



Cluster

ONTAP 9.14.1 REST API reference

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Cluster

Cluster overview

Overview

These APIs enable you to perform a number of independent workflows, including:

- Creating the cluster
- Adding nodes to the cluster
- Managing cluster configuration data (including name, version, NTP servers, name servers, and DNS domains)
- Managing node configuration data (including node names, models, serial numbers, and HA group information)
- Discovering the nodes on the cluster network that can be added to the cluster
- Viewing and updating current and recent jobs
- Updating the cluster software

Pre-Cluster APIs

A few of the cluster APIs (namely, POST/OPTIONS on `/api/cluster`, GET/HEAD/OPTIONS on `/api/cluster/nodes`, and calls on `/api/cluster/jobs`) are allowed before the cluster is created. These APIs support creation of the cluster and monitoring of its progress. Any other cluster API used before the cluster is created will fail.

Manage clusters

Cluster endpoint overview

Overview

You can use this API to create a cluster, update cluster-wide configurations, and retrieve the current configuration details.

Creating a cluster

You can create a new cluster by issuing a POST request to `/cluster`. Parameters are provided in the body of the POST request to configure cluster-wide settings and add nodes during the cluster setup.

Fields used for creating a cluster

The fields used for the cluster APIs fall into the following categories:

- Required cluster-wide configuration
- Optional cluster-wide configuration

Required cluster-wide configuration

The following fields are always required for any POST /cluster request:

- name
- password

Optional cluster-wide configuration

The following fields are used to set up additional cluster-wide configurations:

- location
- contact
- dns_domains
- name_servers
- ntp_servers
- timezone
- license
- configuration_backup
- management_interface
- nodes

Nodes field

The nodes field specifies the nodes to join to the cluster. To use this API, all nodes must run the same version of ONTAP. If you do not specify a node, the cluster is configured with one node added. The REST request is issued to the node that is added to the cluster. If you specify one node, do not use the "node.cluster_interface.ip.address" field. If you specify multiple nodes, specify the node to which the REST request is issued in addition to the remote nodes. Use the "node.cluster_interface.ip.address" field to identify each node. All other node fields are optional in all cases. If you provide a field for one node, you need to provide the same field for all nodes.

Node networking fields

The cluster management interface and each node management interface use the cluster management interface subnet mask and gateway. For advanced configurations in which the cluster and node management interfaces are on different subnets, use the /network/ip/interface APIs to configure network interfaces after setup is complete. The management interfaces are used to communicate with the name servers and NTP servers. The address family of the name servers and NTP servers must match the management interfaces address family.

Single node cluster field

When the "single_node_cluster" field is set to "true", the cluster is created in single node cluster mode. You can provide a node field for this node for node-specific configuration but do not use the "node.cluster_interface.ip.address" field. Storage failover is configured to non-HA mode, and ports used for cluster ports are moved to the default IPspace. This might cause the node to reboot during setup. While a node reboots, the RESTful interface might not be available. See "Connection failures during cluster create" for more information.

Create recommended aggregates parameter

When the "create_recommended_aggregates" parameter is set to "true", aggregates based on an optimal layout recommended by the system are created on each of the nodes in the cluster. The default setting is "false".

Performance monitoring

Performance of the cluster can be monitored by the `metric.*` and `statistics.*` fields. These fields show the performance of the cluster in terms of IOPS, latency and throughput. The `metric.*` fields denote an average, whereas the `statistics.*` fields denote a real-time monotonically increasing value aggregated across all nodes.

Analytics auto-enable properties

New SVMs will use the values set for the "auto_enable_analytics" and "auto_enable_activity_tracking" fields as the default for new volumes. The default setting is false.

Setting auto_enable_analytics

```
# The API:
/api/cluster/

# The Call:
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d '{
"auto_enable_analytics" : "true"}'

# The response:
{
  "job": {
    "uuid": "a079cfd8-50d0-11ed-9a7f-005056acd56e",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/a079cfd8-50d0-11ed-9a7f-005056acd56e"
      }
    }
  }
}
```

Setting auto_enable_activity_tracking

```
# The API:
/api/cluster/

# Modify field:
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d '{
"auto_enable_activity_tracking" : "true"}'

# The response:
{
"job": {
  "uuid": "8a8b29e6-557a-11ed-92cc-005056ac76ec",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/8a8b29e6-557a-11ed-92cc-005056ac76ec"
    }
  }
}
}
```

Monitoring cluster create status

Errors before the job starts

Configuration in the POST /cluster request is validated before the cluster create job starts. If an invalid configuration is found, an HTTP error code in the 4xx range is returned. No cluster create job is started.

Polling on the job

After a successful POST /cluster request is issued, an HTTP error code of 202 is returned along with a job UUID and link in the body of the response. The cluster create job continues asynchronously and is monitored with the job UUID using the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Errors during the job

If a failure occurs during the cluster create job, the job body provides details of the error along with error code fields. See the error table under "Responses" in the POST /cluster documentation for common error codes and descriptions.

Rerunning POST /cluster

The POST /cluster request can be rerun if errors occur. When rerunning the request, use the same body and query parameters. You can change the value of any field in the original body or query, but you cannot change the provided fields. For example, an initial request might have a body section as follows:

```
body =
{
  "name": "clusCreateRerun",
  "password": "openSesame",
  "nodes": [
    {
      "cluster_interface": {
        "ip": {
          "address": "1.1.1.1"
        }
      }
    },
    {
      "cluster_interface": {
        "ip": {
          "address": "2.2.2.2"
        }
      }
    }
  ]
}
```

A rerun request updates the body details to:

```

body =
{
  "name": "clusCreateRerun",
  "password": "openSesame",
  "nodes": [
    {
      "cluster_interface": {
        "ip": {
          "address": "3.3.3.3"
        }
      }
    },
    {
      "cluster_interface": {
        "ip": {
          "address": "4.4.4.4"
        }
      }
    }
  ]
}

```

A rerun request with the following body details is invalid:

```

body =
{
  "name": "clusCreateRerun",
  "password": "openSesame",
  "nodes": [
    {
      "cluster_interface": {
        "ip": {
          "address": "3.3.3.3"
        }
      }
    }
  ]
}

```

Note that the password might already be configured. If a password is already configured and then a new password is provided, the new request overwrites the existing password. If a password is already configured either by another interface or by a previous POST request to /cluster, authenticate any future REST requests with that password. If a POST request to /cluster with the default return_timeout of 0 returns an error, then the password was not changed.

Connection failures during cluster create

A request to poll the job status might fail during a cluster create job in the following two cases. In these cases, programmatic use of the RESTful interface might be resilient to these connection failures.

1. When the "single_node_cluster" flag is set to "true", the node might reboot. During this time, the RESTful interface might refuse connections and return errors on a GET request, or connection timeouts might occur. Programmatic use of the RESTful interface during reboots must consider these effects while polling a cluster create job.
2. The "mgmt_auto" LIF is removed during the cluster create job. A POST /cluster request might be issued on the "mgmt_auto" LIF. However, requests to poll the job status might fail during cluster create when the "mgmt_auto" LIF is removed. The "mgmt_auto" LIF is only removed if a cluster management interface is provided as an argument to POST /cluster, and only after the cluster management interface is created. Programmatic use of the POST /cluster API on the "mgmt_auto" LIF should be configured to dynamically switch to polling the job on the cluster management LIF.

Modifying cluster configurations

The following fields can be used to modify a cluster-wide configuration:

- name
- location
- contact
- dns_domains
- name_servers
- timezone
- auto-enable-analytics
- auto-enable-activity-tracking

Examples

Minimally configuring a 2-node setup

```
# Body
minimal_2_node_cluster.txt(body):
{
  "name": "clusCreateExample1",
  "password": "openSesame",
  "nodes": [
    {
      "cluster_interface": {
        "ip": {
          "address": "1.1.1.1"
        }
      }
    },
    {
      "cluster_interface": {
        "ip": {
          "address": "2.2.2.2"
        }
      }
    }
  ]
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster" -d
"@minimal_2_node_cluster.txt"
```

Setting up a single node with additional node configuration and auto aggregate creation

```
# Body
single_node_additional_config.txt (body) :
{
  "name": "clusCreateExample2",
  "password": "openSesame",
  "nodes": [
    {
      "name": "singleNode",
      "location": "Sunnyvale"
    }
  ]
}

# Request
curl -X POST "https://<mgmt-
ip>/api/cluster?single_node_cluster=true&create_recommended_aggregates=true" -d "@single_node_additional_config.txt"
```

Modifying a cluster-wide configuration

```
# Body
modify_cluster_config.txt (body) :
{
  "contact": "it@company.com"
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d
"@modify_cluster_config.txt"
```

Creating a cluster using the cluster "create" operation

This example shows how to create a cluster using the cluster APIs. Specifically, this example shows the creation of a two-node cluster and uses information from the nodes themselves combined with user supplied information to configure the cluster.

Preparing for setup

Before the REST APIs can be issued to create the cluster, the cluster must be wired up and powered on. The network connections between the nodes for the cluster interconnect and the connections to the management network must be completed. After the nodes are powered on, the nodes automatically configure interfaces on the platform's default cluster ports to allow the nodes to discover each other during setup and expansion workflows. You must configure a management interface on one node or use the mgmt_auto LIF, which is

assigned an IP address using DHCP, to start using the REST APIs. By making a console connection to a node, the cluster setup wizard guides you through the configuration of the initial node management interface to which the REST calls can be sent. Once this step is completed, exit the wizard by typing "exit". You can then issue REST API requests.

1. Wire and power on the nodes.
2. Make a console connection to one node to access the cluster setup wizard.
3. Enter node management interface information to enable REST API requests to be sent to the node.

```
Welcome to the cluster setup wizard.
You can enter the following commands at any time:
"help" or "?" - if you want to have a question clarified,
"back" - if you want to change previously answered questions, and
"exit" or "quit" - if you want to quit the cluster setup wizard.
Any changes you made before quitting will be saved.
You can return to cluster setup at any time by typing "cluster setup".
To accept a default or omit a question, do not enter a value.
This system will send event messages and periodic reports to NetApp
Technical
Support. To disable this feature, enter
autosupport modify -support disable
within 24 hours.
Enabling AutoSupport can significantly speed problem determination and
resolution should a problem occur on your system.
For further information on AutoSupport, see:
  http://support.netapp.com/autosupport/
Type yes to confirm and continue {yes}: yes
Enter the node management interface port [e0c]:
  Enter the node management interface IP address: 10.224.82.249
  Enter the node management interface netmask: 255.255.192.0
  Enter the node management interface default gateway: 10.224.64.1
  A node management interface on port e0c with IP address 10.224.82.249
has been created.
  Use your web browser to complete cluster setup by accessing
  https://10.224.82.249
  Otherwise, press Enter to complete cluster setup using the command
line
  interface: exit
  Exiting the cluster setup wizard. Any changes you made have been
saved.
  The cluster administrator's account (username "admin") password is set
to the system default.
  Warning: You have exited the cluster setup wizard before completing
all
  of the tasks. The cluster is not configured. You can complete cluster
setup by typing
  "cluster setup" in the command line interface.
```

Discovering the nodes

If you issue a `GET /api/cluster/nodes` request when the nodes are not in a cluster, the API returns a list of nodes that were discovered on the cluster interconnect. Information returned includes the node's serial number, model, software version, UUID, and cluster interface address. The number of nodes returned should

be the same as the number of nodes expected to be in the cluster. If too many nodes are discovered, remove the nodes that should not be part of the cluster. If not enough nodes are discovered, verify all the nodes are powered on, that the connections to the cluster interconnect are complete, and retry the command.

```
# The API:
/api/cluster/nodes

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/nodes?fields=state,uptime" -H
"accept: application/hal+json"

# The response:
{
  "records": [
    {
      "uuid": "6dce4710-c860-11e9-b5bc-005056bb6135",
      "name": "cluster1",
      "uptime": 134555,
      "state": "up",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/6dce4710-c860-11e9-b5bc-005056bb6135"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/cluster/nodes?fields=state,uptime"
    }
  }
}
```

Creating the cluster

When the node information is available, including each node's cluster interface address, you can assemble the information for creating the cluster. Provide the cluster name and the password for the admin account. The rest of the information is optional and can be configured later using other APIs. Provide the cluster interface address for each node to be included in the cluster so that you can connect to it while adding it to the cluster. In addition to the cluster interface address, you can provide the optional node name, location, and management interface information. If you do not provide node names, nodes are named based on the cluster name. The nodes' management interface subnet mask and gateway values are omitted and must be the same as the cluster management interface's subnet mask and gateway.

```

# The API:
/api/cluster

# The call:
curl -X POST "https://<mgmt-ip>/api/cluster" -H "accept:
application/hal+json" -H "accept: application/hal+json" -d
'{"name":"cluster1","location":"datacenter1","contact":"me","dns_domains":
["example.com"],"name_servers":["10.224.223.130","10.224.223.131","10.224.
223.132"],"ntp_servers":["time.nist.gov"],"management_interface":{"ip":{"a
ddress":"10.224.82.25","netmask":"255.255.192.0","gateway":"10.224.64.1"}}
,"password":"mypassword","license":{"keys":["AMEPOSOIKLKGEEEEEDGNDEKSJDE"]}
,"nodes":[{"cluster_interface":{"ip":{"address":"169.254.245.113"}}, {"name"
:"node1","management_interface":{"ip":{"address":"10.224.82.29"}}, {"clust
er_interface":{"ip":{"address":"169.254.217.95"}}, {"name":"node2","manageme
nt_interface":{"ip":{"address":"10.224.82.31"}}}]}'

# The response:
{
  "job": {
    "uuid": "b5bc07e2-19e9-11e9-a751-005056bbd95f",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/b5bc07e2-19e9-11e9-a751-005056bbd95f"
      }
    }
  }
}

```

Monitoring the progress of cluster creation

To monitor the progress of the cluster create operation, poll the returned job link until the state value is no longer "running" or "queued".

```
# The API:
/api/cluster/jobs/b5bc07e2-19e9-11e9-a751-005056bbd95f

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/b5bc07e2-1e9-11e9-a751-005056bbd95f" -H "accept: application/hal+json"

# The response:
{
  "uuid": "b5bc07e2-19e9-11e9-a751-005056bbd95f",
  "description": "POST /api/cluster",
  "state": "success",
  "message": "success",
  "code": 0,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/b5bc07e2-19e9-11e9-a751-005056bbd95f"
    }
  }
}
```

Verifying the cluster information

After the cluster is created, you can verify the information applied using a number of APIs. You can retrieve most of the information provided using the `/api/cluster` and `/api/cluster/nodes` APIs. In addition, you can view the network interface and route information using the `/api/network` APIs. The following example shows how to retrieve the cluster information:

```
# The API:
/api/cluster

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster" -H "accept: application/hal+json"

# The response:
{
  "name": "C1_sti44-vsimsim-ucs515w_1621957038",
  "uuid": "5f7f57c7-bd67-11eb-95f4-005056a7b9b1",
  "location": "sti",
  "contact": "divyabha",
  "version": {
    "full": "NetApp Release 9.10.1: Mon May 24 08:07:35 UTC 2021",
    "generation": 9,
  }
}
```



```
"major": 10,
"minor": 1
},
"dns_domains": [
  "ctl.gdl.englab.netapp.com",
  "gdl.englab.netapp.com",
  "rtp.netapp.com",
  "eng.netapp.com",
  "netapp.com"
],
"name_servers": [
  "10.224.223.131",
  "10.224.223.130"
],
"ntp_servers": [
  "10.235.48.111"
],
"peering_policy": {
  "minimum_passphrase_length": 8,
  "authentication_required": true,
  "encryption_required": false
},
"management_interfaces": [
  {
    "uuid": "beef2db7-bd67-11eb-95f4-005056a7b9b1",
    "name": "clus_mgmt",
    "ip": {
      "address": "10.236.153.229"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/beef2db7-bd67-11eb-95f4-005056a7b9b1"
      }
    }
  },
  {
    "uuid": "cb63e02c-bd72-11eb-95f4-005056a7b9b1",
    "name": "sti44-vsimsim-ucs515w_cluster_mgmt_inet6",
    "ip": {
      "address": "fd20:8b1e:b255:9051::a02"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/interfaces/cb63e02c-bd72-11eb-95f4-005056a7b9b1"
      }
    }
  }
]
```

```

    }
  }
},
{
  "uuid": "ea13dec1-bd72-11eb-bd00-005056a7f50e",
  "name": "sti44-vsimgucs515x_cluster_mgmt_inet6",
  "ip": {
    "address": "fd20:8b1e:b255:9051::a0a"
  },
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/ea13dec1-bd72-11eb-bd00-005056a7f50e"
    }
  }
}
],
"metric": {
  "timestamp": "2021-05-26T20:36:15Z",
  "duration": "PT15S",
  "status": "ok",
  "latency": {
    "other": 0,
    "total": 0,
    "read": 0,
    "write": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  }
},
"statistics": {
  "timestamp": "2021-05-26T20:36:25Z",
  "status": "ok",
  "latency_raw": {
    "other": 0,
    "total": 0,

```

```

    "read": 0,
    "write": 0
  },
  "iops_raw": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput_raw": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  }
},
"timezone": {
  "name": "America/New_York"
},
"san_optimized": false,
"_links": {
  "self": {
    "href": "/api/cluster"
  }
}
}

# The API:
/api/cluster

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster?fields=management_interfaces"
-H "accept: application/hal+json"

# The response:
{
  "management_interfaces": [
    {
      "uuid": "c661725a-19e9-11e9-a751-005056bbd95f",
      "name": "cluster_mgmt",
      "ip": {
        "address": "10.224.82.25"
      },
      "_links": {
        "self": {
          "href": "/api/network/ip/interfaces/c661725a-19e9-11e9-a751-"

```

```

005056bbd95f"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/cluster"
  }
}
}
}

```

Retrieve the cluster configuration

GET /cluster

Introduced In: 9.6

Retrieves the cluster configuration.

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------------------------|------------------------|--|
| _links | _links | |
| _tags | array[string] | Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings. |
| auto_enable_activity_tracking | boolean | Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes. |

| Name | Type | Description |
|-----------------------|--------------------------------------|---|
| auto_enable_analytics | boolean | Indicates how new SVMs will default "auto_enable_analytics" for new volumes. |
| certificate | certificate | Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests. |
| configuration_backup | configuration_backup | |
| contact | string | |
| dns_domains | array[string] | <p>A list of DNS domains. Domain names have the following requirements:</p> <ul style="list-style-type: none"> • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names: "all", "local", and "localhost". |
| license | license | License keys or NLF contents. |
| location | string | |

| Name | Type | Description |
|-----------------------|--|---|
| management_interface | management_interface | The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration. |
| management_interfaces | array[management_interfaces] | |
| metric | metric | Performance numbers, such as IOPS latency and throughput. |
| name | string | |
| name_servers | array[string] | The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses. |
| nodes | array[nodes] | |
| ntp_servers | array[string] | Host name, IPv4 address, or IPv6 address for the external NTP time servers. |
| password | string | Initial admin password used to create the cluster. |
| peering_policy | peering_policy | |
| san_optimized | boolean | Specifies if this cluster is an All SAN Array. |
| statistics | statistics | These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. |

| Name | Type | Description |
|----------|----------|--|
| timezone | timezone | <p>Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's:</p> <ul style="list-style-type: none"> • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7 |
| uuid | string | |
| version | version | <p>This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.</p> |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"configuration_backup": {
  "password": "yourpassword",
  "url": "http://10.224.65.198/backups",
  "username": "me"
},
"contact": "<a href="
mailto:support@company.com">support@company.com</a>",
"dns_domains": [
  "example.com",
  "example2.example3.com"
],
"license": {
  "keys": {
  }
},
"location": "building 1",
"management_interface": {
  "ip": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
```



```

        "href": "/api/resourcelink"
    }
},
"ip": {
    "address": "10.10.10.7"
},
"name": "lif1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metric": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "duration": "PT15S",
    "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
},
"name": "cluster1",
"name_servers": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
],
"nodes": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "cluster_interface": {

```

```
"ip": {
  "address": "10.10.10.7"
},
"cluster_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"controller": {
  "board": "System Board XXVIII",
  "cpu": {
    "count": 20,
    "firmware_release": "string",
    "processor": "string"
  },
  "failed_fan": {
    "count": 1,
    "message": {
      "code": "111411207",
      "message": "There are no failed fans."
    }
  },
  "failed_power_supply": {
    "count": 1,
    "message": {
      "code": "111411208",
      "message": "There are no failed power supplies."
    }
  },
  "flash_cache": {
    "capacity": 102400000000,
    "device_id": 0,
    "firmware_file": "X9170_0000Z6300NVM",
    "firmware_version": "NA05",
    "hardware_revision": "A1",
    "model": "X1970A",
    "part_number": "119-00207",
    "serial_number": "A22P5061550000187",
```

```

    "slot": "6-1",
    "state": "ok"
  },
  "frus": {
    "id": "string",
    "state": "ok",
    "type": "fan"
  },
  "memory_size": 1024000000,
  "over_temperature": "over"
},
"date": "2019-04-17 11:49:26 -0400",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed",
    "status": {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "error": {
      "code": "852126",
      "message": "shutdown"
    },
    "state": "done"
  }
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "down"
},

```

```

"partners": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ports": {
  "number": 0,
  "state": "active"
},
"takeover": {
  "failure": {
    "code": 852130,
    "message": "Failed to initiate takeover. Run the \"storage
failover show-takeover\" command for more information."
  },
  "state": "failed"
},
"takeover_check": {
  "reasons": {
  }
}
},
"hw_assist": {
  "status": {
    "local": {
      "state": "active"
    },
    "partner": {
      "state": "active"
    }
  }
},
"location": "rack 2 row 5",
"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}

```

```

    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"membership": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "processor_utilization": 13,
  "status": "ok",
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "elb"
  },
  "type": "fc"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "battery_ok",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {
    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "installed",
    "version": "11.6"
  }
}

```

```

    },
    "firmware_version": "string",
    "ipv4_interface": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24",
      "setup_state": "not_setup"
    },
    "ipv6_interface": {
      "address": "fd20:8b1e:b255:5011:10:141:4:97",
      "gateway": "fd20:8b1e:b255:5011:10::1",
      "link_local_ip": "FE80::/10",
      "netmask": 64,
      "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
      "setup_state": "not_setup"
    },
    "last_update_state": "failed",
    "link_status": "up",
    "mac_address": "string",
    "primary": {
      "state": "installed",
      "version": "11.6"
    },
    "ssh_info": {
      "allowed_addresses": {
      }
    },
    "state": "online",
    "type": "sp"
  },
  "snaplock": {
    "compliance_clock_time": "2018-06-04 15:00:00 -0400"
  },
  "state": "up",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "storage_configuration": "unknown",
  "system_aggregate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  }
}

```

```

    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "system_id": 92027651,
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": 300536,
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": 791603000068,
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  },
  "vm": {
    "provider_type": "GoogleCloud"
  }
},
"ntp_servers": [
  "time.nist.gov",
  "10.98.19.20",
  "2610:20:6F15:15::27"
],
"password": "mypassword",
"peering_policy": {
  "minimum_passphrase_length": 0
},
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500"
}

```

```

},
"timezone": {
  "name": "America/New_York"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": 9,
  "major": 4,
  "minor": 0
}
}

```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 9241607 | Only POST/OPTIONS on /api/cluster, GET/HEAD/OPTIONS on /api/cluster/nodes, or calls on /api/cluster/jobs are available in precluster. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

```

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

```


Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

certificate

Support for this field will be removed in a future release. Please use `/api/cluster/web` for this field. Certificate used by cluster and node management interfaces for TLS connection requests.

| Name | Type | Description |
|--------|------------------------|------------------|
| _links | _links | |
| name | string | Certificate name |
| uuid | string | Certificate UUID |

configuration_backup

| Name | Type | Description |
|----------------------|---------|--|
| password | string | |
| url | string | An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster. |
| username | string | |
| validate_certificate | boolean | Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default. |

license

License keys or NLF contents.

| Name | Type | Description |
|------|---------------|-------------|
| keys | array[string] | |

ip

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

management_interface

The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration.

| Name | Type | Description |
|------|--------------------|---|
| ip | ip | Object to setup an interface along with its default router. |

ip

IP information

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

management_interfaces

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

| Name | Type | Description |
|------------------------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

iops

The rate of I/O operations observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

latency

The round trip latency in microseconds observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |

| Name | Type | Description |
|-------|---------|--|
| write | integer | Performance metric for write I/O operations. |

throughput

The rate of throughput bytes per second observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

metric

Performance numbers, such as IOPS latency and throughput.

| Name | Type | Description |
|----------|-------------------------|--|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| iops | iops | The rate of I/O operations observed at the storage object. |
| latency | latency | The round trip latency in microseconds observed at the storage object. |

| Name | Type | Description |
|------------|----------------------------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| throughput | throughput | The rate of throughput bytes per second observed at the storage object. |
| timestamp | string | The timestamp of the performance data. |

node_setup_ip

The IP configuration for cluster setup.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interface

The cluster network IP address of the node to be added.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

cluster_interfaces

Network interface

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

cpu

CPU information.

| Name | Type | Description |
|------------------|---------|---|
| count | integer | Number of CPUs on the node. |
| firmware_release | string | Firmware release number. Defined by the CPU manufacturer. |
| processor | string | CPU type on the node. |

message

| Name | Type | Description |
|---------|--------|---|
| code | string | Error code describing the current condition of chassis fans. |
| message | string | Message describing the current condition of chassis fans. It is only of use when <code>failed_fan.count</code> is not zero. |

failed_fan

| Name | Type | Description |
|---------|-------------------------|--|
| count | integer | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | message | |

message

| Name | Type | Description |
|---------|--------|--|
| code | string | Error code describing the current condition of power supply. |
| message | string | Message describing the state of any power supplies that are currently degraded. It is only of use when <code>failed_power_supply.count</code> is not zero. |

failed_power_supply

| Name | Type | Description |
|---------|-------------------------|--------------------------------------|
| count | integer | Number of failed power supply units. |
| message | message | |

flash_cache

| Name | Type | Description |
|-------------------|---------|---------------|
| capacity | integer | Size in bytes |
| device_id | integer | |
| firmware_file | string | |
| firmware_version | string | |
| hardware_revision | string | |
| model | string | |
| part_number | string | |
| serial_number | string | |
| slot | string | |
| state | string | |

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

controller

Controller information

| Name | Type | Description |
|---------------------|--------------------------------------|---|
| board | string | Type of the system board. This is defined by vendor. |
| cpu | cpu | CPU information. |
| failed_fan | failed_fan | |
| failed_power_supply | failed_power_supply | |
| flash_cache | array[flash_cache] | A list of Flash-Cache devices. Only returned when requested by name. |
| frus | array[frus] | List of FRUs on the node. Only returned when requested by name. |
| memory_size | integer | Memory available on the node, in bytes. |
| over_temperature | string | Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds. |

external_cache

Cache used for buffer management.

| Name | Type | Description |
|------------|---------|--|
| is_enabled | boolean | Indicates whether the external cache is enabled. |

| Name | Type | Description |
|-------------------|---------|---|
| is_hya_enabled | boolean | Indicates whether HyA caching is enabled. |
| is_rewarm_enabled | boolean | Indicates whether rewarm is enabled. |
| pcs_size | integer | PCS size in gigabytes. |

failure

Indicates the failure code and message.

| Name | Type | Description |
|---------|---------|--------------------------------------|
| code | integer | Message code |
| message | string | Detailed message based on the state. |

aggregate

Aggregate name and UUID.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error

Indicates the failed aggregate giveback code and message.

| Name | Type | Description |
|---------|--------|--------------------------------------|
| code | string | Message code. |
| message | string | Detailed message based on the state. |

status

| Name | Type | Description |
|-----------|---------------------------|--------------------------|
| aggregate | aggregate | Aggregate name and UUID. |

| Name | Type | Description |
|-------|-----------------------|--|
| error | error | Indicates the failed aggregate giveback code and message. |
| state | string | Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks). |

giveback

Represents the state of the node that is giving storage back to its HA partner.

| Name | Type | Description |
|---------|---------------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |
| status | array[status] | Giveback status of each aggregate. |

interconnect

| Name | Type | Description |
|---------|--------|---------------------------------------|
| adapter | string | HA interconnect device name. |
| state | string | Indicates the HA interconnect status. |

partners

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |

| Name | Type | Description |
|------|--------|-------------|
| uuid | string | |

ports

| Name | Type | Description |
|--------|---------|--|
| number | integer | HA port number |
| state | string | HA port state: <ul style="list-style-type: none"> • <i>down</i> - Logical HA link is down. • <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • <i>armed</i> - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • <i>active</i> - Logical HA link is active. • <i>reserved</i> - Logical HA link is active, but the physical link is down. |

takeover

This represents the state of the node that is taking over storage from its HA partner.

| Name | Type | Description |
|---------|-------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |

takeover_check

The takeover check response.

| Name | Type | Description |
|---------|---------------|---|
| reasons | array[string] | Reasons why the takeover is not possible. |

| Name | Type | Description |
|-------------------|---------|---|
| takeover_possible | boolean | Indicates whether the takeover is possible. |

ha

| Name | Type | Description |
|----------------|-----------------------------------|---|
| auto_giveback | boolean | Specifies whether giveback is automatically initiated when the node that owns the storage is ready. |
| enabled | boolean | Specifies whether or not storage failover is enabled. |
| giveback | giveback | Represents the state of the node that is giving storage back to its HA partner. |
| interconnect | interconnect | |
| partners | array[partners] | Nodes in this node's High Availability (HA) group. |
| ports | array[ports] | |
| takeover | takeover | This represents the state of the node that is taking over storage from its HA partner. |
| takeover_check | takeover_check | The takeover check response. |

local

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

partner

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

status

| Name | Type | Description |
|---------|-------------------------|---|
| enabled | boolean | Indicates whether hardware assist is enabled on the node. |
| local | local | |
| partner | partner | |

hw_assist

The hardware assist information.

| Name | Type | Description |
|--------|------------------------|-------------|
| status | status | |

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

management_interfaces

Network interface

| Name | Type | Description |
|--------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

metric

CPU performance for the nodes.

| Name | Type | Description |
|------------------------|------------------------|--|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| processor_utilization | integer | Average CPU Utilization for the node |

| Name | Type | Description |
|-----------|--------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |
| uuid | string | |

ports

| Name | Type | Description |
|------|--------|-------------|
| name | string | |

metrocluster

Metrocluster

| Name | Type | Description |
|---------------------|--------------|---|
| custom_vlan_capable | boolean | Indicates whether the MetroCluster over IP platform supports custom VLAN IDs. |
| ports | array[ports] | MetroCluster over IP ports. |

| Name | Type | Description |
|------|--------|-------------------------------------|
| type | string | The Metrocluster configuration type |

nvrाम

| Name | Type | Description |
|---------------|---------|--|
| battery_state | string | Specifies status of the NVRAM battery. Possible values: <ul style="list-style-type: none"> • <i>battery_ok</i> • <i>battery_partially_discharged</i> • <i>battery_fully_discharged</i> • <i>battery_not_present</i> • <i>battery_near_end_of_life</i> • <i>battery_at_end_of_life</i> • <i>battery_unknown</i> • <i>battery_over_charged</i> • <i>battery_fully_charged</i> |
| id | integer | Vendor specific NVRAM ID of the node. |

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts SP API service access to cluster nodes only. By default, limit_access is set to true. |

| Name | Type | Description |
|------|---------|---|
| port | integer | Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used. |

auto_config

Provides the properties of the service processor auto configuration.

| Name | Type | Description |
|-------------|--------|--|
| ipv4_subnet | string | Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |
| ipv6_subnet | string | Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |

backup

Provides the properties of the service processor backup partition.

| Name | Type | Description |
|------------|---------|--|
| is_current | boolean | Indicates whether the service processor is currently booted from the backup partition. |
| state | string | Status of the backup partition. |
| version | string | Firmware version of the backup partition. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

| Name | Type | Description |
|-------------|---------|---|
| enabled | boolean | Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |
| setup_state | string | Indicates the setup state of the interface. |

ipv6_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|--------------------|---------|--|
| address | string | IPv6 address |
| enabled | boolean | Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv6 address of the default router. |
| is_ipv6_ra_enabled | boolean | Indicates whether IPv6 RA is enabled. |
| link_local_ip | string | Link local IP address. |
| netmask | integer | The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127. |
| router_ip | string | Router assigned IP address. |
| setup_state | string | Indicates the setup state of the interface. |

primary

Provides the properties of the service processor primary partition.

| Name | Type | Description |
|------------|---------|---|
| is_current | boolean | Indicates whether the service processor is currently booted from the primary partition. |
| state | string | Status of the primary partition. |
| version | string | Firmware version of the primary partition. |

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

| Name | Type | Description |
|-------------------|---------------|----------------------|
| allowed_addresses | array[string] | Allowed IP addresses |

web_service

Provides the properties of SP or BMC web service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts web service access to cluster nodes only. By default, limit_access is set to true. |

service_processor

| Name | Type | Description |
|--------------------|--------------------------------|---|
| api_service | api_service | Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service. |
| auto_config | auto_config | Provides the properties of the service processor auto configuration. |
| autoupdate_enabled | boolean | Indicates whether the service processor can be automatically updated from ONTAP. <ul style="list-style-type: none"> • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true |
| backup | backup | Provides the properties of the service processor backup partition. |
| dhcp_enabled | boolean | Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true". |
| firmware_version | string | The version of firmware installed. |
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |
| ipv6_interface | ipv6_interface | Object to setup an interface along with its default router. |
| is_ip_configured | boolean | Indicates whether the service processor network is configured. |
| last_update_state | string | Provides the "update status" of the last service processor update. |
| link_status | string | |
| mac_address | string | |

| Name | Type | Description |
|-------------|-----------------------------|--|
| primary | primary | Provides the properties of the service processor primary partition. |
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state | string | |
| type | string | |
| web_service | web_service | Provides the properties of SP or BMC web service. |

snaplock

SnapLock-related properties.

| Name | Type | Description |
|-----------------------|--------|---------------------------------|
| compliance_clock_time | string | SnapLock compliance clock time. |

statistics

Raw CPU performance for the nodes.

| Name | Type | Description |
|----------------------------|---------|--|
| processor_utilization_base | integer | Base counter for CPU Utilization. |
| processor_utilization_raw | integer | Raw CPU Utilization for the node. This should be divided by the processor_utilization_base to calculate the percentage CPU utilization for the node. |

| Name | Type | Description |
|-----------|--------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |

system_aggregate

Aggregate

| Name | Type | Description |
|------------------------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------|--------|----------------------------------|
| full | string | The full cluster version string. |

| Name | Type | Description |
|------------|---------|--|
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

vm

| Name | Type | Description |
|---------------|--------|--|
| provider_type | string | Cloud provider where the VM is hosted. |

nodes

Complete node information

| Name | Type | Description |
|--------------------|---|---|
| _links | _links | |
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none"> • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |

| Name | Type | Description |
|-----------------------|--|--|
| hw_assist | hw_assist | The hardware assist information. |
| is_spares_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| model | string | |
| name | string | |
| nvrnm | nvrnm | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |

| Name | Type | Description |
|-----------------------|----------------------------------|---|
| storage_configuration | string | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

peering_policy

| Name | Type | Description |
|---------------------------|---------|--|
| authentication_required | boolean | Indicates whether authentication is required in the communication between cluster peers. If true, authentication is required to establish communication between cluster peers. |
| encryption_required | boolean | Indicates whether encryption is required in the communication between cluster peers. If true, encryption is required to establish communication between cluster peers. |
| minimum_passphrase_length | integer | Minimum required length for a passphrase. For more information on password strength best practices, see: https://cheatsheetseries.owasp.org/cheatsheets/Authentication_Cheat_Sheet.html#implement-proper-password-strength-controls |

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS

value to calculate the average latency per I/O operation.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

| Name | Type | Description |
|----------------|--------------------------------|---|
| iops_raw | iops_raw | The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time. |
| latency_raw | latency_raw | The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation. |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| throughput_raw | throughput_raw | Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time. |
| timestamp | string | The timestamp of the performance data. |

timezone

Provides the cluster-wide time zone information that localizes time found on messages displayed on each

node's:

- console messages;
- logging to internal ONTAP log files; and
- localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC.

| Name | Type | Description |
|------|--------|--|
| name | string | <p>The ONTAP time zone name or identification in either IANA time zone format "Area/Location", or an ONTAP traditional time zone.</p> <p>The initial first node in cluster setting for time zone is "Etc/UTC". "Etc/UTC" is the IANA timezone "Area/Location" specifier for Coordinated Universal Time (UTC), which is an offset of 0.</p> <p>IANA time zone format</p> <p>The IANA time zone, formatted as "Area/Location", is based on geographic areas that have had the same time zone offset for many years.</p> <p>"Location" represents a compound name using additional forward slashes.</p> <p>An example of the "Area/Location" time zone is "America/New_York" and represents most of the United States Eastern Time Zone. Examples of "Area/Location" with "Location" as a compound name are "America/Argentina/Buenos_Aires" and "America/Indiana/Indianapolis".</p> <p>ONTAP traditional time zone</p> <p>Examples of the traditional time zones are "EST5EDT" for the United States Eastern Time Zone and "CET" for Central European Time Zone.</p> <ul style="list-style-type: none"> • example: America/New_York • Introduced in: 9.7 • x-nullable: true |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update the cluster configuration

PATCH `/cluster`

Introduced In: 9.6

Updates the cluster configuration after the cluster is created.

Related ONTAP commands

- `cluster identity modify`
- `system node modify`
- `vserver services dns modify`
- `vserver services name-service dns modify`
- `timezone`
- `security ssl modify`

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| Name | Type | Description |
|-------------------------------|------------------------|--|
| _links | _links | |
| _tags | array[string] | Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings. |
| auto_enable_activity_tracking | boolean | Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes. |

| Name | Type | Description |
|-----------------------|--------------------------------------|---|
| auto_enable_analytics | boolean | Indicates how new SVMs will default "auto_enable_analytics" for new volumes. |
| certificate | certificate | Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests. |
| configuration_backup | configuration_backup | |
| contact | string | |
| dns_domains | array[string] | <p>A list of DNS domains. Domain names have the following requirements:</p> <ul style="list-style-type: none"> • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names: "all", "local", and "localhost". |
| license | license | License keys or NLF contents. |
| location | string | |

| Name | Type | Description |
|-----------------------|--|---|
| management_interface | management_interface | The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration. |
| management_interfaces | array[management_interfaces] | |
| metric | metric | Performance numbers, such as IOPS latency and throughput. |
| name | string | |
| name_servers | array[string] | The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses. |
| nodes | array[nodes] | |
| ntp_servers | array[string] | Host name, IPv4 address, or IPv6 address for the external NTP time servers. |
| password | string | Initial admin password used to create the cluster. |
| peering_policy | peering_policy | |
| san_optimized | boolean | Specifies if this cluster is an All SAN Array. |
| statistics | statistics | These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. |

| Name | Type | Description |
|----------|----------|--|
| timezone | timezone | <p>Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's:</p> <ul style="list-style-type: none"> • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7 |
| uuid | string | |
| version | version | <p>This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.</p> |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"configuration_backup": {
  "password": "yourpassword",
  "url": "http://10.224.65.198/backups",
  "username": "me"
},
"contact": "<a href="
mailto:support@company.com">support@company.com</a>",
"dns_domains": [
  "example.com",
  "example2.example3.com"
],
"license": {
  "keys": {
  }
},
"location": "building 1",
"management_interface": {
  "ip": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
```

```

        "href": "/api/resourcelink"
    }
},
"ip": {
    "address": "10.10.10.7"
},
"name": "lif1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metric": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "duration": "PT15S",
    "iops": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "latency": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
},
"name": "cluster1",
"name_servers": [
    "10.224.65.20",
    "2001:db08:a0b:12f0::1"
],
"nodes": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "cluster_interface": {

```

```
"ip": {
  "address": "10.10.10.7"
},
"cluster_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"controller": {
  "board": "System Board XXVIII",
  "cpu": {
    "count": 20,
    "firmware_release": "string",
    "processor": "string"
  },
  "failed_fan": {
    "count": 1,
    "message": {
      "code": "111411207",
      "message": "There are no failed fans."
    }
  },
  "failed_power_supply": {
    "count": 1,
    "message": {
      "code": "111411208",
      "message": "There are no failed power supplies."
    }
  },
  "flash_cache": {
    "capacity": 102400000000,
    "device_id": 0,
    "firmware_file": "X9170_0000Z6300NVM",
    "firmware_version": "NA05",
    "hardware_revision": "A1",
    "model": "X1970A",
    "part_number": "119-00207",
    "serial_number": "A22P5061550000187",
```



```

    "slot": "6-1",
    "state": "ok"
  },
  "frus": {
    "id": "string",
    "state": "ok",
    "type": "fan"
  },
  "memory_size": 1024000000,
  "over_temperature": "over"
},
"date": "2019-04-17 11:49:26 -0400",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed",
    "status": {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "error": {
      "code": "852126",
      "message": "shutdown"
    },
    "state": "done"
  }
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "down"
},

```

```
"partners": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ports": {
  "number": 0,
  "state": "active"
},
"takeover": {
  "failure": {
    "code": 852130,
    "message": "Failed to initiate takeover. Run the \"storage failover show-takeover\" command for more information."
  },
  "state": "failed"
},
"takeover_check": {
  "reasons": {
  }
}
},
"hw_assist": {
  "status": {
    "local": {
      "state": "active"
    },
    "partner": {
      "state": "active"
    }
  }
},
"location": "rack 2 row 5",
"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}
```

```

    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"membership": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "processor_utilization": 13,
  "status": "ok",
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "elb"
  },
  "type": "fc"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "battery_ok",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {
    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "installed",
    "version": "11.6"
  }
}

```

```

    },
    "firmware_version": "string",
    "ipv4_interface": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24",
      "setup_state": "not_setup"
    },
    "ipv6_interface": {
      "address": "fd20:8b1e:b255:5011:10:141:4:97",
      "gateway": "fd20:8b1e:b255:5011:10::1",
      "link_local_ip": "FE80::/10",
      "netmask": 64,
      "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
      "setup_state": "not_setup"
    },
    "last_update_state": "failed",
    "link_status": "up",
    "mac_address": "string",
    "primary": {
      "state": "installed",
      "version": "11.6"
    },
    "ssh_info": {
      "allowed_addresses": {
      }
    },
    "state": "online",
    "type": "sp"
  },
  "snaplock": {
    "compliance_clock_time": "2018-06-04 15:00:00 -0400"
  },
  "state": "up",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "storage_configuration": "unknown",
  "system_aggregate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  }
}

```

```
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "system_id": 92027651,
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": 300536,
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": 791603000068,
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  },
  "vm": {
    "provider_type": "GoogleCloud"
  }
},
"ntp_servers": [
  "time.nist.gov",
  "10.98.19.20",
  "2610:20:6F15:15::27"
],
"password": "mypassword",
"peering_policy": {
  "minimum_passphrase_length": 0
},
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500"
```

```
},
"timezone": {
  "name": "America/New_York"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": 9,
  "major": 4,
  "minor": 0
}
}
```

Response

Status: 200, Ok

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 3604491 | Updating timezone failed. |
| 3604520 | Internal error. System state is not correct to read or change timezone. |
| 8847361 | Too many DNS domains provided. |
| 8847362 | Too many name servers provided. |
| 8847400 | The "dns_domains" field is required when "name_servers" is specified. |
| 9240587 | A name must be provided. |
| 9240588 | The name is too long. |
| 12451843 | Certificate does not exist. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

certificate

Support for this field will be removed in a future release. Please use `/api/cluster/web` for this field. Certificate used by cluster and node management interfaces for TLS connection requests.

| Name | Type | Description |
|--------|------------------------|------------------|
| _links | _links | |
| name | string | Certificate name |
| uuid | string | Certificate UUID |

configuration_backup

| Name | Type | Description |
|----------------------|---------|--|
| password | string | |
| url | string | An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster. |
| username | string | |
| validate_certificate | boolean | Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default. |

license

License keys or NLF contents.

| Name | Type | Description |
|------|---------------|-------------|
| keys | array[string] | |

ip

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

management_interface

The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration.

| Name | Type | Description |
|------|--------------------|---|
| ip | ip | Object to setup an interface along with its default router. |

ip

IP information

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

management_interfaces

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

| Name | Type | Description |
|------------------------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

iops

The rate of I/O operations observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

latency

The round trip latency in microseconds observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |

| Name | Type | Description |
|-------|---------|--|
| write | integer | Performance metric for write I/O operations. |

throughput

The rate of throughput bytes per second observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

metric

Performance numbers, such as IOPS latency and throughput.

| Name | Type | Description |
|----------|-------------------------|--|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| iops | iops | The rate of I/O operations observed at the storage object. |
| latency | latency | The round trip latency in microseconds observed at the storage object. |

| Name | Type | Description |
|------------|----------------------------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| throughput | throughput | The rate of throughput bytes per second observed at the storage object. |
| timestamp | string | The timestamp of the performance data. |

node_setup_ip

The IP configuration for cluster setup.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interface

The cluster network IP address of the node to be added.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

cluster_interfaces

Network interface

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

cpu

CPU information.

| Name | Type | Description |
|------------------|---------|---|
| count | integer | Number of CPUs on the node. |
| firmware_release | string | Firmware release number. Defined by the CPU manufacturer. |
| processor | string | CPU type on the node. |

message

| Name | Type | Description |
|---------|--------|---|
| code | string | Error code describing the current condition of chassis fans. |
| message | string | Message describing the current condition of chassis fans. It is only of use when <code>failed_fan.count</code> is not zero. |

failed_fan

| Name | Type | Description |
|---------|-------------------------|--|
| count | integer | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | message | |

message

| Name | Type | Description |
|---------|--------|--|
| code | string | Error code describing the current condition of power supply. |
| message | string | Message describing the state of any power supplies that are currently degraded. It is only of use when <code>failed_power_supply.count</code> is not zero. |

failed_power_supply

| Name | Type | Description |
|---------|-------------------------|--------------------------------------|
| count | integer | Number of failed power supply units. |
| message | message | |

flash_cache

| Name | Type | Description |
|-------------------|---------|---------------|
| capacity | integer | Size in bytes |
| device_id | integer | |
| firmware_file | string | |
| firmware_version | string | |
| hardware_revision | string | |
| model | string | |
| part_number | string | |
| serial_number | string | |
| slot | string | |
| state | string | |

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

controller

Controller information

| Name | Type | Description |
|---------------------|--------------------------------------|---|
| board | string | Type of the system board. This is defined by vendor. |
| cpu | cpu | CPU information. |
| failed_fan | failed_fan | |
| failed_power_supply | failed_power_supply | |
| flash_cache | array[flash_cache] | A list of Flash-Cache devices. Only returned when requested by name. |
| frus | array[frus] | List of FRUs on the node. Only returned when requested by name. |
| memory_size | integer | Memory available on the node, in bytes. |
| over_temperature | string | Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds. |

external_cache

Cache used for buffer management.

| Name | Type | Description |
|------------|---------|--|
| is_enabled | boolean | Indicates whether the external cache is enabled. |

| Name | Type | Description |
|-------------------|---------|---|
| is_hya_enabled | boolean | Indicates whether HyA caching is enabled. |
| is_rewarm_enabled | boolean | Indicates whether rewarm is enabled. |
| pcs_size | integer | PCS size in gigabytes. |

failure

Indicates the failure code and message.

| Name | Type | Description |
|---------|---------|--------------------------------------|
| code | integer | Message code |
| message | string | Detailed message based on the state. |

aggregate

Aggregate name and UUID.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error

Indicates the failed aggregate giveback code and message.

| Name | Type | Description |
|---------|--------|--------------------------------------|
| code | string | Message code. |
| message | string | Detailed message based on the state. |

status

| Name | Type | Description |
|-----------|---------------------------|--------------------------|
| aggregate | aggregate | Aggregate name and UUID. |

| Name | Type | Description |
|-------|-----------------------|--|
| error | error | Indicates the failed aggregate giveback code and message. |
| state | string | Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks). |

giveback

Represents the state of the node that is giving storage back to its HA partner.

| Name | Type | Description |
|---------|---------------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |
| status | array[status] | Giveback status of each aggregate. |

interconnect

| Name | Type | Description |
|---------|--------|---------------------------------------|
| adapter | string | HA interconnect device name. |
| state | string | Indicates the HA interconnect status. |

partners

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |

| Name | Type | Description |
|------|--------|-------------|
| uuid | string | |

ports

| Name | Type | Description |
|--------|---------|--|
| number | integer | HA port number |
| state | string | HA port state: <ul style="list-style-type: none"> • <i>down</i> - Logical HA link is down. • <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • <i>armed</i> - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • <i>active</i> - Logical HA link is active. • <i>reserved</i> - Logical HA link is active, but the physical link is down. |

takeover

This represents the state of the node that is taking over storage from its HA partner.

| Name | Type | Description |
|---------|-------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |

takeover_check

The takeover check response.

| Name | Type | Description |
|---------|---------------|---|
| reasons | array[string] | Reasons why the takeover is not possible. |

| Name | Type | Description |
|-------------------|---------|---|
| takeover_possible | boolean | Indicates whether the takeover is possible. |

ha

| Name | Type | Description |
|----------------|-----------------------------------|---|
| auto_giveback | boolean | Specifies whether giveback is automatically initiated when the node that owns the storage is ready. |
| enabled | boolean | Specifies whether or not storage failover is enabled. |
| giveback | giveback | Represents the state of the node that is giving storage back to its HA partner. |
| interconnect | interconnect | |
| partners | array[partners] | Nodes in this node's High Availability (HA) group. |
| ports | array[ports] | |
| takeover | takeover | This represents the state of the node that is taking over storage from its HA partner. |
| takeover_check | takeover_check | The takeover check response. |

local

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

partner

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

status

| Name | Type | Description |
|---------|-------------------------|---|
| enabled | boolean | Indicates whether hardware assist is enabled on the node. |
| local | local | |
| partner | partner | |

hw_assist

The hardware assist information.

| Name | Type | Description |
|--------|------------------------|-------------|
| status | status | |

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

management_interfaces

Network interface

| Name | Type | Description |
|--------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

metric

CPU performance for the nodes.

| Name | Type | Description |
|------------------------|------------------------|--|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| processor_utilization | integer | Average CPU Utilization for the node |

| Name | Type | Description |
|-----------|--------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |
| uuid | string | |

ports

| Name | Type | Description |
|------|--------|-------------|
| name | string | |

metrocluster

Metrocluster

| Name | Type | Description |
|---------------------|--------------|---|
| custom_vlan_capable | boolean | Indicates whether the MetroCluster over IP platform supports custom VLAN IDs. |
| ports | array[ports] | MetroCluster over IP ports. |

| Name | Type | Description |
|------|--------|-------------------------------------|
| type | string | The Metrocluster configuration type |

nvrाम

| Name | Type | Description |
|---------------|---------|--|
| battery_state | string | Specifies status of the NVRAM battery. Possible values: <ul style="list-style-type: none"> • <i>battery_ok</i> • <i>battery_partially_discharged</i> • <i>battery_fully_discharged</i> • <i>battery_not_present</i> • <i>battery_near_end_of_life</i> • <i>battery_at_end_of_life</i> • <i>battery_unknown</i> • <i>battery_over_charged</i> • <i>battery_fully_charged</i> |
| id | integer | Vendor specific NVRAM ID of the node. |

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts SP API service access to cluster nodes only. By default, limit_access is set to true. |

| Name | Type | Description |
|------|---------|---|
| port | integer | Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used. |

auto_config

Provides the properties of the service processor auto configuration.

| Name | Type | Description |
|-------------|--------|--|
| ipv4_subnet | string | Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |
| ipv6_subnet | string | Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |

backup

Provides the properties of the service processor backup partition.

| Name | Type | Description |
|------------|---------|--|
| is_current | boolean | Indicates whether the service processor is currently booted from the backup partition. |
| state | string | Status of the backup partition. |
| version | string | Firmware version of the backup partition. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

| Name | Type | Description |
|-------------|---------|---|
| enabled | boolean | Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |
| setup_state | string | Indicates the setup state of the interface. |

ipv6_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|--------------------|---------|--|
| address | string | IPv6 address |
| enabled | boolean | Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv6 address of the default router. |
| is_ipv6_ra_enabled | boolean | Indicates whether IPv6 RA is enabled. |
| link_local_ip | string | Link local IP address. |
| netmask | integer | The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127. |
| router_ip | string | Router assigned IP address. |
| setup_state | string | Indicates the setup state of the interface. |

primary

Provides the properties of the service processor primary partition.

| Name | Type | Description |
|------------|---------|---|
| is_current | boolean | Indicates whether the service processor is currently booted from the primary partition. |
| state | string | Status of the primary partition. |
| version | string | Firmware version of the primary partition. |

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

| Name | Type | Description |
|-------------------|---------------|----------------------|
| allowed_addresses | array[string] | Allowed IP addresses |

web_service

Provides the properties of SP or BMC web service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts web service access to cluster nodes only. By default, limit_access is set to true. |

service_processor

| Name | Type | Description |
|--------------------|--------------------------------|---|
| api_service | api_service | Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service. |
| auto_config | auto_config | Provides the properties of the service processor auto configuration. |
| autoupdate_enabled | boolean | Indicates whether the service processor can be automatically updated from ONTAP. <ul style="list-style-type: none"> • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true |
| backup | backup | Provides the properties of the service processor backup partition. |
| dhcp_enabled | boolean | Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true". |
| firmware_version | string | The version of firmware installed. |
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |
| ipv6_interface | ipv6_interface | Object to setup an interface along with its default router. |
| is_ip_configured | boolean | Indicates whether the service processor network is configured. |
| last_update_state | string | Provides the "update status" of the last service processor update. |
| link_status | string | |
| mac_address | string | |

| Name | Type | Description |
|-------------|-----------------------------|--|
| primary | primary | Provides the properties of the service processor primary partition. |
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state | string | |
| type | string | |
| web_service | web_service | Provides the properties of SP or BMC web service. |

snaplock

SnapLock-related properties.

| Name | Type | Description |
|-----------------------|--------|---------------------------------|
| compliance_clock_time | string | SnapLock compliance clock time. |

statistics

Raw CPU performance for the nodes.

| Name | Type | Description |
|----------------------------|---------|--|
| processor_utilization_base | integer | Base counter for CPU Utilization. |
| processor_utilization_raw | integer | Raw CPU Utilization for the node. This should be divided by the processor_utilization_base to calculate the percentage CPU utilization for the node. |

| Name | Type | Description |
|-----------|--------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |

system_aggregate

Aggregate

| Name | Type | Description |
|------------------------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------|--------|----------------------------------|
| full | string | The full cluster version string. |

| Name | Type | Description |
|------------|---------|--|
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

vm

| Name | Type | Description |
|---------------|--------|--|
| provider_type | string | Cloud provider where the VM is hosted. |

nodes

Complete node information

| Name | Type | Description |
|--------------------|---|---|
| _links | _links | |
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none"> • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |

| Name | Type | Description |
|-----------------------|--|--|
| hw_assist | hw_assist | The hardware assist information. |
| is_spares_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| model | string | |
| name | string | |
| nvrnm | nvrnm | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |

| Name | Type | Description |
|-----------------------|----------------------------------|---|
| storage_configuration | string | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

peering_policy

| Name | Type | Description |
|---------------------------|---------|--|
| authentication_required | boolean | Indicates whether authentication is required in the communication between cluster peers. If true, authentication is required to establish communication between cluster peers. |
| encryption_required | boolean | Indicates whether encryption is required in the communication between cluster peers. If true, encryption is required to establish communication between cluster peers. |
| minimum_passphrase_length | integer | Minimum required length for a passphrase. For more information on password strength best practices, see: https://cheatsheetseries.owasp.org/cheatsheets/Authentication_Cheat_Sheet.html#implement-proper-password-strength-controls |

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS

value to calculate the average latency per I/O operation.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

| Name | Type | Description |
|----------------|--------------------------------|---|
| iops_raw | iops_raw | The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time. |
| latency_raw | latency_raw | The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation. |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| throughput_raw | throughput_raw | Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time. |
| timestamp | string | The timestamp of the performance data. |

timezone

Provides the cluster-wide time zone information that localizes time found on messages displayed on each

node's:

- console messages;
- logging to internal ONTAP log files; and
- localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC.

| Name | Type | Description |
|------|--------|--|
| name | string | <p>The ONTAP time zone name or identification in either IANA time zone format "Area/Location", or an ONTAP traditional time zone.</p> <p>The initial first node in cluster setting for time zone is "Etc/UTC". "Etc/UTC" is the IANA timezone "Area/Location" specifier for Coordinated Universal Time (UTC), which is an offset of 0.</p> <p>IANA time zone format</p> <p>The IANA time zone, formatted as "Area/Location", is based on geographic areas that have had the same time zone offset for many years.</p> <p>"Location" represents a compound name using additional forward slashes.</p> <p>An example of the "Area/Location" time zone is "America/New_York" and represents most of the United States Eastern Time Zone. Examples of "Area/Location" with "Location" as a compound name are "America/Argentina/Buenos_Aires" and "America/Indiana/Indianapolis".</p> <p>ONTAP traditional time zone</p> <p>Examples of the traditional time zones are "EST5EDT" for the United States Eastern Time Zone and "CET" for Central European Time Zone.</p> <ul style="list-style-type: none"> • example: America/New_York • Introduced in: 9.7 • x-nullable: true |

cluster

Complete cluster information

| Name | Type | Description |
|-------------------------------|--------------------------------------|---|
| _links | _links | |
| _tags | array[string] | Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings. |
| auto_enable_activity_tracking | boolean | Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes. |
| auto_enable_analytics | boolean | Indicates how new SVMs will default "auto_enable_analytics" for new volumes. |
| certificate | certificate | Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests. |
| configuration_backup | configuration_backup | |
| contact | string | |

| Name | Type | Description |
|-----------------------|--|---|
| dns_domains | array[string] | <p>A list of DNS domains. Domain names have the following requirements:</p> <ul style="list-style-type: none"> • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names: "all", "local", and "localhost". |
| license | license | License keys or NLF contents. |
| location | string | |
| management_interface | management_interface | The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration. |
| management_interfaces | array[management_interfaces] | |
| metric | metric | Performance numbers, such as IOPS latency and throughput. |
| name | string | |
| name_servers | array[string] | The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses. |
| nodes | array[nodes] | |

| Name | Type | Description |
|----------------|--------------------------------|---|
| ntp_servers | array[string] | Host name, IPv4 address, or IPv6 address for the external NTP time servers. |
| password | string | Initial admin password used to create the cluster. |
| peering_policy | peering_policy | |
| san_optimized | boolean | Specifies if this cluster is an All SAN Array. |
| statistics | statistics | These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. |
| timezone | timezone | Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's: <ul style="list-style-type: none"> • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7 |
| uuid | string | |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Create a cluster

POST /cluster

Introduced In: 9.6

Creates a cluster.

Required properties

- name
- password

Recommended optional properties

- location
- contact

- dns_domains
- name_servers
- ntp_servers
- license
- configuration_backup
- management_interface
- nodes
- timezone

Learn more

- [DOC /cluster](#)

Parameters

| Name | Type | In | Required | Description |
|-------------------------------|---------|-------|----------|--|
| single_node_cluster | boolean | query | False | Configures a single node cluster. All cluster ports are reassigned to the default network. The storage failover settings are configured to non-HA. The node reboots during this operation. |
| create_recommended_aggregates | boolean | query | False | Create aggregates based on an optimal layout recommended by the system. <ul style="list-style-type: none"> • Introduced in: 9.7 • Default value: |

| Name | Type | In | Required | Description |
|------------------------|---------|-------|----------|--|
| keep_precluster_config | boolean | query | False | <p>This is used to keep temporary configuration settings that allow initial setup including a node scoped certificate and possibly an automatically created node management interface. This is useful when creating a GUI that does not replace the node management interface using POST on /api/cluster, but instead creates the interface at another time. The certificate also relates to creating a web based GUI so that the certificate lasts through the entire workflow and is not replaced by the cluster scoped certificate during POST on /api/cluster. To remove the temporary configuration settings when a custom setup workflow is complete, set the remove_precluster_config query parameter in a PATCH on /api/cluster.</p> <ul style="list-style-type: none"> • Introduced in: 9.12 • Default value: |

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| Name | Type | Description |
|-------------------------------|------------------------|--|
| _links | _links | |
| _tags | array[string] | Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings. |
| auto_enable_activity_tracking | boolean | Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes. |

| Name | Type | Description |
|-----------------------|--------------------------------------|---|
| auto_enable_analytics | boolean | Indicates how new SVMs will default "auto_enable_analytics" for new volumes. |
| certificate | certificate | Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests. |
| configuration_backup | configuration_backup | |
| contact | string | |
| dns_domains | array[string] | <p>A list of DNS domains. Domain names have the following requirements:</p> <ul style="list-style-type: none"> • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names: "all", "local", and "localhost". |
| license | license | License keys or NLF contents. |
| location | string | |

| Name | Type | Description |
|-----------------------|--|---|
| management_interface | management_interface | The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration. |
| management_interfaces | array[management_interfaces] | |
| metric | metric | Performance numbers, such as IOPS latency and throughput. |
| name | string | |
| name_servers | array[string] | The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses. |
| nodes | array[nodes] | |
| ntp_servers | array[string] | Host name, IPv4 address, or IPv6 address for the external NTP time servers. |
| password | string | Initial admin password used to create the cluster. |
| peering_policy | peering_policy | |
| san_optimized | boolean | Specifies if this cluster is an All SAN Array. |
| statistics | statistics | These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. |

| Name | Type | Description |
|----------|----------|--|
| timezone | timezone | <p>Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's:</p> <ul style="list-style-type: none"> • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7 |
| uuid | string | |
| version | version | <p>This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.</p> |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "_tags": [
    "team:csi",
    "environment:test"
  ],
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"configuration_backup": {
  "password": "yourpassword",
  "url": "http://10.224.65.198/backups",
  "username": "me"
},
"contact": "<a href="
mailto:support@company.com">support@company.com</a>",
"dns_domains": [
  "example.com",
  "example2.example3.com"
],
"license": {
  "keys": {
  }
},
"location": "building 1",
"management_interface": {
  "ip": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
```

```

    "href": "/api/resourcelink"
  }
},
"ip": {
  "address": "10.10.10.7"
},
"name": "lif1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500"
},
"name": "cluster1",
"name_servers": [
  "10.224.65.20",
  "2001:db08:a0b:12f0::1"
],
"nodes": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {

```

```

    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    },
    "flash_cache": {
      "capacity": 102400000000,
      "device_id": 0,
      "firmware_file": "X9170_0000Z6300NVM",
      "firmware_version": "NA05",
      "hardware_revision": "A1",
      "model": "X1970A",
      "part_number": "119-00207",
      "serial_number": "A22P5061550000187",

```

```

    "slot": "6-1",
    "state": "ok"
  },
  "frus": {
    "id": "string",
    "state": "ok",
    "type": "fan"
  },
  "memory_size": 1024000000,
  "over_temperature": "over"
},
"date": "2019-04-17 11:49:26 -0400",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed",
    "status": {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "error": {
      "code": "852126",
      "message": "shutdown"
    },
    "state": "done"
  }
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "down"
},

```

```
"partners": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ports": {
  "number": 0,
  "state": "active"
},
"takeover": {
  "failure": {
    "code": 852130,
    "message": "Failed to initiate takeover. Run the \"storage failover show-takeover\" command for more information."
  },
  "state": "failed"
},
"takeover_check": {
  "reasons": {
  }
}
},
"hw_assist": {
  "status": {
    "local": {
      "state": "active"
    },
    "partner": {
      "state": "active"
    }
  }
},
"location": "rack 2 row 5",
"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}
```

```

    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"membership": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "processor_utilization": 13,
  "status": "ok",
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "elb"
  },
  "type": "fc"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "battery_ok",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {
    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "installed",
    "version": "11.6"
  }
}

```

```

},
"firmware_version": "string",
"ipv4_interface": {
  "address": "10.10.10.7",
  "gateway": "10.1.1.1",
  "netmask": "24",
  "setup_state": "not_setup"
},
"ipv6_interface": {
  "address": "fd20:8b1e:b255:5011:10:141:4:97",
  "gateway": "fd20:8b1e:b255:5011:10::1",
  "link_local_ip": "FE80::/10",
  "netmask": 64,
  "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
  "setup_state": "not_setup"
},
"last_update_state": "failed",
"link_status": "up",
"mac_address": "string",
"primary": {
  "state": "installed",
  "version": "11.6"
},
"ssh_info": {
  "allowed_addresses": {
  }
},
"state": "online",
"type": "sp"
},
"snaplock": {
  "compliance_clock_time": "2018-06-04 15:00:00 -0400"
},
"state": "up",
"statistics": {
  "processor_utilization_base": 12345123,
  "processor_utilization_raw": 13,
  "status": "ok",
  "timestamp": "2017-01-25 06:20:13 -0500"
},
"storage_configuration": "unknown",
"system_aggregate": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}

```

```

    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "system_id": 92027651,
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": 300536,
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": 791603000068,
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  },
  "vm": {
    "provider_type": "GoogleCloud"
  }
},
"ntp_servers": [
  "time.nist.gov",
  "10.98.19.20",
  "2610:20:6F15:15::27"
],
"password": "mypassword",
"peering_policy": {
  "minimum_passphrase_length": 0
},
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25 06:20:13 -0500"
}

```



```

},
"timezone": {
  "name": "America/New_York"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": 9,
  "major": 4,
  "minor": 0
}
}

```

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

```

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

```

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Response

Status: 201, Created

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 262245 | The value provided is invalid. |
| 1179813 | Fields set for one node must be set for all nodes. |
| 1179817 | The IP address, subnet mask, and gateway must all be provided for cluster management interface. |
| 1179818 | The IP address and gateway must be of the same family. |
| 1179821 | An IP address and subnet mask conflicts with an existing entry. |
| 1179823 | An invalid netmask was provided. |
| 1179824 | An invalid gateway was provided. |
| 1179825 | All management and cluster config IP addresses must belong to the same address family. |
| 2097165 | An NTP server could not be reached. |
| 8847361 | Too many DNS domains provided. |
| 8847362 | Too many name servers provided. |
| 8847394 | An invalid DNS domain was provided. |
| 8978433 | An invalid license key was provided. |
| 9240587 | A name must be provided. |
| 9240594 | An invalid name was provided. |
| 39387137 | The URL provided is invalid. |
| 131727360 | A node could not be added to the cluster. This is a generic code, see response message for details. |
| 131727388 | Hostnames for NTP servers cannot be used without DNS configured. |
| 131727389 | URL and username are required for configuration backup. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

certificate

Support for this field will be removed in a future release. Please use `/api/cluster/web` for this field. Certificate used by cluster and node management interfaces for TLS connection requests.

| Name | Type | Description |
|--------|------------------------|------------------|
| _links | _links | |
| name | string | Certificate name |
| uuid | string | Certificate UUID |

configuration_backup

| Name | Type | Description |
|----------------------|---------|--|
| password | string | |
| url | string | An external backup location for the cluster configuration. This is mostly required for single node clusters where node and cluster configuration backups cannot be copied to other nodes in the cluster. |
| username | string | |
| validate_certificate | boolean | Use this parameter with the value "true" to validate the digital certificate of the remote server. Digital certificate validation is available only when the HTTPS protocol is used in the URL; it is disabled by default. |

license

License keys or NLF contents.

| Name | Type | Description |
|------|---------------|-------------|
| keys | array[string] | |

ip

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

management_interface

The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration.

| Name | Type | Description |
|------|--------------------|---|
| ip | ip | Object to setup an interface along with its default router. |

ip

IP information

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

management_interfaces

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

| Name | Type | Description |
|------------------------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

iops

The rate of I/O operations observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

latency

The round trip latency in microseconds observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |

| Name | Type | Description |
|-------|---------|--|
| write | integer | Performance metric for write I/O operations. |

throughput

The rate of throughput bytes per second observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

metric

Performance numbers, such as IOPS latency and throughput.

| Name | Type | Description |
|------------------------|-------------------------|--|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| iops | iops | The rate of I/O operations observed at the storage object. |
| latency | latency | The round trip latency in microseconds observed at the storage object. |

| Name | Type | Description |
|------------|----------------------------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| throughput | throughput | The rate of throughput bytes per second observed at the storage object. |
| timestamp | string | The timestamp of the performance data. |

node_setup_ip

The IP configuration for cluster setup.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interface

The cluster network IP address of the node to be added.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

cluster_interfaces

Network interface

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

cpu

CPU information.

| Name | Type | Description |
|------------------|---------|---|
| count | integer | Number of CPUs on the node. |
| firmware_release | string | Firmware release number. Defined by the CPU manufacturer. |
| processor | string | CPU type on the node. |

message

| Name | Type | Description |
|---------|--------|---|
| code | string | Error code describing the current condition of chassis fans. |
| message | string | Message describing the current condition of chassis fans. It is only of use when <code>failed_fan.count</code> is not zero. |

failed_fan

| Name | Type | Description |
|---------|-------------------------|--|
| count | integer | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | message | |

message

| Name | Type | Description |
|---------|--------|--|
| code | string | Error code describing the current condition of power supply. |
| message | string | Message describing the state of any power supplies that are currently degraded. It is only of use when <code>failed_power_supply.count</code> is not zero. |

failed_power_supply

| Name | Type | Description |
|---------|-------------------------|--------------------------------------|
| count | integer | Number of failed power supply units. |
| message | message | |

flash_cache

| Name | Type | Description |
|-------------------|---------|---------------|
| capacity | integer | Size in bytes |
| device_id | integer | |
| firmware_file | string | |
| firmware_version | string | |
| hardware_revision | string | |
| model | string | |
| part_number | string | |
| serial_number | string | |
| slot | string | |
| state | string | |

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

controller

Controller information

| Name | Type | Description |
|---------------------|--------------------------------------|---|
| board | string | Type of the system board. This is defined by vendor. |
| cpu | cpu | CPU information. |
| failed_fan | failed_fan | |
| failed_power_supply | failed_power_supply | |
| flash_cache | array[flash_cache] | A list of Flash-Cache devices. Only returned when requested by name. |
| frus | array[frus] | List of FRUs on the node. Only returned when requested by name. |
| memory_size | integer | Memory available on the node, in bytes. |
| over_temperature | string | Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds. |

external_cache

Cache used for buffer management.

| Name | Type | Description |
|------------|---------|--|
| is_enabled | boolean | Indicates whether the external cache is enabled. |

| Name | Type | Description |
|-------------------|---------|---|
| is_hya_enabled | boolean | Indicates whether HyA caching is enabled. |
| is_rewarm_enabled | boolean | Indicates whether rewarm is enabled. |
| pcs_size | integer | PCS size in gigabytes. |

failure

Indicates the failure code and message.

| Name | Type | Description |
|---------|---------|--------------------------------------|
| code | integer | Message code |
| message | string | Detailed message based on the state. |

aggregate

Aggregate name and UUID.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error

Indicates the failed aggregate giveback code and message.

| Name | Type | Description |
|---------|--------|--------------------------------------|
| code | string | Message code. |
| message | string | Detailed message based on the state. |

status

| Name | Type | Description |
|-----------|---------------------------|--------------------------|
| aggregate | aggregate | Aggregate name and UUID. |

| Name | Type | Description |
|-------|-----------------------|--|
| error | error | Indicates the failed aggregate giveback code and message. |
| state | string | Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks). |

giveback

Represents the state of the node that is giving storage back to its HA partner.

| Name | Type | Description |
|---------|---------------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |
| status | array[status] | Giveback status of each aggregate. |

interconnect

| Name | Type | Description |
|---------|--------|---------------------------------------|
| adapter | string | HA interconnect device name. |
| state | string | Indicates the HA interconnect status. |

partners

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |

| Name | Type | Description |
|------|--------|-------------|
| uuid | string | |

ports

| Name | Type | Description |
|--------|---------|--|
| number | integer | HA port number |
| state | string | HA port state: <ul style="list-style-type: none"> • <i>down</i> - Logical HA link is down. • <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • <i>armed</i> - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • <i>active</i> - Logical HA link is active. • <i>reserved</i> - Logical HA link is active, but the physical link is down. |

takeover

This represents the state of the node that is taking over storage from its HA partner.

| Name | Type | Description |
|---------|-------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |

takeover_check

The takeover check response.

| Name | Type | Description |
|---------|---------------|---|
| reasons | array[string] | Reasons why the takeover is not possible. |

| Name | Type | Description |
|-------------------|---------|---|
| takeover_possible | boolean | Indicates whether the takeover is possible. |

ha

| Name | Type | Description |
|----------------|-----------------------------------|---|
| auto_giveback | boolean | Specifies whether giveback is automatically initiated when the node that owns the storage is ready. |
| enabled | boolean | Specifies whether or not storage failover is enabled. |
| giveback | giveback | Represents the state of the node that is giving storage back to its HA partner. |
| interconnect | interconnect | |
| partners | array[partners] | Nodes in this node's High Availability (HA) group. |
| ports | array[ports] | |
| takeover | takeover | This represents the state of the node that is taking over storage from its HA partner. |
| takeover_check | takeover_check | The takeover check response. |

local

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

partner

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

status

| Name | Type | Description |
|---------|-------------------------|---|
| enabled | boolean | Indicates whether hardware assist is enabled on the node. |
| local | local | |
| partner | partner | |

hw_assist

The hardware assist information.

| Name | Type | Description |
|--------|------------------------|-------------|
| status | status | |

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

management_interfaces

Network interface

| Name | Type | Description |
|--------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

metric

CPU performance for the nodes.

| Name | Type | Description |
|------------------------|------------------------|--|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| processor_utilization | integer | Average CPU Utilization for the node |

| Name | Type | Description |
|-----------|--------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |
| uuid | string | |

ports

| Name | Type | Description |
|------|--------|-------------|
| name | string | |

metrocluster

Metrocluster

| Name | Type | Description |
|---------------------|--------------|---|
| custom_vlan_capable | boolean | Indicates whether the MetroCluster over IP platform supports custom VLAN IDs. |
| ports | array[ports] | MetroCluster over IP ports. |

| Name | Type | Description |
|------|--------|-------------------------------------|
| type | string | The Metrocluster configuration type |

nvrाम

| Name | Type | Description |
|---------------|---------|--|
| battery_state | string | Specifies status of the NVRAM battery. Possible values: <ul style="list-style-type: none"> • <i>battery_ok</i> • <i>battery_partially_discharged</i> • <i>battery_fully_discharged</i> • <i>battery_not_present</i> • <i>battery_near_end_of_life</i> • <i>battery_at_end_of_life</i> • <i>battery_unknown</i> • <i>battery_over_charged</i> • <i>battery_fully_charged</i> |
| id | integer | Vendor specific NVRAM ID of the node. |

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts SP API service access to cluster nodes only. By default, limit_access is set to true. |

| Name | Type | Description |
|------|---------|---|
| port | integer | Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used. |

auto_config

Provides the properties of the service processor auto configuration.

| Name | Type | Description |
|-------------|--------|--|
| ipv4_subnet | string | Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |
| ipv6_subnet | string | Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |

backup

Provides the properties of the service processor backup partition.

| Name | Type | Description |
|------------|---------|--|
| is_current | boolean | Indicates whether the service processor is currently booted from the backup partition. |
| state | string | Status of the backup partition. |
| version | string | Firmware version of the backup partition. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

| Name | Type | Description |
|-------------|---------|---|
| enabled | boolean | Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |
| setup_state | string | Indicates the setup state of the interface. |

ipv6_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|--------------------|---------|--|
| address | string | IPv6 address |
| enabled | boolean | Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv6 address of the default router. |
| is_ipv6_ra_enabled | boolean | Indicates whether IPv6 RA is enabled. |
| link_local_ip | string | Link local IP address. |
| netmask | integer | The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127. |
| router_ip | string | Router assigned IP address. |
| setup_state | string | Indicates the setup state of the interface. |

primary

Provides the properties of the service processor primary partition.

| Name | Type | Description |
|------------|---------|---|
| is_current | boolean | Indicates whether the service processor is currently booted from the primary partition. |
| state | string | Status of the primary partition. |
| version | string | Firmware version of the primary partition. |

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

| Name | Type | Description |
|-------------------|---------------|----------------------|
| allowed_addresses | array[string] | Allowed IP addresses |

web_service

Provides the properties of SP or BMC web service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts web service access to cluster nodes only. By default, limit_access is set to true. |

service_processor

| Name | Type | Description |
|--------------------|--------------------------------|---|
| api_service | api_service | Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service. |
| auto_config | auto_config | Provides the properties of the service processor auto configuration. |
| autoupdate_enabled | boolean | Indicates whether the service processor can be automatically updated from ONTAP. <ul style="list-style-type: none"> • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true |
| backup | backup | Provides the properties of the service processor backup partition. |
| dhcp_enabled | boolean | Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true". |
| firmware_version | string | The version of firmware installed. |
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |
| ipv6_interface | ipv6_interface | Object to setup an interface along with its default router. |
| is_ip_configured | boolean | Indicates whether the service processor network is configured. |
| last_update_state | string | Provides the "update status" of the last service processor update. |
| link_status | string | |
| mac_address | string | |

| Name | Type | Description |
|-------------|-----------------------------|--|
| primary | primary | Provides the properties of the service processor primary partition. |
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state | string | |
| type | string | |
| web_service | web_service | Provides the properties of SP or BMC web service. |

snaplock

SnapLock-related properties.

| Name | Type | Description |
|-----------------------|--------|---------------------------------|
| compliance_clock_time | string | SnapLock compliance clock time. |

statistics

Raw CPU performance for the nodes.

| Name | Type | Description |
|----------------------------|---------|--|
| processor_utilization_base | integer | Base counter for CPU Utilization. |
| processor_utilization_raw | integer | Raw CPU Utilization for the node. This should be divided by the processor_utilization_base to calculate the percentage CPU utilization for the node. |

| Name | Type | Description |
|-----------|--------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |

system_aggregate

Aggregate

| Name | Type | Description |
|------------------------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------|--------|----------------------------------|
| full | string | The full cluster version string. |

| Name | Type | Description |
|------------|---------|--|
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

vm

| Name | Type | Description |
|---------------|--------|--|
| provider_type | string | Cloud provider where the VM is hosted. |

nodes

Complete node information

| Name | Type | Description |
|--------------------|---|---|
| _links | _links | |
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none"> • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |

| Name | Type | Description |
|-----------------------|--|--|
| hw_assist | hw_assist | The hardware assist information. |
| is_spares_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| model | string | |
| name | string | |
| nvrnm | nvrnm | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |

| Name | Type | Description |
|-----------------------|----------------------------------|---|
| storage_configuration | string | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

peering_policy

| Name | Type | Description |
|---------------------------|---------|--|
| authentication_required | boolean | Indicates whether authentication is required in the communication between cluster peers. If true, authentication is required to establish communication between cluster peers. |
| encryption_required | boolean | Indicates whether encryption is required in the communication between cluster peers. If true, encryption is required to establish communication between cluster peers. |
| minimum_passphrase_length | integer | Minimum required length for a passphrase. For more information on password strength best practices, see: https://cheatsheetseries.owasp.org/cheatsheets/Authentication_Cheat_Sheet.html#implement-proper-password-strength-controls |

iops_raw

The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

latency_raw

The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS

value to calculate the average latency per I/O operation.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

throughput_raw

Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

statistics

These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.

| Name | Type | Description |
|----------------|--------------------------------|---|
| iops_raw | iops_raw | The number of I/O operations observed at the storage object. This can be used along with delta time to calculate the rate of I/O operations per unit of time. |
| latency_raw | latency_raw | The raw latency in microseconds observed at the storage object. This can be divided by the raw IOPS value to calculate the average latency per I/O operation. |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| throughput_raw | throughput_raw | Throughput bytes observed at the storage object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time. |
| timestamp | string | The timestamp of the performance data. |

timezone

Provides the cluster-wide time zone information that localizes time found on messages displayed on each

node's:

- console messages;
- logging to internal ONTAP log files; and
- localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC.

| Name | Type | Description |
|------|--------|--|
| name | string | <p>The ONTAP time zone name or identification in either IANA time zone format "Area/Location", or an ONTAP traditional time zone.</p> <p>The initial first node in cluster setting for time zone is "Etc/UTC". "Etc/UTC" is the IANA timezone "Area/Location" specifier for Coordinated Universal Time (UTC), which is an offset of 0.</p> <p>IANA time zone format</p> <p>The IANA time zone, formatted as "Area/Location", is based on geographic areas that have had the same time zone offset for many years.</p> <p>"Location" represents a compound name using additional forward slashes.</p> <p>An example of the "Area/Location" time zone is "America/New_York" and represents most of the United States Eastern Time Zone. Examples of "Area/Location" with "Location" as a compound name are "America/Argentina/Buenos_Aires" and "America/Indiana/Indianapolis".</p> <p>ONTAP traditional time zone</p> <p>Examples of the traditional time zones are "EST5EDT" for the United States Eastern Time Zone and "CET" for Central European Time Zone.</p> <ul style="list-style-type: none"> • example: America/New_York • Introduced in: 9.7 • x-nullable: true |

cluster

Complete cluster information

| Name | Type | Description |
|-------------------------------|--------------------------------------|---|
| _links | _links | |
| _tags | array[string] | Tags are an optional way to track the uses of a resource. Tag values must be formatted as key:value strings. |
| auto_enable_activity_tracking | boolean | Indicates how new SVMs will default "auto_enable_activity_tracking" for new volumes. |
| auto_enable_analytics | boolean | Indicates how new SVMs will default "auto_enable_analytics" for new volumes. |
| certificate | certificate | Support for this field will be removed in a future release. Please use /api/cluster/web for this field. Certificate used by cluster and node management interfaces for TLS connection requests. |
| configuration_backup | configuration_backup | |
| contact | string | |

| Name | Type | Description |
|-----------------------|--|--|
| dns_domains | array[string] | <p>A list of DNS domains. Domain names have the following requirements:</p> <ul style="list-style-type: none"> • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-", or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names: "all", "local", and "localhost". |
| license | license | License keys or NLF contents. |
| location | string | |
| management_interface | management_interface | The management interface of the cluster. The subnet mask and gateway for this interface are used for the node management interfaces provided in the node configuration. |
| management_interfaces | array[management_interfaces] | |
| metric | metric | Performance numbers, such as IOPS latency and throughput. |
| name | string | |
| name_servers | array[string] | The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses. |
| nodes | array[nodes] | |

| Name | Type | Description |
|----------------|--------------------------------|---|
| ntp_servers | array[string] | Host name, IPv4 address, or IPv6 address for the external NTP time servers. |
| password | string | Initial admin password used to create the cluster. |
| peering_policy | peering_policy | |
| san_optimized | boolean | Specifies if this cluster is an All SAN Array. |
| statistics | statistics | These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster. |
| timezone | timezone | <p>Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's:</p> <ul style="list-style-type: none"> • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. <ul style="list-style-type: none"> • Introduced in: 9.7 |
| uuid | string | |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve cluster chassis

Cluster chassis endpoint overview

Overview

You can use the chassis GET API to retrieve all of the chassis information in the cluster.

Examples

Retrieving a list of chassis from the cluster

The following example shows the response with a list of chassis in the cluster:

```

# The API:
/api/cluster/chassis

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/chassis" -H "accept:
application/hal+json"

# The response:
{
  "records": [
    {
      "id": "021352005981",
      "_links": {
        "self": {
          "href": "/api/cluster/chassis/021352005981"
        }
      }
    },
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/cluster/chassis"
    }
  }
}

```

Retrieving a specific chassis from the cluster

The following example shows the response of the requested chassis. If there is no chassis with the requested ID, an error is returned.

```

# The API:
/api/cluster/chassis/{id}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/chassis/021352005981" -H
"accept: application/hal+json"

# The response:
{
  "id": "021352005981",
  "state": "ok",
  "nodes": [

```

```

{
  "name": "node-1",
  "uuid": "6ede364b-c3d0-11e8-a86a-00a098567f31",
  "position": "top",
  "usbs": {
    "supported": true,
    "enabled": true,
    "ports": [
      {
        "connected": false
      }
    ]
  },
  "pcis": {
    "cards": [
      {
        "slot": "0",
        "device": "Gigabit Ethernet I210",
        "info": "\t e0M MAC Address:    d0:39:ea:3f:06:2b (auto-1000t-
fd-up) \n\t e0S MAC Address:    d0:39:ea:3f:06:2c (auto-1000t-fd-up) \n\t
Device Type:          1533\n\t Firmware Version:    3.25-0.0 0x800005D1\n"
      },
      {
        "slot": "0",
        "device": "Intel Lewisburg series chipset SATA Controller",
        "info": "\t Additional Info: 0 (0xaaf00000)  \n\t
SHM2S86Q120GLM22NP FW1146 114473MB 512B/sect (SPG190108HJ)  \n"
      }
    ]
  },
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/6ede364b-c3d0-11e8-a86a-00a098567f31"
    }
  }
},
"frus": [
  {
    "id": "PSU2",
    "type": "psu",
    "state": "ok"
  },
  {
    "id": "PSU1",
    "type": "psu",

```



```

    "state": "ok"
  },
  {
    "id": "Fan2",
    "type": "fan",
    "state": "ok"
  },
  {
    "id": "Fan3",
    "type": "fan",
    "state": "ok"
  },
  {
    "id": "Fan1",
    "type": "fan",
    "state": "ok"
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/chassis/021352005981"
  }
}
}
}

```

Retrieve a collection of chassis

GET /cluster/chassis

Introduced In: 9.6

Retrieves a collection of chassis.

Related ONTAP commands

- `system chassis show`
- `system chassis fru show`

Learn more

- [DOC /cluster/chassis](#)

Parameters

| Name | Type | In | Required | Description |
|-------|--------|-------|----------|-----------------|
| state | string | query | False | Filter by state |

| Name | Type | In | Required | Description |
|----------------------------|---------|-------|----------|--|
| nodes.name | string | query | False | Filter by nodes.name |
| nodes.pcis.cards.slot | string | query | False | Filter by nodes.pcis.cards.slot • Introduced in: 9.9 |
| nodes.pcis.cards.device | string | query | False | Filter by nodes.pcis.cards.device • Introduced in: 9.9 |
| nodes.pcis.cards.info | string | query | False | Filter by nodes.pcis.cards.info • Introduced in: 9.9 |
| nodes.position | string | query | False | Filter by nodes.position • Introduced in: 9.8 |
| nodes.uuid | string | query | False | Filter by nodes.uuid |
| nodes.usbs.supported | boolean | query | False | Filter by nodes.usbs.supported • Introduced in: 9.9 |
| nodes.usbs.ports.connected | boolean | query | False | Filter by nodes.usbs.ports.connected • Introduced in: 9.9 |

| Name | Type | In | Required | Description |
|--------------------|---------------|-------|----------|---|
| nodes.usbs.enabled | boolean | query | False | Filter by nodes.usbs.enabled <ul style="list-style-type: none"> Introduced in: 9.9 |
| shelves.uid | string | query | False | Filter by shelves.uid |
| frus.id | string | query | False | Filter by frus.id |
| frus.state | string | query | False | Filter by frus.state |
| frus.type | string | query | False | Filter by frus.type |
| id | string | query | False | Filter by id |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> Default value: 1 Max value: 120 Min value: 0 |

| Name | Type | In | Required | Description |
|----------|---------------|-------|----------|---|
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|----------------------------------|--------------------|
| _links | _links | |
| num_records | integer | Number of records. |
| records | array[chassis] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "frus": {
      "state": "ok",
      "type": "fan"
    },
    "id": "021352005981",
    "nodes": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "pcis": {
        "cards": {
          "device": "Intel Lewisburg series chipset SATA Controller",
          "info": "Additional Info: 0 (0xaaf00000)  SHM2S86Q120GLM22NP
FW1146 114473MB 512B/sect (SPG190108GW)",
          "slot": "0"
        }
      },
      "position": "top",
      "usbs": {
        "ports": {
        }
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "shelves": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  },
}
```

```
    "uid": "7777841915827391056"
  },
  "state": "ok"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cards

| Name | Type | Description |
|--------|--------|--|
| device | string | The description of the PCI card. |
| info | string | The info string from the device driver of the PCI card. |
| slot | string | The slot where the PCI card is placed. This can sometimes take the form of "6-1" to indicate slot and subslot. |

pcis

| Name | Type | Description |
|-------|--------------------------------|-------------|
| cards | array[cards] | |

ports

| Name | Type | Description |
|-----------|---------|---|
| connected | boolean | Indicates whether or not the USB port has a device connected to it. |

usbs

The status of the USB ports on the controller.

| Name | Type | Description |
|-----------|--------------|---|
| enabled | boolean | Indicates whether or not the USB ports are enabled. |
| ports | array[ports] | |
| supported | boolean | Indicates whether or not USB ports are supported on the current platform. |

nodes

List of nodes in chassis.

| Name | Type | Description |
|----------|------------------------|---|
| _links | _links | |
| name | string | |
| pcis | pcis | |
| position | string | The position of the node in the chassis, when viewed from the rear of the system. |
| usbs | usbs | The status of the USB ports on the controller. |
| uuid | string | |

shelf_reference

Shelf

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| uid | string | |

chassis

| Name | Type | Description |
|---------|------------------------|-------------------------------|
| frus | array[frus] | List of FRUs in the chassis. |
| id | string | |
| nodes | array[nodes] | List of nodes in the chassis. |
| shelves | array[shelf_reference] | List of shelves in chassis. |
| state | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve a chassis

GET /cluster/chassis/{id}

Introduced In: 9.6

Retrieves a specific chassis.

Related ONTAP commands

- `system chassis show`
- `system chassis fru show`

Learn more

- [DOC /cluster/chassis](#)

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| id | string | path | True | Chassis ID |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|---------|------------------------|-------------------------------|
| frus | array[frus] | List of FRUs in the chassis. |
| id | string | |
| nodes | array[nodes] | List of nodes in the chassis. |
| shelves | array[shelf_reference] | List of shelves in chassis. |
| state | string | |

Example response

```
{
  "frus": {
    "state": "ok",
    "type": "fan"
  },
  "id": "021352005981",
  "nodes": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "pcis": {
      "cards": {
        "device": "Intel Lewisburg series chipset SATA Controller",
        "info": "Additional Info: 0 (0xaaf00000) SHM2S86Q120GLM22NP
FW1146 114473MB 512B/sect (SPG190108GW)",
        "slot": "0"
      }
    },
    "position": "top",
    "usbs": {
      "ports": {
      }
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "shelves": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uid": "7777841915827391056"
  },
  "state": "ok"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cards

| Name | Type | Description |
|--------|--------|--|
| device | string | The description of the PCI card. |
| info | string | The info string from the device driver of the PCI card. |
| slot | string | The slot where the PCI card is placed. This can sometimes take the form of "6-1" to indicate slot and subslot. |

pcis

| Name | Type | Description |
|-------|--------------------------------|-------------|
| cards | array[cards] | |

ports

| Name | Type | Description |
|-----------|---------|---|
| connected | boolean | Indicates whether or not the USB port has a device connected to it. |

usbs

The status of the USB ports on the controller.

| Name | Type | Description |
|-----------|--------------|---|
| enabled | boolean | Indicates whether or not the USB ports are enabled. |
| ports | array[ports] | |
| supported | boolean | Indicates whether or not USB ports are supported on the current platform. |

nodes

List of nodes in chassis.

| Name | Type | Description |
|----------|------------------------|---|
| _links | _links | |
| name | string | |
| pcis | pcis | |
| position | string | The position of the node in the chassis, when viewed from the rear of the system. |
| usbs | usbs | The status of the USB ports on the controller. |
| uuid | string | |

shelf_reference

Shelf

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| uid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve cluster counter tables

Cluster counter tables endpoint overview

Overview

The Counter Manager subsystem allows both manual and automated processes to access statistical information about various aspects of the ONTAP system. The information is most often utilized to assess the current performance of the system.

The data architecture is broken down into four components:

- Tables
- Rows
- Counters / Properties
- Aggregation

Tables

A table represents a collection of statistics that are grouped according to a common feature or function. An example counter manager table is for network adapters. This table would contain statistics related to the network adapter's performance such as the number of packets, rate of flow and error counters.

A table is described by its schema which includes a detailed description about the various statistics included, their format and their purpose.

The table catalog is a collection of all the statistical tables that the ONTAP REST interface supports, which can be queried to find information about a data point of interest.

Rows

Each table is populated with a list of rows. Each row is identified by a unique key and represents a specific statistical entity within the system. For example, a system may contain multiple network adapters that are represented by several records in the network adapter table.

Counter / Property

A counter is the basic 'numeric' statistical unit of the architecture.

A property is the basic 'string' statistical unit of the architecture.

Counter values can be organized as singular values or into multi-dimensional arrays. An array can be one or two dimensional; formatted as a list of label / value pairs. Additional detail can be found in the "counter" model definition.

A table schema definition consists of multiple counters and properties.

Counters are classified according to their type. The available type options are the following:

- average
- rate
- raw
- delta
- percent

Average and percent counters specify a secondary counter called the 'denominator' in the schema. The client must use the provided and secondary counters to compute the final intended value.

For example:

Determining the average wait time for a workload per visit
 Query the 'wait_time' and 'visits' field from a 'qos_detail' row:
 curl -X GET "https://<mgmt-
 ip>/api/cluster/counter/tables/qos_detail/rows/<instance-
 id>?fields=counters&counters.name=visits|wait_time"
 {
 "counter_table": {
 "name": "qos_detail"
 },
 "id": "main-vsimg1:_WAFL.CPU_ha",
 "counters": [
 {
 "name": "visits",
 "value": 14631
 },
 {
 "name": "wait_time",
 "value": 167816
 }
],
 "_links": {
 "self": {
 "href": "/api/cluster/counter/tables/qos_detail/rows/<instance-id>"
 }
 }
 }
 The average wait time per visit is calculated as $167816 / 14631 = 11$
 micro-seconds



In the above example, the average is calculated since boot-time. Sample periods are discussed in more detail below.

Counter Computations

The statistics available through the counter tables gives you information about a specific point in time. This data can be useful, but more often you are interested in the statistics over a period of time.

The procedure for calculating a statistic over a period of time involves the following:

- Collect a data sample at the beginning of the period. If the counter requires a denominator, this should be collected at the same time.
- Collect a second data sample at the end of the period. If the counter requires a denominator, collect a second sample at the same time.
- Calculate the final result using the collected information and the formula associated with the counter type below



All counters that are not of type 'raw' will require some computation to be useful.

```
-----  
  
'''  
  
T1, T2 : The start and ending time of the sample period  
C1, C2 : The counter value at the start and ending time of the period  
D1, D2 : The denominator value at the start and ending time of the period  
-----  
  
'''  
  
Percentage = ((C2 - C1) x 100) / (D2 - D1)  
Rate = (C2 - C1) / (T2 - T1)  
Average = (C2 - C1) / (D2 - D1)  
Delta = C2 - C1  
-----  
  
'''
```

Aggregation

An aggregation is a logical container that consolidates the information from multiple entities into a single entity. There are two methods of aggregating tables:

- Automatic
- Combination.

Automatic

Tables with automatic aggregation are generated by consolidating all entities with matching identifiers. The underlying tables that contribute to the aggregated table are referenced by the following syntax: {table_name}:constituent.

Combination

Tables with combination aggregation are generated by consolidating all entities according to a unique field in the definition. The name of the combination table uses the following syntax: {table name}:{aggregation_name}.

An example combination table is 'volume:svm' table. This table aggregates all the volume statistics associated with a given vserver into a single table.

Multi-Dimensional Arrays

Numeric counters can be scalar, one-dimensional or two dimensional values. Scalars are the most common values which consist of a single numeric value. A one-dimensional array is commonly used to present histograms such as the following table:

```
< 1s      : 3
< 5s      : 10
< 60s     : 1
```

A counter endpoint response that contains the above table would be formatted as follows:

```
{
  "name": "Sample One-Dimensional Counter",
  "labels": [ "< 1s", "< 5s", "< 60s" ],
  "values": [3, 10, 1]
}
```

A two-dimensional array is used to report information about more complex relationships. An example data set is below:

| | New | Used |
|------------|-----|------|
| ... | | |
| Car | 1 | 2 |
| Truck | 3 | 4 |
| Motorcycle | 5 | 6 |

A counter endpoint response that contains the above table would be formatted as follows:

```
{
  "name": "Sample Two-Dimensional Counter",
  "labels": [ "New", "Used" ],
  "counters": [
    {
      "label": "Car",
      "values": [1, 2]
    },
    {
      "label": "Truck",
      "values": [3, 4]
    },
    {
      "label": "Motorcycle",
      "values": [5, 6]
    }
  ]
}
```

Filtering / Querying

The counter endpoints adhere to the same behavior as other endpoints, with exception of how queries are handled for nested array fields.

The default behavior when processing a nested array query is to return the entire array content on a match. The counter endpoints' behavior will only return entries in the array that match the query.

Counter responses can contain a significant amount of data. This behavior improves the response by only returning the information requested and eliminating extra work for the client.

For example:

```
Given the following array:
"list": [ "fruit_apple", "color_red" ]
When you apply the following query:
list=fruit*
The default query behavior will return the array as:
"list": [ "fruit_apple", "color_red" ]
The counter endpoints will return the array as:
"list": [ "fruit_apple" ]
```

Examples

Retrieving a table schema definition

This example retrieves the table description and schema definition for the qos_detail table.

```
# The API:
/api/support/counter/tables/{name}

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/qos_detail?fields=*" -H "accept:
application/hal+json"

# The response:
{
  "name": "qos_detail",
  "description": "The qos_detail table that provides service center-based
  statistical information.

*Note:*
This table returns a large number of rows. Querying by row name and using
wild cards may improve response times.",
  "counter_schemas": [
    {
      "name": "in_latency_path",
      "description": "Determines whether or not service center-based
      statistics are in the latency path.",
      "type": "raw",
      "unit": "none"
    },
    {
      "name": "node.name",
      "description": "System node name",
      "type": "string",
      "unit": "none"
    },
    {
      "name": "resource.name",
      "description": "Name of the associated resource.",
      "type": "string",
      "unit": "none"
    },
    {
      "name": "service_time",
      "description": "The workload's average service time per visit to the
      service center.",
```

```

    "type": "average",
    "unit": "microsec",
    "denominator": {
      "name": "visits"
    }
  },
  {
    "name": "visits",
    "description": "The number of visits that the workload made to the
service center; measured in visits per second.",
    "type": "rate",
    "unit": "per_sec"
  },
  {
    "name": "wait_time",
    "description": "The workload's average wait time per visit to the
service center.",
    "type": "average",
    "unit": "microsec",
    "denominator": {
      "name": "visits"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/counter/tables/qos_detail"
  }
}
}

```

Query for tables that contain a keyword in the description

This example retrieves all table definitions contain the word "security" in their description.

```

# The API:
/api/support/counter/tables

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/?fields=name,description&description=*secur
ity*" -H "accept: application/hal+json"

```

```

# The response:
{
  "records": [
    {
      "name": "csm_global",
      "description": "This table reports global statistics of the Cluster
Session Manager. The counters report the processing overhead of SpinNP
cryptography, both encryption and decryption, as carried out by CSM as it
handles cross-cluster data traffic, mostly on behalf of their data
protection operations. For example, a customer might seek to know the
processor time being consumed by these cryptographic operations in support
of their cross-cluster traffic. That data might help them evaluate the
performance impact of these security operations.",
      "_links": {
        "self": {
          "href": "/api/cluster/counter/tables/csm_global"
        }
      }
    },
    {
      "name": "file_directory",
      "description": "This table reports how many times file-directory jobs
were triggered to the set the file-security ACLS or SLAG ACLS. This
counter gives an indication how frequently the feature is being used to
set the ACLS on file-directory/volume.",
      "_links": {
        "self": {
          "href": "/api/cluster/counter/tables/file_directory"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href":
"/api/cluster/counter/tables?fields=name,description&description=*security
*"
    }
  }
}

```

Query for a specific property within all table rows.

This example requests the property named 'node.name' for all 'waf1' table rows.



The properties array content excludes any entries that do not match the provided query.

```
# The API:
/api/cluster/counter/tables/{counter_table.name}/rows

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/waf1/rows?properties.name=node.name&fields=
properties" -H "accept: application/hal+json"

# The response:
{
  "records": [
    {
      "id": "<instance id>",
      "properties": [
        {
          "name": "node.name",
          "value": "<node name>"
        }
      ],
      "_links": {
        "self": {
          "href": "/api/cluster/counter/tables/waf1/rows/<instance id>"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href":
"/api/cluster/counter/tables/waf1/rows?properties.name=node.name&fields=pr
operties"
    }
  }
}
```


Query for a list of properties that match a wildcard on a specific row.

This example queries for all properties associated with a row of the volume table.



The properties array content excludes any entries that do not match the provided query.

```
# The API:
/api/cluster/counter/tables/{counter_table.name}/rows/{id}

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/volume/rows/<instance-
id>/?fields=properties&properties.name=svm*" -H "accept:
application/hal+json"

# The response:
{
  "counter_table": {
    "name": "volume"
  },
  "id": "<instance-id>",
  "properties": [
    {
      "name": "svm.name",
      "value": "<svm-name>"
    },
    {
      "name": "svm.uuid",
      "value": "4774d11c-a606-11ec-856f-005056bb7b59"
    }
  ],
  "_links": {
    "self": {
      "href": "/api/cluster/counter/tables/volume/rows/<instance-id>/"
    }
  }
}
```

Query for a list of counters in a specific table row

This example queries for an explicit list of counters within a single row of the waf table.



The counters array content excludes any entries that do not match the provided query.

```

# The API:
/api/cluster/counter/tables/{counter_table.name}/rows/{id}

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/counter/tables/wafl/rows/<instance-
id>?fields=counters&counters.name=memory_used&#124;memory_free" -H
"accept: application/hal+json"

# The response:
{
  "counter_table": {
    "name": "wafl"
  },
  "id": "<instance-id>",
  "counters": [
    {
      "name": "memory_used",
      "value": 541
    },
    {
      "name": "memory_free",
      "value": 786
    }
  ],
  "_links": {
    "self": {
      "href": "/api/cluster/counter/tables/wafl/rows/<instance-id>"
    }
  }
}

```

Retrieve counter tables with schema definitions

GET /cluster/counter/tables

Introduced In: 9.11

Returns a collection of counter tables and their schema definitions.

Parameters

| Name | Type | In | Required | Description |
|------|--------|-------|----------|----------------|
| name | string | query | False | Filter by name |

| Name | Type | In | Required | Description |
|---|----------------|---------------|----------|---|
| counter_schemas.name | string | query | False | Filter by counter_schemas.name |
| counter_schemas.unit | string | query | False | Filter by counter_schemas.unit |
| counter_schemas.denominator.name | string | query | False | Filter by counter_schemas.denominator.name |
| counter_schemas.type | string | query | False | Filter by counter_schemas.type |
| counter_schemas.description | string | query | False | Filter by counter_schemas.description |
| description | string | query | False | Filter by description |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |
| desc] direction. Default direction is 'asc' for ascending. | fields | array[string] | query | False |
| Specify the fields to return. | max_records | integer | query | False |
| Limit the number of records returned. | return_records | boolean | query | False |
| The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1 | return_timeout | integer | query | False |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|--|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[counter_table] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "counter_schemas": {
      "type": "average",
      "unit": "per_sec"
    }
  }
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 8585368 | The system has not completed it's initialization |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|----------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

counter_denominator

Counter used as the denominator in calculating the resulting value of averages and percentages.

| Name | Type | Description |
|------|--------|---------------|
| name | string | Counter name. |

counter_schema

Schema definition of a single counter or property.

| Name | Type | Description |
|-------------|-------------------------------------|---|
| denominator | counter_denominator | Counter used as the denominator in calculating the resulting value of averages and percentages. |
| description | string | Counter or property description. |
| name | string | Counter or property name. |
| type | string | Type of counter or property. Properties will always set this field to 'string'. |
| unit | string | Counter unit. |

counter_table

Information for a single counter table.

| Name | Type | Description |
|------------------------------|---|--------------------------------------|
| <code>_links</code> | _links | |
| <code>counter_schemas</code> | array[counter_schema] | Array of counter schema definitions. |
| <code>description</code> | string | Description of the table. |
| <code>name</code> | string | Table name. |

error_arguments

| Name | Type | Description |
|----------------------|--------|------------------|
| <code>code</code> | string | Argument code |
| <code>message</code> | string | Message argument |

returned_error

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

Retrieve counter rows

GET `/cluster/counter/tables/{counter_table.name}/rows`

Introduced In: 9.11

Returns a collection of counter rows.

Parameters

| Name | Type | In | Required | Description |
|---------------------------------|--------|------|----------|---------------------|
| <code>counter_table.name</code> | string | path | True | Counter table name. |

| Name | Type | In | Required | Description |
|--|---------------|---------------|----------|---|
| aggregation.complete | boolean | query | False | Filter by aggregation.complete |
| aggregation.count | integer | query | False | Filter by aggregation.count |
| counters.labels | string | query | False | Filter by counters.labels |
| counters.value | integer | query | False | Filter by counters.value |
| counters.counters.values | integer | query | False | Filter by counters.counters.values |
| counters.counters.label | string | query | False | Filter by counters.counters.label |
| counters.values | integer | query | False | Filter by counters.values |
| counters.name | string | query | False | Filter by counters.name |
| properties.name | string | query | False | Filter by properties.name |
| properties.value | string | query | False | Filter by properties.value |
| id | string | query | False | Filter by id |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |
| desc] direction. Default direction is 'asc' for ascending. | fields | array[string] | query | False |
| Specify the fields to return. | max_records | integer | query | False |

| Name | Type | In | Required | Description |
|---|----------------|---------|----------|-------------|
| Limit the number of records returned. | return_records | boolean | query | False |
| <p>The default is true for GET calls. When set to false, only the number of records is returned.</p> <ul style="list-style-type: none"> • Default value: 1 | return_timeout | integer | query | False |

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|--------------------------------------|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[counter_row] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "counter_table": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    },
    "counters": {
      "counters": {
        "values": {
        }
      },
      "labels": {
      },
      "values": {
      }
    },
    "properties": {
    }
  }
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|-----------------------------------|
| 8585320 | Table requested is not found |
| 8586228 | Invalid counter name request. |
| 8586229 | Invalid counter property request. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

instance_counter_aggregation

Aggregation information about this counter.

| Name | Type | Description |
|----------|---------|---|
| complete | boolean | The aggregation state for this row. For non-aggregated tables: Not present For aggregated tables: If all requests to remote nodes for counter data are successful, then this value will be 'true'. If any requests to remote nodes fail, then this value will be 'false'. |
| count | integer | Number of nodes included in the aggregation of this counter. |

counter_table_reference

Counter table reference.

| Name | Type | Description |
|--------|------------------------|---------------------|
| _links | _links | |
| name | string | Counter table name. |

counter2d

Counters that represent the second dimension of a two-dimension counter.

| Name | Type | Description |
|--------|----------------|---------------------------------|
| label | string | Second dimension label. |
| values | array[integer] | List of values for the counter. |

counter

Representation of a counter and contains one of the following:

- Scalar counter populates the 'name' and 'value' fields.
- A 1D array populates the 'name', 'labels' and 'values' fields.
- A 2D array is represented as a list of counter entries.

```

"counters": [
  // Scalar counter
  {
    "name": "memory",
    "value": 4480
  },
  // one dimensional array "sys_read_latency_hist"
  {
    "name": "sys_read_latency_hist",
    "labels": ["0 - <1ms", "1 - <2ms", ...],
    "values": [0, 0, ...]
  },
  // Two dimensional array "foo" with ["Label 1", "Label 2"] as the
first
  // array dimension and labels ["w", "x", "y"] for the 2nd dimension
  {
    "name": "foo",
    "labels": ["Label 1", "Label 2"],
    "counters": [
      {
        "label": "x",
        "values": [0, 0]
      },
      {
        "label": "y",
        "values": [0, 0]
      },
      {
        "label": "z",
        "values": [0, 0]
      }
    ]
  }
]
}

```

| Name | Type | Description |
|----------|------------------------------------|---|
| counters | array[counter2d] | List of labels and values for the second dimension. |
| labels | array[string] | List of labels for the first dimension. |
| name | string | Counter name. |
| value | integer | Scalar value. |

| Name | Type | Description |
|--------|----------------|--|
| values | array[integer] | List of values in a one-dimensional counter. |

counter_property

Single string counter entry.

| Name | Type | Description |
|-------|--------|-----------------|
| name | string | Property name. |
| value | string | Property value. |

counter_row

A single row of counter and property counter data.

| Name | Type | Description |
|---------------|--|---|
| _links | _links | |
| aggregation | instance_counter_aggregation | Aggregation information about this counter. |
| counter_table | counter_table_reference | Counter table reference. |
| counters | array[counter] | Array of counter name/value pairs. |
| id | string | Unique row identifier. |
| properties | array[counter_property] | Array of property name/value pairs. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve a counter row

GET /cluster/counter/tables/{counter_table.name}/rows/{id}

Introduced In: 9.11

Returns a single counter row.

Parameters

| Name | Type | In | Required | Description |
|--------------------|---------------|-------|----------|-------------------------------|
| counter_table.name | string | path | True | Counter table name. |
| id | string | path | True | Unique row identifier. |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|---------------|--|---|
| _links | _links | |
| aggregation | instance_counter_aggregation | Aggregation information about this counter. |
| counter_table | counter_table_reference | Counter table reference. |
| counters | array[counter] | Array of counter name/value pairs. |

| Name | Type | Description |
|------------|-------------------------|-------------------------------------|
| id | string | Unique row identifier. |
| properties | array[counter_property] | Array of property name/value pairs. |

Example response

```

{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "counter_table": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "counters": {
    "counters": {
      "values": {
      }
    },
    "labels": {
    },
    "values": {
    }
  },
  "properties": {
  }
}

```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|------------------------------|
| 8585320 | Table requested is not found |

| Error Code | Description |
|------------|-----------------------------------|
| 8586228 | Invalid counter name request. |
| 8586229 | Invalid counter property request. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

instance_counter_aggregation

Aggregation information about this counter.

| Name | Type | Description |
|----------|---------|---|
| complete | boolean | The aggregation state for this row. For non-aggregated tables: Not present For aggregated tables: If all requests to remote nodes for counter data are successful, then this value will be 'true'. If any requests to remote nodes fail, then this value will be 'false'. |
| count | integer | Number of nodes included in the aggregation of this counter. |

counter_table_reference

Counter table reference.

| Name | Type | Description |
|--------|------------------------|---------------------|
| _links | _links | |
| name | string | Counter table name. |

counter2d

Counters that represent the second dimension of a two-dimension counter.

| Name | Type | Description |
|-------|--------|-------------------------|
| label | string | Second dimension label. |

| Name | Type | Description |
|--------|----------------|---------------------------------|
| values | array[integer] | List of values for the counter. |

counter

Representation of a counter and contains one of the following:

- Scalar counter populates the 'name' and 'value' fields.
- A 1D array populates the 'name', 'labels' and 'values' fields.
- A 2D array is represented as a list of counter entries.

```
"counters": [
// Scalar counter
{
  "name": "memory",
  "value": 4480
},
// one dimensional array "sys_read_latency_hist"
{
  "name": "sys_read_latency_hist",
  "labels": ["0 - <1ms", "1 - <2ms", ...],
  "values": [0, 0, ...]
},
// Two dimensional array "foo" with ["Label 1", "Label 2"] as the first
// array dimension and labels ["w", "x", "y"] for the 2nd dimension
{
  "name": "foo",
  "labels": ["Label 1", "Label 2"],
  "counters": [
    {
      "label": "x",
      "values": [0, 0]
    },
    {
      "label": "y",
      "values": [0, 0]
    },
    {
      "label": "z",
      "values": [0, 0]
    }
  ]
}
]
```

| Name | Type | Description |
|----------|------------------------------------|---|
| counters | array[counter2d] | List of labels and values for the second dimension. |
| labels | array[string] | List of labels for the first dimension. |
| name | string | Counter name. |
| value | integer | Scalar value. |
| values | array[integer] | List of values in a one-dimensional counter. |

counter_property

Single string counter entry.

| Name | Type | Description |
|-------|--------|-----------------|
| name | string | Property name. |
| value | string | Property value. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve counter table details

GET /cluster/counter/tables/{name}

Introduced In: 9.11

Returns the information about a single counter table.

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| name | string | path | True | Counter table name. |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|-----------------|---|--------------------------------------|
| _links | _links | |
| counter_schemas | array[counter_schema] | Array of counter schema definitions. |
| description | string | Description of the table. |
| name | string | Table name. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "counter_schemas": {
    "type": "average",
    "unit": "per_sec"
  }
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 8585320 | Table requested is not found |
| 8585368 | The system has not completed it's initialization |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

counter_denominator

Counter used as the denominator in calculating the resulting value of averages and percentages.

| Name | Type | Description |
|------|--------|---------------|
| name | string | Counter name. |

counter_schema

Schema definition of a single counter or property.

| Name | Type | Description |
|-------------|-------------------------------------|---|
| denominator | counter_denominator | Counter used as the denominator in calculating the resulting value of averages and percentages. |
| description | string | Counter or property description. |
| name | string | Counter or property name. |
| type | string | Type of counter or property. Properties will always set this field to 'string'. |
| unit | string | Counter unit. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage cluster firmware history

Cluster firmware history endpoint overview

Overview

Use this API to retrieve a history of firmware update requests. This API supports GET calls.

Examples

Retrieving history of firmware updates

The following example retrieves a history of firmware updates performed on the cluster. Note that if the *fields=** parameter is not specified, only the job ID and start time are returned. Filters can be added on the fields to limit the results.

```
# The API:
GET /api/cluster/firmware/history

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/firmware/history/?fields=*" -H
"accept: application/hal+json"

# The response:
200 OK
{
  "records": [
    {
      "start_time": "1970-01-01T00:02:03+00:00",
      "job": {
        "uuid": "adf700c2-b50e-11ea-a54f-005056bbec43"
      }
    },
  ],
}
```

```

"node": {
  "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
  "name": "node1"
},
"fw_file_name": "all_disk_fw.zip",
"fw_update_state": "starting_workers",
"end_time": "1970-01-01T00:07:36+00:00",
"update_status": [
  {
    "worker": {
      "node": {
        "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
        "name": "node1"
      },
      "state": "failed",
      "error": {
        "message": "A firmware file already exists.",
        "code": 2228327
      }
    }
  },
  {
    "worker": {
      "node": {
        "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ef",
        "name": "node2"
      },
      "state": "complete",
      "error": {
        "message": "Success",
        "code": 0
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/firmware/history/1970-01-01T00%3A02%3A03-00%3A00/adf700c2-b50e-11ea-a54f-005056bbec43"
  }
},
{
  "start_time": "1970-01-01T00:02:03+00:00",
  "job": {
    "uuid": "f84adabe-b50e-11ea-a54f-005056bbec43"
  }
}

```

```

},
"node": {
  "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
  "name": "node1"
},
"fw_file_name": "all_shelf_fw.zip",
"fw_update_state": "completed",
"end_time": "1970-01-01T00:07:36+00:00",
"update_status": [
  {
    "worker": {
      "node": {
        "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ee",
        "name": "node1"
      },
      "state": "failed",
      "error": {
        "message": "A firmware file already exists.",
        "code": 2228327
      }
    }
  },
  {
    "worker": {
      "node": {
        "uuid": "0530d6c1-8c6d-11e8-907f-00a0985a72ef",
        "name": "node2"
      },
      "state": "complete",
      "error": {
        "message": "Success",
        "code": 0
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/firmware/history/1970-01-01T00%3A02%3A03-00%3A00/f84adabe-b50e-11ea-a54f-005056bbec43"
  }
}
],
"num_records": 2,
"_links": {

```

```

"self": {
  "href": "/api/cluster/firmware/history/?fields=%2A"
}
}
}

```

Retrieve history details for firmware update requests

GET /cluster/firmware/history

Introduced In: 9.8

Retrieves the history details for firmware update requests.

Learn more

- [DOC /cluster/firmware/history](#)

Parameters

| Name | Type | In | Required | Description |
|------------------------------------|---------|-------|----------|--|
| update_status.worker.state | string | query | False | Filter by update_status.worker.state |
| update_status.worker.node.name | string | query | False | Filter by update_status.worker.node.name |
| update_status.worker.node.uuid | string | query | False | Filter by update_status.worker.node.uuid |
| update_status.worker.error.code | integer | query | False | Filter by update_status.worker.error.code |
| update_status.worker.error.message | string | query | False | Filter by update_status.worker.error.message |
| fw_file_name | string | query | False | Filter by fw_file_name |
| node.name | string | query | False | Filter by node.name |

| Name | Type | In | Required | Description |
|-----------------|---------------|-------|----------|---|
| node.uuid | string | query | False | Filter by node.uuid |
| start_time | string | query | False | Filter by start_time |
| end_time | string | query | False | Filter by end_time |
| fw_update_state | string | query | False | Filter by fw_update_state |
| job.uuid | string | query | False | Filter by job.uuid |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|---|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[firmware_history] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "end_time": "2019-02-02 14:00:00 -0500",
    "fw_file_name": "all_disk_fw.zip",
    "fw_update_state": "downloading",
    "job": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "uuid": "string"
    },
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "start_time": "2019-02-02 14:00:00 -0500",
    "update_status": {
      "worker": {
        "error": {
          "code": 2228325,
          "message": "Cannot open local staging ZIP file
disk_firmware.zip"
        }
      }
    }
  },
}
```

```

    "node": {
      "_links": {
        "self": {
          "href": "/api/resourceLink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "state": "waiting_to_retry"
  }
}
}

```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

```

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

```

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

job_link

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

node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

firmware_history_update_state_error

| Name | Type | Description |
|---------|---------|--|
| code | integer | Code corresponding to the status message. |
| message | string | Error message returned when a firmware update job fails. |

worker

| Name | Type | Description |
|-------|---|--|
| error | firmware_history_update_state_error | |
| node | node | |
| state | string | The state of each worker that a node is controlling. |

firmware_history_update_state

| Name | Type | Description |
|--------|------------------------|-------------|
| worker | worker | |

firmware_history

| Name | Type | Description |
|-----------------|--|------------------------------------|
| _links | _links | |
| end_time | string | End time of this update request. |
| fw_file_name | string | Name of the firmware file. |
| fw_update_state | string | |
| job | job_link | |
| node | node | |
| start_time | string | Start time of this update request. |
| update_status | array[firmware_history_update_state] | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

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

View and manage cluster jobs

Cluster jobs endpoint overview

Overview

You can use this API to view and manipulate jobs. Jobs provide information about asynchronous operations. Some long-running jobs are paused or cancelled by calling a PATCH request. Individual operations indicate if they support PATCH requests on the job. After a job transitions to a terminal state, it is deleted after a default time of 300 seconds. Attempts to call a GET or PATCH request on the job returns a 404 error code After the job has been deleted.

Example

The following examples show how to retrieve and update a job state:

Retrieving job information

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

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/b5145e1d-b53b-11e8-8252-005056bbd8f5" -H "accept: application/json"

# The response:
{
  "uuid": "b5145e1d-b53b-11e8-8252-005056bbd8f5",
  "code": 0,
  "description": "Cluster Backup Job",
  "state": "running",
  "message": "creating_node_backups",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/b5145e1d-b53b-11e8-8252-005056bbd8f5"
    }
  }
}
```

Updating a job that supports the new state

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

# The call:
curl -X PATCH "https://<mgmt-ip>/api/cluster/jobs/b5145e1d-b53b-11e8-8252-005056bbd8f5?action=cancel" -H "accept: application/json"
```

Retrieve recent asynchronous jobs

GET /cluster/jobs

Introduced In: 9.6

Retrieves a list of recently running asynchronous jobs. After a job transitions to a failure or success state, it is deleted after a default time of 300 seconds.

Parameters

| Name | Type | In | Required | Description |
|-------------------------|---------|-------|----------|---|
| code | integer | query | False | Filter by code |
| error.code | string | query | False | Filter by error.code <ul style="list-style-type: none">• Introduced in: 9.9 |
| error.arguments.code | string | query | False | Filter by error.arguments.code <ul style="list-style-type: none">• Introduced in: 9.9 |
| error.arguments.message | string | query | False | Filter by error.arguments.message <ul style="list-style-type: none">• Introduced in: 9.9 |
| error.message | string | query | False | Filter by error.message <ul style="list-style-type: none">• Introduced in: 9.9 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| svm.uuid | string | query | False | Filter by svm.uuid • Introduced in: 9.8 |
| svm.name | string | query | False | Filter by svm.name • Introduced in: 9.8 |
| uuid | string | query | False | Filter by uuid |
| state | string | query | False | Filter by state |
| description | string | query | False | Filter by description |
| end_time | string | query | False | Filter by end_time |
| start_time | string | query | False | Filter by start_time |
| node.name | string | query | False | Filter by node.name • Introduced in: 9.11 |
| message | string | query | False | Filter by message |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|------------------------------|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[job] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "code": 0,
    "description": "App Snapshot Job",
    "end_time": "string",
    "error": {
      "arguments": {
        "code": "string",
        "message": "string"
      },
      "code": "4",
      "message": "entry doesn't exist"
    },
    "message": "Complete: Successful",
    "start_time": "string",
    "state": "queued",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

error

The error that caused the job to fail. This property is only populated when the job fails and it matches the API response error structure used by all APIs. The message and code match the dedicated message and code properties once the job has failed.

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

node

The node where this job was run

| Name | Type | Description |
|------|--------|----------------------|
| name | string | The name of the node |

svm

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

job

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| code | integer | If the state indicates "failure", this is the final error code. |
| description | string | The description of the job to help identify it independent of the UUID. |
| end_time | string | The time the job ended. |
| error | error | The error that caused the job to fail. This property is only populated when the job fails and it matches the API response error structure used by all APIs. The message and code match the dedicated message and code properties once the job has failed. |
| message | string | A message corresponding to the state of the job providing additional details about the current state. |
| node | node | The node where this job was run |
| start_time | string | The time the job started. |
| state | string | The state of the job. |

| Name | Type | Description |
|------|---------------------|--|
| svm | svm | SVM, applies only to SVM-scoped objects. |
| uuid | string | |

returned_error

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

Retrieve details of an asynchronous job

GET /cluster/jobs/{uuid}

Introduced In: 9.6

Retrieves the details of a specific asynchronous job. After a job transitions to a failure or success state, it is deleted after a default time of 300 seconds.

Parameters

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

Response

Status: 200, Ok

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |

| Name | Type | Description |
|-------------|-----------------------|---|
| code | integer | If the state indicates "failure", this is the final error code. |
| description | string | The description of the job to help identify it independent of the UUID. |
| end_time | string | The time the job ended. |
| error | error | The error that caused the job to fail. This property is only populated when the job fails and it matches the API response error structure used by all APIs. The message and code match the dedicated message and code properties once the job has failed. |
| message | string | A message corresponding to the state of the job providing additional details about the current state. |
| node | node | The node where this job was run |
| start_time | string | The time the job started. |
| state | string | The state of the job. |
| svm | svm | SVM, applies only to SVM-scoped objects. |
| uuid | string | |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "code": 0,
  "description": "App Snapshot Job",
  "end_time": "string",
  "error": {
    "arguments": {
      "code": "string",
      "message": "string"
    },
    "code": "4",
    "message": "entry doesn't exist"
  },
  "message": "Complete: Successful",
  "start_time": "string",
  "state": "queued",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

error

The error that caused the job to fail. This property is only populated when the job fails and it matches the API response error structure used by all APIs. The message and code match the dedicated message and code properties once the job has failed.

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

node

The node where this job was run

| Name | Type | Description |
|------|--------|----------------------|
| name | string | The name of the node |

svm

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|--------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

returned_error

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

Update the state of an asynchronous job

PATCH /cluster/jobs/{uuid}

Introduced In: 9.6

Updates the state of a specific asynchronous job.

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|-------------|
| uuid | string | path | True | Job UUID |

| Name | Type | In | Required | Description |
|--------|--------|-------|----------|---|
| action | string | query | False | Requests a job to pause, resume, or cancel. Note that not all jobs support these actions. A job can only be resumed if it is in a paused state. After you successfully request a job to be cancelled, the job state changes to either success or failure. <ul style="list-style-type: none"> enum: ["pause", "resume", "cancel"] |

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 458762 | Job is already in a terminal state. |
| 458773 | The Job Manager is not initialized. |
| 458771 | The specified job is running. |
| 458776 | The specified job is not currently running. |
| 458783 | This job does not support pause. |
| 458784 | This job does not support cancel. |

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve capacity pool licenses

Cluster licensing capacity-pools endpoint overview

Overview

Capacity pool licenses are installed on and managed by the license manager. Each ONTAP node that is using the capacity pools licensing model is associated with a capacity pool license from which capacity is leased for data aggregates.

This API is used to retrieve information about associations between ONTAP nodes in the cluster and capacity pool licenses. It also reports how much capacity each node is consuming from the capacity pool.

Examples

Retrieving a collection of capacity pools associated with the cluster

This example retrieves a collection that contains two capacity pool licenses, each of which is associated with an HA pair of nodes in a four-node cluster.

```
# API
curl -X GET "https://<mgmt-ip>/api/cluster/licensing/capacity-pools"

# Response
200 OK

# JSON Body
{
  "records": [
    {
      "serial_number": "390000100",
      "license_manager": {
        "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566",
        "_links": {
          "self": {
            "href": "/api/cluster/licensing/license-managers/4ea7a442-86d1-11e0-ae1c-112233445566"
          }
        }
      }
    },
    "nodes": [
      {
        "node": {
          "name": "node-1",
          "uuid": "4ea7a442-86d1-11e0-ae1c-123478563411"
        },
        "used_size": 1099511627776,
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-123478563411"
          }
        }
      }
    ]
  }
}
```

```

    }
  },
  {
    "node":{
      "name":"node-2",
      "uuid":"4ea7a442-86d1-11e0-ae1c-123478563412"
    },
    "used_size":1099511627776,
    "_links":{
      "self":{
        "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-
123478563412"
      }
    }
  },
  {
    "serial_number":"390000101",
    "license_manager": {
      "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566",
      "_links": {
        "self": {
          "href": "/api/cluster/licensing/license-managers/4ea7a442-86d1-
11e0-ae1c-112233445566"
        }
      }
    }
  },
  "nodes":[
    {
      "node":{
        "name":"node-3",
        "uuid":"4ea7a442-86d1-11e0-ae1c-123478563413"
      },
      "used_size":2199023255552,
      "_links":{
        "self":{
          "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-
123478563413"
        }
      }
    }
  ]
}

```

```

    }
  },
  {
    "node":{
      "name":"node-4",
      "uuid":"4ea7a442-86d1-11e0-ae1c-123478563414"
    },
    "used_size":2199023255552,
    "_links":{
      "self":{
        "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-123478563414"
      }
    }
  }
],
"_links":{
  "self":{
    "href":"/api/cluster/licensing/capacity-pools/390000101"
  }
}
}
],
"num_records":2,
"_links":{
  "self":{
    "href":"/api/cluster/licensing/capacity-pools"
  }
}
}
}

```

Retrieving information about nodes associated with a specific capacity pool license

This example retrieves information about the nodes that are associated with a capacity pool license of the serial number 390000100.

```

# API
curl -X GET "https://<mgmt-ip>/api/cluster/licensing/capacity-
pools/390000100"

# Response
200 OK

# JSON Body
{
  "serial_number":"390000100",

```

```

"license_manager": {
  "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566",
  "_links": {
    "self": {
      "href": "/api/cluster/licensing/license-managers/4ea7a442-86d1-11e0-ae1c-112233445566"
    }
  }
},
"nodes": [
  {
    "node": {
      "name": "node-1",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563411"
    },
    "used_size": 1099511627776,
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-123478563411"
      }
    }
  },
  {
    "node": {
      "name": "node-2",
      "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
    },
    "used_size": 1099511627776,
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-123478563412"
      }
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/licensing/capacity-pools/390000100"
  }
}
}

```

Retrieve capacity pools

GET /cluster/licensing/capacity-pools

Introduced In: 9.8

Retrieves a collection of capacity pools.

Learn more

- [DOC /cluster/licensing/capacity-pools](#)

Related ONTAP commands

- `system license show-status`
- `system license show`

Parameters

| Name | Type | In | Required | Description |
|----------------------|---------------|-------|----------|---|
| nodes.node.name | string | query | False | Filter by nodes.node.name |
| nodes.node.uuid | string | query | False | Filter by nodes.node.uuid |
| nodes.used_size | integer | query | False | Filter by nodes.used_size |
| serial_number | string | query | False | Filter by serial_number |
| license_manager.uuid | string | query | False | Filter by license_manager.uuid |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none">• Default value: 1 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|----------------------------------|-------------------|
| _links | collection_links | |
| num_records | integer | Number of records |
| records | array[records] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "license_manager": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
    },
    "nodes": {
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "used_size": 0
    },
    "serial_number": 390000100
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

collection_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

license_manager

License manager instance where this capacity pool license in installed.

| Name | Type | Description |
|--------|---------------------------|-------------|
| _links | self_link | |
| uuid | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node_reference

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

nodes

Information on a node from the capacity licensing perspective.

| Name | Type | Description |
|------|--------------------------------|-------------|
| node | node_reference | |

| Name | Type | Description |
|-----------|---------|---|
| used_size | integer | Capacity, in bytes, that is currently used by the node. |

records

Information on a capacity pool license and how it is associated with the cluster.

| Name | Type | Description |
|-----------------|---------------------------------|---|
| _links | self_link | |
| license_manager | license_manager | License manager instance where this capacity pool license is installed. |
| nodes | array[nodes] | Nodes in the cluster associated with this capacity pool. |
| serial_number | string | Serial number of the capacity pool license. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve capacity pool information

GET /cluster/licensing/capacity-pools/{serial_number}

Introduced In: 9.8

Retrieves information about the capacity pool.

Learn more

- [DOC /cluster/licensing/capacity-pools](#)

Related ONTAP commands

- `system license show-status`
- `system license show`

Parameters

| Name | Type | In | Required | Description |
|----------------------|---------------|-------|----------|---|
| serial_number | string | path | True | Serial number of the capacity pool license. |
| nodes.node.name | string | query | False | Filter by nodes.node.name |
| nodes.node.uuid | string | query | False | Filter by nodes.node.uuid |
| nodes.used_size | integer | query | False | Filter by nodes.used_size |
| license_manager.uuid | string | query | False | Filter by license_manager.uuid |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|-----------------|---------------------------------|---|
| _links | self_link | |
| license_manager | license_manager | License manager instance where this capacity pool license is installed. |

| Name | Type | Description |
|---------------|--------------|--|
| nodes | array[nodes] | Nodes in the cluster associated with this capacity pool. |
| serial_number | string | Serial number of the capacity pool license. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "license_manager": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
  },
  "nodes": {
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "used_size": 0
  },
  "serial_number": 390000100
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

license_manager

License manager instance where this capacity pool license is installed.

| Name | Type | Description |
|--------|---------------------------|-------------|
| _links | self_link | |
| uuid | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node_reference

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

nodes

Information on a node from the capacity licensing perspective.

| Name | Type | Description |
|-----------|--------------------------------|---|
| node | node_reference | |
| used_size | integer | Capacity, in bytes, that is currently used by the node. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage cluster license managers

Cluster licensing license-managers endpoint overview

Overview

This API is used to manage information about the license manager instance associated with the cluster.

When an ONTAP cluster is initially created to use the capacity pools licensing model, information about the license manager instance that the cluster should use is pre-configured. Generally, this configuration does not need to be updated unless the license manager instance changes its IP address.

The license manager is currently bundled with the ONTAP Select Deploy utility and runs on the same VM as ONTAP Select Deploy. Use this API to update the license manager IP address when the Deploy VM changes its IP address.

Examples

Retrieving information about the license manager instance associated with the cluster

```
# API
curl -X GET "https://<mgmt-ip>/api/cluster/licensing/license-managers"

# Response
200 OK

# JSON Body
{
  "records": [
    {
      "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566",
      "uri": {
        "host": "10.1.1.1",
      },
      "default": true
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/cluster/licensing/license-managers"
    }
  }
}
```

Updating an existing license manager instance

```
# API
curl -X PATCH "https://<mgmt-ip>/api/cluster/licensing/license-managers/4ea7a442-86d1-11e0-ae1c-112233445566"

# JSON Body
{
  "uri": {
    "host": "10.1.1.3"
  }
}

# Response
202 Accepted
```

Retrieve license managers

GET /cluster/licensing/license-managers

Introduced In: 9.8

Retrieves a collection of license managers.

Learn more

- [DOC /cluster/licensing/license-managers](#)

Related ONTAP commands

- `system license license-manager show`

Parameters

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| uuid | string | query | False | Filter by uuid |
| default | boolean | query | False | Filter by default |
| uri.host | string | query | False | Filter by uri.host |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none">• Default value: 1 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|----------------------------------|-------------------|
| _links | collection_links | |
| num_records | integer | Number of records |
| records | array[records] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uri": {
      "host": "10.1.1.1"
    },
    "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

collection_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

uri

License manager URI.

| Name | Type | Description |
|------|--------|--|
| host | string | License manager host name, IPv4 or IPv6 address. |

records

Information on a license manager instance associated with the cluster.

| Name | Type | Description |
|---------|---------------------------|--|
| _links | self_link | |
| default | boolean | Flag that indicates whether it's the default license manager instance used by the cluster.' When a capacity pool is created and if the license manager field is omitted, it is assumed that the license of the capacity pool is installed on the default license manager instance. |
| uri | uri | License manager URI. |
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve the license manager information

GET /cluster/licensing/license-managers/{uuid}

Introduced In: 9.8

Retrieves information about the license manager.

Learn more

- [DOC /cluster/licensing/license-managers](#)

Related ONTAP commands

- `system license license-manager show`

Parameters

| Name | Type | In | Required | Description |
|----------|---------|-------|----------|--------------------|
| uuid | string | path | True | |
| default | boolean | query | False | Filter by default |
| uri.host | string | query | False | Filter by uri.host |

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|---------------------------|--|
| _links | self_link | |
| default | boolean | Flag that indicates whether it's the default license manager instance used by the cluster.' When a capacity pool is created and if the license manager field is omitted, it is assumed that the license of the capacity pool is installed on the default license manager instance. |
| uri | uri | License manager URI. |
| uuid | string | |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "uri": {
    "host": "10.1.1.1"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

uri

License manager URI.

| Name | Type | Description |
|------|--------|--|
| host | string | License manager host name, IPv4 or IPv6 address. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update the license manager configuration

PATCH /cluster/licensing/license-managers/{uuid}

Introduced In: 9.8

Updates the license manager configuration.

Learn more

- [DOC /cluster/licensing/license-managers](#)

Related ONTAP commands

- `system license license-manager modify`

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| uuid | string | path | True | |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |

Request Body

| Name | Type | Description |
|---------|-----------|--|
| _links | self_link | |
| default | boolean | Flag that indicates whether it's the default license manager instance used by the cluster.' When a capacity pool is created and if the license manager field is omitted, it is assumed that the license of the capacity pool is installed on the default license manager instance. |
| uri | uri | License manager URI. |
| uuid | string | |

Example request

```

{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "uri": {
    "host": "10.1.1.1"
  },
  "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566"
}

```

Response

Status: 200, Ok

| Name | Type | Description |
|------|----------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 1115532 | The requested update to the license manager information failed. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|--------|-----------------------|-------------|
| errors | array[returned_error] | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

uri

License manager URI.

| Name | Type | Description |
|------|--------|--|
| host | string | License manager host name, IPv4 or IPv6 address. |

license_manager

Information on a license manager instance associated with the cluster.

| Name | Type | Description |
|------------------------|---------------------------|--|
| _links | self_link | |
| default | boolean | Flag that indicates whether it's the default license manager instance used by the cluster.' When a capacity pool is created and if the license manager field is omitted, it is assumed that the license of the capacity pool is installed on the default license manager instance. |
| uri | uri | License manager URI. |
| uuid | string | |

[_links](#)

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage cluster licensing

Cluster licensing licenses endpoint overview

Overview

Licensing allows you to tailor a system to meet an organization's specific needs. You can enable new features by purchasing a license from a NetApp sales associate. After installation of the license, the new feature is available immediately.

This interface manages licenses according to their supported feature. By default, the interface displays packages with installed licenses, but you can also return unlicensed packages.

Each feature has a compliance state that is indicated at the package level. Individual licenses also contain a compliance state indicated in the "licenses" array. The state of the package is determined by analyzing the underlying licenses according to the following criteria:

- Licensing terms
- Cluster state

Licensing terms

The licensing terms define the conditions under which a package is considered "compliant". Individual licenses are evaluated based on the following:

- Scope
- Time period
- Usage

Scope

A package can be licensed under the following scopes:

- Site - Permits the feature to be used by any node in any cluster.
- Cluster - Permits the feature to be used by any node in a single specific cluster.
- Node - Permits the authorized node to use the feature. Within a cluster, if you don't supply every node with a valid license, the package state indicates "noncompliant". You must purchase a license for each node in a cluster for the package to be considered "compliant".

Time period

Some package licenses are only valid for a limited period of time. After a license has expired, the package state changes to "noncompliant". You need to purchase a new license for the package to return to a "compliant" state.

Usage

Some package licenses have additional terms that need to be maintained to keep a license in compliance. These conditions are defined by the individual license. For example, a license might define the maximum amount of storage that a node can allocate for the license to be "compliant".

Cluster state

A cluster's state consists of the following:

- Node online status
- Node cluster membership

Some features require that a node be online to display a valid compliance state. If a node cannot be reached or is not known to the cluster, the individual license might indicate an "unknown" state.

Licensing keys

A license is issued in one of the following three formats:

- 28-character key
- NetApp License File Version 1 (NLFv1)
- NetApp License File Version 2 (NLFv2)

Overview of NLFv1 and NLFv2 License Formats

NLFv1 and NLFv2 licenses are both JSON based files that allow features to be enabled.

The difference between the two formats is that a NLFv2 license allows multiple features to be enabled with a single file. A NLFv1 license is capable of enabling a single feature.

These licenses are identified, in the various methods, as follows:

| Format | Identifying Keys |
|------------------|--|
| 28 Character Key | name / serial_number |
| NLFv1 | name / serial_number |
| NLFv2 | licenses.installed_license / serial_number |

The following is an example of a 28-character key:

```
AMEPOSOIKLKGEEEEEDGNDEKSJDEEE
```

The following is an example of an NLFv1 key:

```
{
  "statusResp": {
    "version": "1",
    "serialNumber": "123456789",
    "message": "Success",
    "licenses": {
      "capacity": "1",
      "type": "capacity",
      "licenseProtocol": "FABRICPOOL-TB",
      "package": "FabricPool",
      "licenseScope": "cluster"
    },
    "snStatus": "Active",
    "product": "fabricpool",
    "statusCode": "S007"
  },
  "Signature": "signatureABC"
}
```

The following is an example of an NLFv2 key:

```
{
  "statusResp": {
    "version": "2",
    "serialNumber": "123456789",
    "message": "Success",
    "product": "Sample NLFv2 License",
    "licenses": {
      "capacity": "1",
      "type": "capacity",
      "HostID": "5554444",
      "package": [ "NFS", "CIFS" ],
      "licenseScope": "node"
    },
    "snStatus": "Active",
    "statusCode": "S007"
  },
  "Signature": "signatureABC"
}
```

You can use this API to submit any format to enable features.

Examples

Retrieving a collection of licenses organized by package

This example retrieves a collection that contains one entry for each package (filtered to only the 'fabricpool' package).

```

# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?fields=*&name=fabricpool"

# Response
200 OK

# JSON Body
{
  "records": [
    {
      "name": "fabricpool",
      "scope": "cluster",
      "state": "compliant",
      "description": "FabricPool License",
      "licenses": [
        {
          "owner": "testcluster-1",
          "serial_number": "4149027342",
          "state": "compliant",
          "capacity": {
            "maximum_size": 1099511627776,
            "used_size": 0
          }
        }
      ],
      "_links": {
        "self": {
          "href": "/api/cluster/licensing/licenses/fabricpool"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/cluster/licensing/licenses/?fields=*&name=fabricpool"
    }
  }
}

```

Retrieving a collection of licenses organized by package - for package cloud

The following example retrieves a collection that contains one entry for each package (filtered to only the 'cloud' package). The cloud package, in this example, is in the enforcement period as the license has expired. The REST GET output displays an additional field 'shutdown_imminent' to indicate that the system will

shutdown.

```
# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?fields=*&name=cloud"

# Response
200 OK

# JSON Body
{
  "records": [
    {
      "name": "cloud",
      "scope": "node",
      "state": "noncompliant",
      "description": "Cloud ONTAP License",
      "entitlement": {
        "action": "acquire_license",
        "risk": "unlicensed"
      },
      "licenses": [
        {
          "owner": "test-vsml",
          "serial_number": "90120130000000000001",
          "active": false,
          "evaluation": true,
          "expiry_time": "2021-10-26T19:57:41Z",
          "shutdown_imminent": true,
          "compliance": {
            "state": "noncompliant"
          }
        }
      ],
      "_links": {
        "self": {
          "href": "/api/cluster/licensing/licenses/cloud"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/cluster/licensing/licenses/?fields=*&name=cloud"
    }
  }
}
```

```
}  
}
```

Retrieving a collection of licenses installed with NLFv2

This example retrieves a collection of licenses that were installed by a NLFv2 formatted license.



The license is referenced by the installed license "Core*Bundle" and the license serial number "4212426890"

```
# API  
curl -X GET "https://<mgmt-  
ip>/api/cluster/licensing/licenses?fields=*&licenses.installed_license=Cor  
e*Bundle&serial_number=4212426890"  
  
# Response  
200 OK  
  
# JSON Body  
{  
  "records": [  
    {  
      "name": "nfs",  
      "scope": "node",  
      "state": "noncompliant",  
      "description": "NFS License",  
      "entitlement": {  
        "action": "acquire_license",  
        "risk": "medium"  
      },  
      "licenses": [  
        {  
          "owner": "test-vsimg3",  
          "active": false,  
          "evaluation": false,  
          "compliance": {  
            "state": "unlicensed"  
          }  
        },  
        {  
          "owner": "test-vsimg4",  
          "installed_license": "Core Bundle",  
          "host_id": "4212426890",  
          "serial_number": "4212426890",  
          "active": true,  
          "evaluation": false,  
        }  
      ]  
    }  
  ]  
}
```

```

    "compliance": {
      "state": "compliant"
    },
    "capacity": {
      "maximum_size": 10995116277760
    }
  }
],
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses/nfs/?licenses.installed_license=Core*Bundle"
  }
},
{
  "name": "cifs",
  "scope": "node",
  "state": "noncompliant",
  "description": "CIFS License",
  "entitlement": {
    "action": "acquire_license",
    "risk": "medium"
  },
  "licenses": [
    {
      "owner": "test-vs3",
      "active": false,
      "evaluation": false,
      "compliance": {
        "state": "unlicensed"
      }
    },
    {
      "owner": "test-vs4",
      "installed_license": "Core Bundle",
      "host_id": "4212426890",
      "serial_number": "4212426890",
      "active": true,
      "evaluation": false,
      "compliance": {
        "state": "compliant"
      },
      "capacity": {
        "maximum_size": 10995116277760
      }
    }
  ]
}

```



```

    }
  }
],
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses/cifs/?licenses.installed_license=Core*Bundle"
  }
}
},
{
  "name": "iscsi",
  "scope": "node",
  "state": "noncompliant",
  "description": "iSCSI License",
  "entitlement": {
    "action": "acquire_license",
    "risk": "medium"
  },
  "licenses": [
    {
      "owner": "test-vsimg3",
      "active": false,
      "evaluation": false,
      "compliance": {
        "state": "unlicensed"
      }
    },
    {
      "owner": "test-vsimg4",
      "installed_license": "Core Bundle",
      "host_id": "4212426890",
      "serial_number": "4212426890",
      "active": true,
      "evaluation": false,
      "compliance": {
        "state": "compliant"
      },
      "capacity": {
        "maximum_size": 10995116277760
      }
    }
  ],
  "_links": {
    "self": {

```

```

    "href":
"/api/cluster/licensing/licenses/iscsi/?licenses.installed_license=Core*Bu
ndle"
    }
  },
  {
    "name": "fcp",
    "scope": "node",
    "state": "noncompliant",
    "description": "FCP License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "medium"
    },
    "licenses": [
      {
        "owner": "test-vsimg3",
        "active": false,
        "evaluation": false,
        "compliance": {
          "state": "unlicensed"
        }
      },
      {
        "owner": "test-vsimg4",
        "installed_license": "Core Bundle",
        "host_id": "4212426890",
        "serial_number": "4212426890",
        "active": true,
        "evaluation": false,
        "compliance": {
          "state": "compliant"
        },
        "capacity": {
          "maximum_size": 10995116277760
        }
      }
    ],
    "_links": {
      "self": {
        "href":
"/api/cluster/licensing/licenses/fcp/?licenses.installed_license=Core*Bund
le"
      }
    }
  }
}

```

```

},
{
  "name": "snaprestore",
  "scope": "node",
  "state": "noncompliant",
  "description": "SnapRestore License",
  "entitlement": {
    "action": "acquire_license",
    "risk": "medium"
  },
  "licenses": [
    {
      "owner": "test-vs3",
      "active": false,
      "evaluation": false,
      "compliance": {
        "state": "unlicensed"
      }
    },
    {
      "owner": "test-vs4",
      "installed_license": "Core Bundle",
      "host_id": "4212426890",
      "serial_number": "4212426890",
      "active": true,
      "evaluation": false,
      "compliance": {
        "state": "compliant"
      },
      "capacity": {
        "maximum_size": 1099511627760
      }
    }
  ],
  "_links": {
    "self": {
      "href":
"/api/cluster/licensing/licenses/snaprestore/?licenses.installed_license=C
ore*Bundle"
    }
  }
},
{
  "name": "flexclone",
  "scope": "node",
  "state": "noncompliant",

```

```

"description": "FlexClone License",
"entitlement": {
  "action": "acquire_license",
  "risk": "medium"
},
"licenses": [
  {
    "owner": "test-vsimg3",
    "active": false,
    "evaluation": false,
    "compliance": {
      "state": "unlicensed"
    }
  },
  {
    "owner": "test-vsimg4",
    "installed_license": "Core Bundle",
    "host_id": "4212426890",
    "serial_number": "4212426890",
    "active": true,
    "evaluation": false,
    "compliance": {
      "state": "compliant"
    },
    "capacity": {
      "maximum_size": 10995116277760
    }
  }
],
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses/flexclone/?licenses.installed_license=Core*Bundle"
  }
}
},
{
  "name": "nvme_of",
  "scope": "node",
  "state": "noncompliant",
  "description": "NVMe-oF License",
  "licenses": [
    {
      "owner": "test-vsimg3",
      "active": false,

```

```

    "evaluation": false,
    "compliance": {
      "state": "unlicensed"
    }
  },
  {
    "owner": "test-vsimg4",
    "installed_license": "Core Bundle",
    "host_id": "4212426890",
    "serial_number": "4212426890",
    "active": true,
    "evaluation": false,
    "compliance": {
      "state": "compliant"
    },
    "capacity": {
      "maximum_size": 10995116277760
    }
  }
],
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses/nvme_of/?licenses.installed_license=Core*
Bundle"
  }
},
{
  "name": "s3",
  "scope": "node",
  "state": "noncompliant",
  "description": "S3 License",
  "entitlement": {
    "action": "acquire_license",
    "risk": "medium"
  },
  "licenses": [
    {
      "owner": "test-vsimg3",
      "active": false,
      "evaluation": false,
      "compliance": {
        "state": "unlicensed"
      }
    }
  ],

```

```

    {
      "owner": "test-vsimg4",
      "installed_license": "Core Bundle",
      "host_id": "4212426890",
      "serial_number": "4212426890",
      "active": true,
      "evaluation": false,
      "compliance": {
        "state": "compliant"
      },
      "capacity": {
        "maximum_size": 10995116277760
      }
    }
  ],
  "_links": {
    "self": {
      "href":
"/api/cluster/licensing/licenses/s3/?licenses.installed_license=Core*Bundle"
    }
  }
},
"num_records": 8,
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses?fields=*&licenses.installed_license=Core*
Bundle&serial_number=4212426890"
  }
}
}
}

```

Retrieving a collection of installed licenses

This example retrieves a collection containing all packages (except base) that have installed licenses.

```

# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?fields=*&name=!base"

# Response
200 OK

# JSON Body

```

```

{
"records": [
{
"name": "nfs",
"scope": "node",
"state": "compliant",
"description": "NFS License",
"entitlement": {
"action": "none",
"risk": "low"
},
"licenses": [
{
"owner": "testcluster-1",
"serial_number": "1-81-0000000000000004149027492",
"state": "compliant"
}
],
"_links": {
"self": {
"href": "/api/cluster/licensing/licenses/nfs"
}
}
},
{
"name": "cifs",
"scope": "node",
"state": "compliant",
"description": "CIFS License",
"entitlement": {
"action": "acquire_license",
"risk": "medium"
},
"licenses": [
{
"owner": "testcluster-1",
"serial_number": "1-81-0000000000000004149027492",
"state": "compliant"
}
],
"_links": {
"self": {
"href": "/api/cluster/licensing/licenses/cifs"
}
}
}
}

```

```

],
"num_records": 2,
"_links": {
"self": {
  "href": "/api/cluster/licensing/licenses/?fields=*&name=!base"
}
}
}

```

Retrieving a collection of unlicensed packages

By default, unlicensed packages are filtered from the collection output. This example shows how to use a query to retrieve unlicensed packages.

```

# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?name=flexcache&state=unlicensed"

# Response
200 OK

# JSON Body
{
"records": [
  {
    "name": "flexcache",
    "_links": {
      "self": {
        "href": "/api/cluster/licensing/licenses/flexcache"
      }
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href":
"/api/cluster/licensing/licenses?name=flexcache&state=unlicensed"
  }
}
}

```

Installing a NLF license

This example installs a single NLFv1 license. A NLFv2 license installs using the same procedure.



You must escape all the double quotes and backslash characters of the JSON license before it can be placed in the POST request.

```
# API
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses"

# JSON Body
{
"keys" : [ "{\"statusResp\":{\"snStatus\": \"Active\", \"licenses\":
{\"package\": \"FabricPool\", \"capacity\": \"1\", \"licenseProtocol\":
\"FABRICPOOL-TB\", \"type\": \"capacity\", \"licenseScope\": \"cluster\"},
\"message\": \"Success\", \"statusCode\": \"S007\", \"version\": \"1\",
\"product\": \"fabricpool\", \"serialNumber\": \"4149027342\"},
\"Signature\": \"SignatureABC\"}" ]
}

# Response
201 Created
```

Installing a 28-character key

This example installs a single 28-character key formatted license.

```
# API
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses"

# JSON Body
{
"keys" : [ "AAAAAAAAAAAAAAAAAAAAAAAAAAAA" ]
}

# Response
201 Created
```

Installing multiple licenses with one API call

This example shows how multiple keys can be provided to install multiple features in a single API call.

```
# API
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses"

# JSON Body
{
"keys" : [ "AAAAAAAAAAAAAAAAAAAAAAAAAAAA",
           "BBBBBBBBBBBBBBBBBBBBBBBBBBBB" ]
}

# Response
201 Created
```

Retrieving information for a specific license package

This example shows how to retrieve information about the specific feature package `fabricpool`.

```

# API
curl -X GET "https://<mgmt-ip>/api/cluster/licensing/licenses/fabricpool"

# Response
200 OK

# JSON Body
{
  "name": "fabricpool",
  "scope": "cluster",
  "state": "compliant",
  "description": "FabricPool License",
  "licenses": [
    {
      "owner": "testcluster-1",
      "serial_number": "123456789",
      "state": "compliant",
      "capacity": {
        "maximum_size": 109951162777600,
        "used_size": 0
      }
    }
  ],
  "_links": {
    "self": {
      "href": "/api/cluster/licensing/licenses/fabricpool/"
    }
  }
}

```

Deleting a specific license

This example show how to delete a CIFS site license.

```

# API
curl -X DELETE "https://<mgmt-
ip>/api/cluster/licensing/licenses/cifs?serial_number=1-80-000011"

# JSON Body
{}

# Response
200 OK

```

Deleting with a query

The following example shows how to delete all NFS licenses specified with the '*' query.

```
# API
curl -X DELETE "https://<mgmt-
ip>/api/cluster/licensing/licenses/nfs?serial_number=*"

# JSON Body
{}

# Response
200 OK
```

Deleting all licenses installed with NLFv2

The following example shows how to delete all licenses installed by a NLFv2 formatted license.

```
# API
curl -X DELETE "https://<mgmt-
ip>/api/cluster/licensing/licenses?licenses.installed_license=Core*Bundle&
serial_number=4149026-97-8"

# JSON Body
{
  "num_records": 1,
  "_links": {
    "self": {
      "href":
"/api/cluster/licensing/licenses?licenses.installed_license=Core*Bundle&se
rial_number=4149026-97-8"
    }
  }
}

# Response
200 OK
```

Retrieve license packages

GET /cluster/licensing/licenses

Introduced In: 9.6

Retrieves a collection of license packages.



By default, the GET method only returns licensed packages. You must provide the following query "state=unlicensed" to retrieve unlicensed packages. **Note:** Starting with ONTAP 9.11.1, the GET method no longer returns the Base license record.

Related ONTAP commands

- `system license show-status`
- `system license show`

Parameters

| Name | Type | In | Required | Description |
|---------------------------|--------|-------|----------|---|
| entitlement.risk | string | query | False | Filter by entitlement.risk <ul style="list-style-type: none">• Introduced in: 9.11 |
| entitlement.action | string | query | False | Filter by entitlement.action <ul style="list-style-type: none">• Introduced in: 9.11 |
| state | string | query | False | Filter by state |
| scope | string | query | False | Filter by scope |
| description | string | query | False | Filter by description <ul style="list-style-type: none">• Introduced in: 9.11 |
| name | string | query | False | Filter by name |
| licenses.expiry_time | string | query | False | Filter by licenses.expiry_time |
| licenses.compliance.state | string | query | False | Filter by licenses.compliance.state |
| licenses.serial_number | string | query | False | Filter by licenses.serial_number |

| Name | Type | In | Required | Description |
|--------------------------------|---------------|-------|----------|---|
| licenses.shutdown_imminent | boolean | query | False | Filter by licenses.shutdown_imminent • Introduced in: 9.11 |
| licenses.capacity_maximum_size | integer | query | False | Filter by licenses.capacity_maximum_size |
| licenses.capacity_used_size | integer | query | False | Filter by licenses.capacity_used_size |
| licenses.installed_license | string | query | False | Filter by licenses.installed_license • Introduced in: 9.9 |
| licenses.host_id | string | query | False | Filter by licenses.host_id • Introduced in: 9.9 |
| licenses.start_time | string | query | False | Filter by licenses.start_time |
| licenses.active | boolean | query | False | Filter by licenses.active |
| licenses.owner | string | query | False | Filter by licenses.owner |
| licenses.evaluation | boolean | query | False | Filter by licenses.evaluation |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "description": "NFS License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "high"
    },
    "keys": {
    },
    "licenses": {
      "capacity": {
        "maximum_size": 0,
        "used_size": 0
      },
      "compliance": {
        "state": "compliant"
      },
      "expiry_time": "2019-03-02 14:00:00 -0500",
      "host_id": "456-44-1234",
      "installed_license": "Core Bundle",
      "owner": "cluster1",
      "serial_number": "123456789",
      "start_time": "2019-02-02 14:00:00 -0500"
    },
    "name": "NFS",
    "scope": "not_available",
    "state": "compliant"
  }
}
```


Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

entitlement

| Name | Type | Description |
|--------|--------|---|
| action | string | Entitlement action to be taken to mitigate the risk |
| risk | string | Entitlement risk of the package |

capacity

| Name | Type | Description |
|--------------|---------|---|
| maximum_size | integer | Licensed capacity size (in bytes) that can be used. |
| used_size | integer | Capacity that is currently used (in bytes). |

compliance

| Name | Type | Description |
|-------|--------|----------------------------------|
| state | string | Compliance state of the license. |

licenses

| Name | Type | Description |
|-------------------|----------------------------|---|
| active | boolean | A flag indicating whether the license is currently being enforced. |
| capacity | capacity | |
| compliance | compliance | |
| evaluation | boolean | A flag indicating whether the license is in evaluation mode. |
| expiry_time | string | Date and time when the license expires. |
| host_id | string | A string that associates the license with a node or cluster. |
| installed_license | string | Name of license that enabled the feature. |
| owner | string | Cluster, node or license manager that owns the license. |
| serial_number | string | Serial number of the license. |
| shutdown_imminent | boolean | A flag indicating whether the Cloud ONTAP system is going to shutdown as the Cloud platform license has already expired. <ul style="list-style-type: none"> • readOnly: 1 • Introduced in: 9.11 • x-nullable: true |
| start_time | string | Date and time when the license starts. |

records

| Name | Type | Description |
|-------------|-----------------------------|---------------------|
| _links | _links | |
| description | string | License description |
| entitlement | entitlement | |
| keys | array[string] | |

| Name | Type | Description |
|----------|-----------------------------------|---|
| licenses | array[licenses] | Installed licenses of the package. |
| name | string | Name of the license. |
| scope | string | Scope of the license. |
| state | string | Summary state of package based on all installed licenses. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Install one or more feature licenses

POST `/cluster/licensing/licenses`

Introduced In: 9.6

Installs one or more feature licenses.

Required properties

- `keys` - Array containing a list of NLF or 28-character license keys.

Related ONTAP commands

- `system license add`

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|---|
| return_records | boolean | query | False | The default is false. If set to true, the records are returned. <ul style="list-style-type: none">• Default value: |

Request Body

| Name | Type | Description |
|-------------|-----------------------------------|---|
| _links | _links | |
| description | string | License description |
| entitlement | entitlement | |
| keys | array[string] | |
| licenses | array[licenses] | Installed licenses of the package. |
| name | string | Name of the license. |
| scope | string | Scope of the license. |
| state | string | Summary state of package based on all installed licenses. |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "NFS License",
  "entitlement": {
    "action": "acquire_license",
    "risk": "high"
  },
  "keys": {
  },
  "licenses": {
    "capacity": {
      "maximum_size": 0,
      "used_size": 0
    },
    "compliance": {
      "state": "compliant"
    },
    "expiry_time": "2019-03-02 14:00:00 -0500",
    "host_id": "456-44-1234",
    "installed_license": "Core Bundle",
    "owner": "cluster1",
    "serial_number": "123456789",
    "start_time": "2019-02-02 14:00:00 -0500"
  },
  "name": "NFS",
  "scope": "not_available",
  "state": "compliant"
}
```

Response

Status: 201, Created

| Name | Type | Description |
|------------------------|------------------------|-------------|
| _links | _links | |

| Name | Type | Description |
|-------------|----------------------------------|-------------------|
| num_records | integer | Number of records |
| records | array[records] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "description": "NFS License",
    "entitlement": {
      "action": "acquire_license",
      "risk": "high"
    },
    "keys": {
    },
    "licenses": {
      "capacity": {
        "maximum_size": 0,
        "used_size": 0
      },
      "compliance": {
        "state": "compliant"
      },
      "expiry_time": "2019-03-02 14:00:00 -0500",
      "host_id": "456-44-1234",
      "installed_license": "Core Bundle",
      "owner": "cluster1",
      "serial_number": "123456789",
      "start_time": "2019-02-02 14:00:00 -0500"
    },
    "name": "NFS",
    "scope": "not_available",
    "state": "compliant"
  }
}
```


Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 1115117 | Generic licensing error |
| 1115122 | No cluster serial number found |
| 1115124 | No node serial number found |
| 1115130 | No license code was provided |
| 1115131 | Installation of the license failed |
| 1115132 | License already exists on system |
| 1115134 | Serial number does not belong to node |
| 1115141 | License data is invalid |
| 1115142 | License signature is invalid |
| 1115143 | Internal error applying the requested license |
| 1115152 | License does not apply to the platform |
| 1115154 | Unable to retrieve cluster ID |
| 1115155 | Invalid cluster ID found |
| 1115159 | License is not in an acceptable format |
| 1115160 | License has already expired |
| 1115164 | Minimum ONTAP version requirements not met |
| 1115165 | Minimum ONTAP version requirements are not met for license type enabled |
| 1115166 | Minimum ONTAP version requirements are not met for license protocol SEC-COMP-BNDL-ENBLD |
| 1115179 | FlexCache is not supported on this system |
| 1115180 | FlexCache is not supported on cloud systems |
| 1115407 | Capacity pool licenses cannot be installed directly |
| 1115427 | License is incompatible with capacity pools licensing mode |

| Error Code | Description |
|------------|---|
| 1115562 | One or more errors occurred when installing a NLFv2 license |
| 1115563 | Package details and serial number of license contained within the NLFv2 failure |
| 1115564 | Package cannot be deleted individually as it is part of a bundle |
| 1115565 | NLFv2 install failed as the license serial number is already in use |
| 1115616 | Package details and serial number of license included in the install conflict |
| 1115617 | NLFv2 license install failed with summary of conflicting licenses |
| 1115618 | NLFv2 license install failed as a license with newer timestamp already exists |
| 5375355 | The cluster has more nodes than are supported by All SAN Array. |
| 5375366 | The cluster has one or more nodes that do not support All SAN Array. |
| 66846818 | Failed to interpret FlexCache license information |
| 66846821 | FlexCache is not supported on cloud systems |
| 66846822 | Invalid FlexCache capacity information provided |
| 655294464 | Failed to extract license contents |
| 655294465 | License key is invalid |
| 655294466 | Serial number is invalid |
| 655294467 | Version number is invalid |
| 655294468 | Expired license |
| 655294469 | License does not apply to the platform |
| 655294470 | License does not apply to the product |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|--------|---|-------------|
| errors | array[returned_error] | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

entitlement

| Name | Type | Description |
|--------|--------|---|
| action | string | Entitlement action to be taken to mitigate the risk |
| risk | string | Entitlement risk of the package |

capacity

| Name | Type | Description |
|--------------|---------|---|
| maximum_size | integer | Licensed capacity size (in bytes) that can be used. |
| used_size | integer | Capacity that is currently used (in bytes). |

compliance

| Name | Type | Description |
|-------|--------|----------------------------------|
| state | string | Compliance state of the license. |

licenses

| Name | Type | Description |
|------------|----------------------------|--|
| active | boolean | A flag indicating whether the license is currently being enforced. |
| capacity | capacity | |
| compliance | compliance | |

| Name | Type | Description |
|-------------------|---------|---|
| evaluation | boolean | A flag indicating whether the license is in evaluation mode. |
| expiry_time | string | Date and time when the license expires. |
| host_id | string | A string that associates the license with a node or cluster. |
| installed_license | string | Name of license that enabled the feature. |
| owner | string | Cluster, node or license manager that owns the license. |
| serial_number | string | Serial number of the license. |
| shutdown_imminent | boolean | A flag indicating whether the Cloud ONTAP system is going to shutdown as the Cloud platform license has already expired. <ul style="list-style-type: none"> • readOnly: 1 • Introduced in: 9.11 • x-nullable: true |
| start_time | string | Date and time when the license starts. |

license_package

| Name | Type | Description |
|-------------|-----------------------------------|------------------------------------|
| _links | _links | |
| description | string | License description |
| entitlement | entitlement | |
| keys | array[string] | |
| licenses | array[licenses] | Installed licenses of the package. |
| name | string | Name of the license. |
| scope | string | Scope of the license. |

| Name | Type | Description |
|-------|--------|---|
| state | string | Summary state of package based on all installed licenses. |

`_links`

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

records

| Name | Type | Description |
|---------------------|-----------------------------------|---|
| <code>_links</code> | _links | |
| description | string | License description |
| entitlement | entitlement | |
| keys | array[string] | |
| licenses | array[licenses] | Installed licenses of the package. |
| name | string | Name of the license. |
| scope | string | Scope of the license. |
| state | string | Summary state of package based on all installed licenses. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

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

Delete a license

```
DELETE /cluster/licensing/licenses/{name}
```

Introduced In: 9.6

Deletes a license.

Related ONTAP commands

- `system license delete`

Parameters

| Name | Type | In | Required | Description |
|---------------|--------|-------|----------|---|
| name | string | path | True | Name of the license package to delete. |
| serial_number | string | query | True | Serial number of the license to delete. |

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 525028 | Error during volume limit check, cannot remove license |
| 525029 | Current volume use will exceed limits if license is removed |

| Error Code | Description |
|------------|---|
| 1115137 | Cluster license requires a base license to be installed |
| 1115144 | Cloud licenses cannot be deleted |
| 1115178 | A tier license that is still in use cannot be deleted |
| 1115213 | License is still in use and cannot be removed |
| 1115406 | Capacity pool licenses cannot be deleted |
| 1115564 | Package is part of a NLFv2 license and cannot be removed individually |
| 66846823 | A FlexCache license that is still in use cannot be deleted |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve a license package

GET /cluster/licensing/licenses/{name}

Introduced In: 9.6

Retrieves a specific license package.



By default, the GET method only returns licensed packages. You must provide the following query "state=unlicensed" to retrieve unlicensed packages.

Related ONTAP commands

- `system license show`
- `system license show-status`

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|------------------------------|
| name | string | path | True | Name of the license package. |

| Name | Type | In | Required | Description |
|--------------------------------|---------|-------|----------|---|
| entitlement.risk | string | query | False | Filter by entitlement.risk • Introduced in: 9.11 |
| entitlement.action | string | query | False | Filter by entitlement.action • Introduced in: 9.11 |
| state | string | query | False | Filter by state |
| scope | string | query | False | Filter by scope |
| description | string | query | False | Filter by description • Introduced in: 9.11 |
| licenses.expiry_time | string | query | False | Filter by licenses.expiry_time |
| licenses.compliance.state | string | query | False | Filter by licenses.compliance.state |
| licenses.serial_number | string | query | False | Filter by licenses.serial_number |
| licenses.shutdown_imminent | boolean | query | False | Filter by licenses.shutdown_imminent • Introduced in: 9.11 |
| licenses.capacity.maximum_size | integer | query | False | Filter by licenses.capacity.maximum_size |
| licenses.capacity.used_size | integer | query | False | Filter by licenses.capacity.used_size |

| Name | Type | In | Required | Description |
|----------------------------|---------------|-------|----------|--|
| licenses.installed_license | string | query | False | Filter by licenses.installed_license • Introduced in: 9.9 |
| licenses.host_id | string | query | False | Filter by licenses.host_id • Introduced in: 9.9 |
| licenses.start_time | string | query | False | Filter by licenses.start_time |
| licenses.active | boolean | query | False | Filter by licenses.active |
| licenses.owner | string | query | False | Filter by licenses.owner |
| licenses.evaluation | boolean | query | False | Filter by licenses.evaluation |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|-----------------------------------|------------------------------------|
| _links | _links | |
| description | string | License description |
| entitlement | entitlement | |
| keys | array[string] | |
| licenses | array[licenses] | Installed licenses of the package. |
| name | string | Name of the license. |

| Name | Type | Description |
|-------|--------|---|
| scope | string | Scope of the license. |
| state | string | Summary state of package based on all installed licenses. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "NFS License",
  "entitlement": {
    "action": "acquire_license",
    "risk": "high"
  },
  "keys": {
  },
  "licenses": {
    "capacity": {
      "maximum_size": 0,
      "used_size": 0
    },
    "compliance": {
      "state": "compliant"
    },
    "expiry_time": "2019-03-02 14:00:00 -0500",
    "host_id": "456-44-1234",
    "installed_license": "Core Bundle",
    "owner": "cluster1",
    "serial_number": "123456789",
    "start_time": "2019-02-02 14:00:00 -0500"
  },
  "name": "NFS",
  "scope": "not_available",
  "state": "compliant"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

entitlement

| Name | Type | Description |
|--------|--------|---|
| action | string | Entitlement action to be taken to mitigate the risk |
| risk | string | Entitlement risk of the package |

capacity

| Name | Type | Description |
|--------------|---------|---|
| maximum_size | integer | Licensed capacity size (in bytes) that can be used. |
| used_size | integer | Capacity that is currently used (in bytes). |

compliance

| Name | Type | Description |
|-------|--------|----------------------------------|
| state | string | Compliance state of the license. |

licenses

| Name | Type | Description |
|------------|----------------------------|--|
| active | boolean | A flag indicating whether the license is currently being enforced. |
| capacity | capacity | |
| compliance | compliance | |

| Name | Type | Description |
|-------------------|---------|---|
| evaluation | boolean | A flag indicating whether the license is in evaluation mode. |
| expiry_time | string | Date and time when the license expires. |
| host_id | string | A string that associates the license with a node or cluster. |
| installed_license | string | Name of license that enabled the feature. |
| owner | string | Cluster, node or license manager that owns the license. |
| serial_number | string | Serial number of the license. |
| shutdown_imminent | boolean | A flag indicating whether the Cloud ONTAP system is going to shutdown as the Cloud platform license has already expired. <ul style="list-style-type: none"> • readOnly: 1 • Introduced in: 9.11 • x-nullable: true |
| start_time | string | Date and time when the license starts. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

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

Manage cluster mediators

Cluster mediators endpoint overview

Overview

You can use this API to add or remove a mediator to MetroCluster over IP configuration, or get the status and details of the existing mediator in MetroCluster over IP configuration. The GET operation returns the status of the mediator along with the mediator details. The DELETE operation removes the mediator. The POST operation adds the mediator.

Adding a mediator

A mediator can be added to MetroCluster over IP configuration by issuing a POST on `/cluster/mediators`. Parameters are provided in the body of the POST request. There are no optional parameters for adding a mediator.

Required configuration fields

These fields are always required for any POST `/cluster/mediators` request.

- `ip_address` - Specifies the IP address of the mediator.
- `user` - Specifies a user name credential.
- `password` - Specifies a password credential.

Polling the setup job

After a successful POST `/cluster/mediators` is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The setup job continues asynchronously and can be monitored by using the job UUID and the `/cluster/jobs` API. The "message" field in the response of the GET `/cluster/jobs/{uuid}` request shows the current step in the job, and the "state" field shows the overall state of the job.

Deleting a Mediator

A mediator can be deleted from MetroCluster over IP configuration by issuing a DELETE to `/cluster/mediators/{uuid}`. Parameters are provided in the body of the DELETE request. There are no optional parameters for adding a mediator.

Required configuration fields

These fields are always required for any DELETE `/cluster/mediators/{uuid}` request.

- `user` - Specifies a user name credential.
- `password` - Specifies a password credential.

Polling the delete job

After a successful DELETE `/cluster/mediators/{uuid}` is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The delete job continues asynchronously and can be monitored by using the job UUID and the `/cluster/jobs` API. The "message" field in the response of the GET `/cluster/jobs/{uuid}` request shows the current step in the job, and the "state" field shows the overall state of the job.

Examples

Setting up a mediator for a 4-Node MetroCluster over IP Configuration

This example shows the POST body when setting up a mediator for a 4-Node MetroCluster over IP configuration. The only prerequisite is that MetroCluster over IP is configured.

```
# API
/api/cluster/mediators
```

POST body included from file

```
mediator_post_body.txt:
{
  "ip_address": "1.1.1.1",
  "user": "username",
  "password": "password"
}
curl -X POST https://<mgmt-ip>/api/cluster/mediators -d
"@mediator_post_body.txt"
```

Inline POST body

```
curl -X POST https://<mgmt-ip>/api/cluster/mediators -H "Content-Type:
application/hal+json" -d '{"ip_address": "1.1.1.1", "user": "username",
"password": "password"}'
```

POST Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 07:40:59 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
  "job": {
    "uuid": "f567b48b-fca6-11ea-acaf-005056bb47c1",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f567b48b-fca6-11ea-acaf-005056bb47c1"
      }
    }
  }
}
```

Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the mediator setup job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/f567b48b-fca6-11ea-acaf-005056bb47c1
```

Job status response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 07:41:29 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
  "uuid": "f567b48b-fca6-11ea-acaf-005056bb47c1",
  "description": "POST /api/cluster/mediators/",
  "state": "running",
  "start_time": "2020-09-22T03:41:00-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f567b48b-fca6-11ea-acaf-005056bb47c1"
    }
  }
}
```

Final status of a successful Mediator add

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 07:43:38 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 358
Content-Type: application/hal+json
{
  "uuid": "f567b48b-fca6-11ea-acaf-005056bb47c1",
  "description": "POST /api/cluster/mediators/",
  "state": "success",
  "message": "success",
  "code": 0,
  "start_time": "2020-09-22T03:41:00-04:00",
  "end_time": "2020-09-22T03:42:10-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f567b48b-fca6-11ea-acaf-005056bb47c1"
    }
  }
}
```

Retrieving the existing mediator configurations

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/mediators
```

Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 08:53:18 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 320
Content-Type: application/hal+json
{
  "records": [
    {
      "uuid": "f89e8906-fca6-11ea-acaf-005056bb47c1",
      "_links": {
        "self": {
          "href": "/api/cluster/mediators/f89e8906-fca6-11ea-acaf-005056bb47c1"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/cluster/mediators"
    }
  }
}
```

Retrieving a specific mediator using the uuid

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/mediators/f89e8906-fca6-11ea-acaf-005056bb47c1
```

Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 08:59:40 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 347
Content-Type: application/hal+json
{
  "uuid": "f89e8906-fca6-11ea-acaf-005056bb47c1",
  "ip_address": "10.234.173.40",
  "port": 31784,
  "reachable": true,
  "peer_cluster": {
    "name": "mcc_siteB",
    "uuid": "38779fd1-fc6b-11ea-9421-005056bb21d8"
  },
  "peer_mediator_connectivity": "connected",
  "_links": {
    "self": {
      "href": "/api/cluster/mediators/f89e8906-fca6-11ea-acaf-005056bb47c1"
    }
  }
}
```

Deleting a configured Mediator using the uuid

Request

```
curl -X DELETE https://<mgmt-ip>/api/cluster/mediators/{uuid} -H "Content-Type: application+hal/json" -d '{"user": "username", "password": "password"}'
```

Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 09:13:52 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
  "job": {
    "uuid": "eeb71ccd-fcb3-11ea-acaf-005056bb47c1",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/eeb71ccd-fcb3-11ea-acaf-005056bb47c1"
      }
    }
  }
}
```

Monitoring the job progress

Use the link provided in the response to the DELETE request to fetch information for the delete job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/eeb71ccd-fcb3-11ea-acaf-005056bb47c1
```

Job status response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 09:14:20 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 316
Content-Type: application/hal+json
{
  "uuid": "eeb71ccd-fcb3-11ea-acaf-005056bb47c1",
  "description": "DELETE /api/cluster/mediators/f89e8906-fca6-11ea-acaf-005056bb47c1",
  "state": "running",
  "start_time": "2020-09-22T05:13:52-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/eeb71ccd-fcb3-11ea-acaf-005056bb47c1"
    }
  }
}
```

Final status of the Mediator DELETE job

```

HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 09:21:46 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 396
Content-Type: application/hal+json
{
  "uuid": "eeb71ccd-fcb3-11ea-acaf-005056bb47c1",
  "description": "DELETE /api/cluster/mediators/f89e8906-fca6-11ea-acaf-005056bb47c1",
  "state": "success",
  "message": "success",
  "code": 0,
  "start_time": "2020-09-22T05:13:52-04:00",
  "end_time": "2020-09-22T05:14:24-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/eeb71ccd-fcb3-11ea-acaf-005056bb47c1"
    }
  }
}

```

Retrieve ONTAP Mediators configured in the cluster

GET /cluster/mediators

Introduced In: 9.8

"Retrieves a Mediator configured in the cluster."

Related ONTAP commands

- storage iscsi-initiator show

Parameters

| Name | Type | In | Required | Description |
|-------------------|--------|-------|----------|-----------------------------|
| peer_cluster.uuid | string | query | False | Filter by peer_cluster.uuid |
| peer_cluster.name | string | query | False | Filter by peer_cluster.name |

| Name | Type | In | Required | Description |
|----------------------------|---------------|-------|----------|---|
| peer_mediator_connectivity | string | query | False | Filter by peer_mediator_connectivity <ul style="list-style-type: none"> Introduced in: 9.10 |
| reachable | boolean | query | False | Filter by reachable |
| ip_address | string | query | False | Filter by ip_address |
| port | integer | query | False | Filter by port |
| uuid | string | query | False | Filter by uuid |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> Default value: 1 Max value: 120 Min value: 0 |

| Name | Type | In | Required | Description |
|----------|---------------|-------|----------|---|
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "dr_group": {
      "id": 0
    },
    "ip_address": "10.10.10.7",
    "password": "mypassword",
    "peer_cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster2",
      "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
    },
    "peer_mediator_connectivity": "connected",
    "port": 31784,
    "reachable": 1,
    "user": "myusername",
    "uuid": "string"
  }
}
```

Error

Status: Default

ONTAP Error Response codes

| Error code | Description |
|------------|--|
| 2430739 | Unable to access Mediator. Reason: Invalid Mediator IP or Mediator does not exist. |

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

dr_group

DR group reference.

| Name | Type | Description |
|------|---------|-------------|
| id | integer | DR Group ID |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

peer_cluster

The peer cluster that the mediator service is used for.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

records

Mediator information

| Name | Type | Description |
|----------------------------|------------------------------|--|
| ca_certificate | string | CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. <ul style="list-style-type: none"> • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true |
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Create and connect an ONTAP Mediator

POST /cluster/mediators

Introduced In: 9.8

Creates and connect a mediator.

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value: |

Request Body

| Name | Type | Description |
|----------------------------|------------------------------|--|
| ca_certificate | string | CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. <ul style="list-style-type: none"> • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true |
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

Example request

```
{
  "dr_group": {
    "id": 0
  },
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebef2"
  },
  "peer_mediator_connectivity": "connected",
  "port": 31784,
  "reachable": 1,
  "user": "myusername",
  "uuid": "string"
}
```

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Response

Status: 201, Created

Error

Status: Default

ONTAP Error Response codes

| Error code | Description |
|------------|--|
| 13369351 | Update to mediator failed. Reason: does not authorized for that command. Check that the peer cluster and mediator are reachable. |
| 2430758 | Mediator cannot be added. Reason: Some of the nodes in the cluster have incorrect MetroCluster IP configuration. |
| 2430734 | Unable to add Mediator. Reason : Authentication failed. |
| 2430774 | Failed to add Mediator. Reason : Node is not reachable or does not exist. |

| Error code | Description |
|------------|--|
| 2432871 | Failed to add Mediator. Reason : Some of the parameters in the request is invalid. |

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

dr_group

DR group reference.

| Name | Type | Description |
|------|---------|-------------|
| id | integer | DR Group ID |

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

peer_cluster

The peer cluster that the mediator service is used for.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mediator

Mediator information

| Name | Type | Description |
|----------------|--------------------------|--|
| ca_certificate | string | CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. <ul style="list-style-type: none">• x-ntap-createOnly: true• Introduced in: 9.8• x-nullable: true |
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |

| Name | Type | Description |
|----------------------------|------------------------------|--|
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Delete an ONTAP Mediator

DELETE /cluster/mediators/{uuid}

Introduced In: 9.8

Deletes the mediator.

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|--|
| uuid | string | path | True | <ul style="list-style-type: none"> format: uuid |

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| Name | Type | Description |
|----------------|--------------------------|---|
| ca_certificate | string | <p>CA certificate for ONTAP Mediator. This is optional if the certificate is already installed.</p> <ul style="list-style-type: none"> • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true |
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |

| Name | Type | Description |
|----------------------------|------------------------------|--|
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

Example request

```
{
  "dr_group": {
    "id": 0
  },
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebef2"
  },
  "peer_mediator_connectivity": "connected",
  "port": 31784,
  "reachable": 1,
  "user": "myusername",
  "uuid": "string"
}
```

Response

Status: 200, Ok

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response codes

| Error code | Description |
|------------|--|
| 13369377 | Mediator field "mediator.id" does not exist. |

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

dr_group

DR group reference.

| Name | Type | Description |
|------|---------|-------------|
| id | integer | DR Group ID |

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

peer_cluster

The peer cluster that the mediator service is used for.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mediator

Mediator information

| Name | Type | Description |
|----------------|--------------------------|--|
| ca_certificate | string | CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. <ul style="list-style-type: none">• x-ntap-createOnly: true• Introduced in: 9.8• x-nullable: true |
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |

| Name | Type | Description |
|----------------------------|------------------------------|--|
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve the ONTAP Mediator state and configuration

GET /cluster/mediators/{uuid}

Introduced In: 9.8

"Retrieves the Mediator state and configuration."

Related ONTAP commands

- `storage iscsi-initiator show`

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|--|
| uuid | string | path | True | <ul style="list-style-type: none"> • format: uuid |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|----------------|--------|---|
| ca_certificate | string | <p>CA certificate for ONTAP Mediator. This is optional if the certificate is already installed.</p> <ul style="list-style-type: none"> • x-ntap-createOnly: true • Introduced in: 9.8 • x-nullable: true |

| Name | Type | Description |
|----------------------------|------------------------------|--|
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

Example response

```
{
  "dr_group": {
    "id": 0
  },
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebef2"
  },
  "peer_mediator_connectivity": "connected",
  "port": 31784,
  "reachable": 1,
  "user": "myusername",
  "uuid": "string"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

dr_group

DR group reference.

| Name | Type | Description |
|------|---------|-------------|
| id | integer | DR Group ID |

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

peer_cluster

The peer cluster that the mediator service is used for.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

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

Retrieve historical performance metrics for the cluster

GET /cluster/metrics

Introduced In: 9.6

Retrieves historical performance metrics for the cluster.

Parameters

| Name | Type | In | Required | Description |
|------------------|---------|-------|----------|----------------------------|
| throughput.total | integer | query | False | Filter by throughput.total |
| throughput.other | integer | query | False | Filter by throughput.other |
| throughput.write | integer | query | False | Filter by throughput.write |
| throughput.read | integer | query | False | Filter by throughput.read |
| status | string | query | False | Filter by status |
| latency.total | integer | query | False | Filter by latency.total |
| latency.other | integer | query | False | Filter by latency.other |
| latency.write | integer | query | False | Filter by latency.write |
| latency.read | integer | query | False | Filter by latency.read |
| duration | string | query | False | Filter by duration |
| timestamp | string | query | False | Filter by timestamp |
| iops.total | integer | query | False | Filter by iops.total |

| Name | Type | In | Required | Description |
|------------|---------|-------|----------|--|
| iops.other | integer | query | False | Filter by iops.other |
| iops.write | integer | query | False | Filter by iops.write |
| iops.read | integer | query | False | Filter by iops.read |
| interval | string | query | False | <p>The time range for the data. Examples can be 1h, 1d, 1m, 1w, or 1y. The period for each time range is specified as follows:</p> <ul style="list-style-type: none"> • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"] |

| Name | Type | In | Required | Description |
|--|----------------|---------|----------|---|
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |
| desc] direction. Default direction is 'asc' for ascending. | return_records | boolean | query | False |

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25 06:20:13 -0500"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

iops

The rate of I/O operations observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

latency

The round trip latency in microseconds observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

throughput

The rate of throughput bytes per second observed at the storage object.

| Name | Type | Description |
|-------|---------|--|
| other | integer | Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on. |
| read | integer | Performance metric for read I/O operations. |
| total | integer | Performance metric aggregated over all types of I/O operations. |
| write | integer | Performance metric for write I/O operations. |

records

Performance numbers, such as IOPS latency and throughput.

| Name | Type | Description |
|------------------------|------------------------|-------------|
| _links | _links | |

| Name | Type | Description |
|------------|------------|---|
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| iops | iops | The rate of I/O operations observed at the storage object. |
| latency | latency | The round trip latency in microseconds observed at the storage object. |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "Inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "Inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| throughput | throughput | The rate of throughput bytes per second observed at the storage object. |
| timestamp | string | The timestamp of the performance data. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

View and manage MetroCluster configurations

Cluster MetroCluster endpoint overview

Overview

You can use this API to create, perform operations, and retrieve relevant information pertaining to MetroCluster. The GET operation fetches MetroCluster status and configuration parameters for the local and partner cluster. The PATCH operation executes a switchover, heal or switchback operation. The POST request can be used to setup a MetroCluster.

Creating a MetroCluster

A new MetroCluster can be set up by issuing a POST to `/cluster/metrocluster`. Parameters are provided in the body of the POST request.

Fields used for setting up a MetroCluster configuration

The fields used for MetroCluster APIs are either required or optional and are described as follows:

Required configuration fields

These fields are always required for any POST `/cluster/metrocluster` request.

- `partner_cluster.name` - Specifies the partner cluster name to which cluster peering has been established.
- `dr_pairs` - Specifies local and DR partner node pairs. Each pair uniquely identifies a DR group.

Optional configuration fields

This field is used to set up additional components in a MetroCluster configuration.

- `mediator.*` - Specifies mediator parameters. If Mediator Assisted Unplanned Switchover (MAUSO) functionality is required, then a mediator should be configured.
- `mccip_ports` - Specifies relevant layer 3 network configuration information for each port. These include port name, node name, IP address, gateway, and netmask. If `mccip_ports` is not provided, then the API automatically generates IP addresses for the ports and creates a layer 2 network configuration.

Polling the setup job

After a successful POST `/cluster/metrocluster` is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The setup job continues asynchronously and can be monitored by using the job UUID and the `/cluster/jobs` API. The "message" field in the response of the GET `/cluster/jobs/{uuid}` request shows the current step in the job, and the "state" field shows the overall state of the job.

Examples

Setting up a 4-node MetroCluster

This example shows the POST body when setting up a 4-node MetroCluster along with a mediator. It is required that cluster peering be established between two clusters, in this example, site "mcc_siteA" and "mcc_siteB" before issuing the POST request. Nodes "node-a" and "node-b" are HA partners and part of the local cluster "mcc_siteA", whereas nodes "node-c" and "node-d" are HA partners in the partner cluster "mcc_siteB". Specifying a single DR pairing of "node-a" and "node-c" is sufficient to identify a DR group -- "node-a" and "node-c" will be designated primary DR partners ("node-b" and "node-d" too). "node-d" will then be designated auxiliary partner of "node-a". Once the MetroCluster configuration has been completed, and since mediator parameters have been provided, the mediator will be setup and MAUSO enabled.

```
# API
/api/cluster/metrocluster
```

POST body included from file

```

mcc_post_body.txt:
{
  "partner_cluster" : {
    "name": "mcc_siteB"
  },
  "dr_pairs" : [
    {
      "node" : {
        "name" : "node-a"
      },
      "partner" : {
        "name" : "node-c"
      }
    }
  ],
  "mediator" : {
    "ip_address" : "1.2.3.4",
    "user" : "mcc_mediator",
    "password" : "openMediator"
  }
}
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster -d
"@mcc_post_body.txt"

```

Inline POST body

```

curl -X POST https://<mgmt-ip>/api/cluster/metrocluster -d
'{"partner_cluster" : {"name": "mcc_siteB" }, "dr_pairs" : [{"node" :
{"name" : "node-a" }, "partner" : {"name" : "node-c" } ]}, "mediator" :
{"ip_address" : "1.2.3.4", "user" : "mcc_mediator" , "password" :
"openMediator" } }'

```

POST Response

```
HTTP/1.1 202 Accepted
Date: Thu, 09 Jan 2020 20:38:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
  "job": {
    "uuid": "f23abddb-331f-11ea-acd3-005056a708b2",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f23abddb-331f-11ea-acd3-005056a708b2"
      }
    }
  }
}
```

Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the setup job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/f23abddb-331f-11ea-acd3-005056a708b2
```

Job status response

The following is an example of the job status response returned by the running MetroCluster setup job:

```
HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:40:20 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 373
Content-Type: application/hal+json
{
  "uuid": "f23abdb-331f-11ea-acd3-005056a708b2",
  "description": "POST /api/cluster/metrocluster",
  "state": "running",
  "message": "Checking remote storage pool",
  "code": 2432844,
  "start_time": "2020-01-09T15:38:08-05:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f23abdb-331f-11ea-acd3-005056a708b2"
    }
  }
}
```

Completion message

This is the final update message from the setup job indicating completion.

```
{
  "uuid": "f23abdb-331f-11ea-acd3-005056a708b2",
  "description": "POST /api/cluster/metrocluster",
  "state": "running",
  "message": "MetroCluster setup is complete",
  "code": 2432849,
  "start_time": "2020-01-09T15:38:08-05:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f23abdb-331f-11ea-acd3-005056a708b2"
    }
  }
}
```

Final status of a successful MetroCluster setup workflow

When the setup job completes, the 'end_time' field is populated, and the 'state' and 'message' fields report the final status.


```
HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:43:54 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 360
Content-Type: application/hal+json
{
  "uuid": "f23abddb-331f-11ea-acd3-005056a708b2",
  "description": "POST /api/cluster/metrocluster",
  "state": "success",
  "message": "success",
  "code": 0,
  "start_time": "2020-01-09T15:38:08-05:00",
  "end_time": "2020-01-09T15:43:50-05:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f23abddb-331f-11ea-acd3-005056a708b2"
    }
  }
}
```

Retrieving the MetroCluster configuration after completion of the POST request

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster
```

Response

```
HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:49:40 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 849
Content-Type: application/hal+json
{
  "local": {
    "configuration_state": "configured",
    "periodic_check_enabled": true,
    "mode": "normal",
    "partner_cluster_reachable": true,
    "cluster": {
      "name": "mcc_siteA",
      "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
      "_links": {
        "self": {
          "href": "/api/cluster"
        }
      }
    }
  },
  "remote": {
    "configuration_state": "configured",
    "periodic_check_enabled": true,
    "mode": "normal",
    "cluster": {
      "name": "mcc_siteB",
      "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/4207c6a5-30e2-11ea-be25-005056a7dc84/cluster"
        }
      }
    }
  },
  "configuration_type": "ip_fabric",
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster"
    }
  }
}
```

Retrieving information about the nodes in a MetroCluster configuration

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/nodes
```

Response

```
HTTP/1.1 200 OK
Date: Fri, 10 Jan 2020 02:26:20 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/hal+json
Transfer-Encoding: chunked
{
  "records": [
    {
      "dr_group_id": 1,
      "cluster": {
        "name": "mcc_siteA",
        "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
        "_links": {
          "self": {
            "href": "/api/cluster"
          }
        }
      },
      "node": {
        "name": "node-a",
        "uuid": "1e6b0137-30dd-11ea-82ba-005056a7c78a",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/1e6b0137-30dd-11ea-82ba-005056a7c78a"
          }
        }
      },
      "_links": {
        "self": {
          "href": "/api/cluster/metrocluster/nodes/1e6b0137-30dd-11ea-82ba-005056a7c78a"
        }
      }
    },
  ],
}
```

```

{
  "dr_group_id": 1,
  "cluster": {
    "name": "mcc_siteA",
    "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
    "_links": {
      "self": {
        "href": "/api/cluster"
      }
    }
  },
  "node": {
    "name": "node-b",
    "uuid": "1e57ba22-30dd-11ea-8b19-005056a708b2",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/1e57ba22-30dd-11ea-8b19-005056a708b2"
      }
    }
  },
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/nodes/1e57ba22-30dd-11ea-8b19-005056a708b2"
    }
  }
},
{
  "dr_group_id": 1,
  "cluster": {
    "name": "mcc_siteB",
    "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/4207c6a5-30e2-11ea-be25-005056a7dc84/cluster"
      }
    }
  },
  "node": {
    "name": "node-c",
    "uuid": "1e563efc-30dd-11ea-a9d3-005056a71573",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/1e563efc-30dd-11ea-a9d3-

```

```

005056a71573"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/nodes/1e563efc-30dd-11ea-a9d3-
005056a71573"
  }
}
},
{
  "dr_group_id": 1,
  "cluster": {
    "name": "mcc_siteB",
    "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/4207c6a5-30e2-11ea-be25-
005056a7dc84/cluster"
      }
    }
  },
  "node": {
    "name": "node-d",
    "uuid": "1e400aa4-30dd-11ea-aded-005056a7dc84",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/1e400aa4-30dd-11ea-aded-
005056a7dc84"
      }
    }
  },
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/nodes/1e400aa4-30dd-11ea-aded-
005056a7dc84"
    }
  }
}
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/nodes"
  }
}

```

```
}  
}
```

Retrieving MetroCluster status and configuration information

```
GET https://<mgmt-ip>/api/cluster/metrocluster  
{  
  "local": {  
    "configuration_state": "configured",  
    "periodic_check_enabled": true,  
    "mode": "normal",  
    "cluster": {  
      "name": "cluster1",  
      "uuid": "bbc00ca3-8d81-11e9-b5a9-005056826931",  
      "_links": {  
        "self": {  
          "href": "/api/cluster"  
        }  
      }  
    }  
  },  
  "remote": {  
    "configuration_state": "configured",  
    "periodic_check_enabled": true,  
    "mode": "normal",  
    "cluster": {  
      "name": "cluster3",  
      "uuid": "ce2cf803-8d81-11e9-87db-00505682cecf",  
      "_links": {  
        "self": {  
          "href": "/api/cluster/peers/ce2cf803-8d81-11e9-87db-  
00505682cecf/cluster"  
        }  
      }  
    }  
  },  
  "_links": {  
    "self": {  
      "href": "/api/cluster/metrocluster"  
    }  
  }  
}
```

Initiating a switchover, heal or switchback command using PATCH

PATCH is used to initiate a variety of operations by specifying one of the following values in the "action" parameter:

- `switchover` - Initiates an Unplanned Switchover (USO).
- `negotiated_switchover` - Indicates that an Negotiated switchover (NSO) is to be performed.
- `negotiated_switchover_simulate` - Provides validation in preparation for NSO but does not perform the operation.
- `switchback` - Indicates that a switchback is to be performed.
- `switchback_simulate` - Provides validation for switchback but does not commit the operation.
- `heal_aggregates` - Indicates that the aggregates phase of the heal operation is to be performed.
- `heal_root_aggregates` - Indicates that the root aggregates phase of the heal operation is to be performed.

PATCH Switchover example

```
PATCH https://<mgmt-ip>/api/cluster/metrocluster?action=switchover
{
  "job": {
    "uuid": "70e54274-57ee-11e9-aa33-005056820b99",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/70e54274-57ee-11e9-aa33-
005056820b99"
      }
    }
  }
}
```

This returns a job UUID. A subsequent GET for this job should return the following:

```
GET https://<mgmt-ip>/api/cluster/jobs/70e54274-57ee-11e9-aa33-005056820b99
{
  "uuid": "70e54274-57ee-11e9-aa33-005056820b99",
  "description": "MetroCluster Switchover Job",
  "state": "success",
  "message": "Complete: Switchover is successful.",
  "code": 0,
  "start_time": "2019-04-05T15:02:02-07:00",
  "end_time": "2019-04-05T15:02:30-07:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/70e54274-57ee-11e9-aa33-005056820b99"
    }
  }
}
```

PATCH Switchback example:

```
PATCH https://<mgmt-ip>/api/cluster/metrocluster?action=switchback
{
  "job": {
    "uuid": "a62714cc-57ec-11e9-aa33-005056820b99",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/a62714cc-57ec-11e9-aa33-005056820b99"
      }
    }
  }
}
```

This returns a job UUID with a link to the job. A subsequent GET for this job UUID can be used to retrieve the completion status of the operation:


```

GET https://<mgmt-ip>/api/cluster/jobs/a62714cc-57ec-11e9-aa33-
005056820b99
{
  "uuid": "a62714cc-57ec-11e9-aa33-005056820b99",
  "description": "MetroCluster Switchback Job",
  "state": "success",
  "message": "Complete: Switchback is successful.",
  "code": 0,
  "start_time": "2019-04-05T14:49:12-07:00",
  "end_time": "2019-04-05T14:50:12-07:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/a62714cc-57ec-11e9-aa33-005056820b99"
    }
  }
}

```

Retrieve MetroCluster status and configuration details

GET /cluster/metrocluster

Introduced In: 9.8

Retrieves MetroCluster status and configuration details.

Related ONTAP commands *metrocluster show *metrocluster node show

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|--------------------|---------------------------|---|
| _links | self_link | |
| configuration_type | string | Displays the MetroCluster configuration type. |

| Name | Type | Description |
|-----------------|--------------------------------------|---|
| dr_pairs | array[dr_pairs] | DR Pairs to create as part of a MetroCluster configure. |
| local | local | |
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| mediator | mediator | Mediator information |
| partner_cluster | partner_cluster | Partner cluster information. |
| remote | remote | |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "configuration_type": "invalid",
  "dr_pairs": {
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "partner": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "local": {
    "automatic_uso_failure_domain": "dr_group",
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "configuration_error",
    "mode": "normal"
  },
  "mccip_ports": {
    "l3_config": {
      "ipv4_interface": {
```

```

        "address": "10.10.10.7",
        "gateway": "10.1.1.1",
        "netmask": "24"
    }
},
"name": "elb",
"node": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"vlan_id": 200
},
"mediator": {
    "dr_group": {
        "id": 0
    },
    "ip_address": "10.10.10.7",
    "password": "mypassword",
    "peer_cluster": {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "name": "cluster2",
        "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
    },
    "peer_mediator_connectivity": "connected",
    "port": 31784,
    "reachable": 1,
    "user": "myusername",
    "uuid": "string"
},
"partner_cluster": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}

```

```

},
"remote": {
  "automatic_uso_failure_domain": "dr_group",
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "configuration_error",
  "mode": "normal"
}
}

```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

Local node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

partner

Partner node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_pairs

| Name | Type | Description |
|---------|-------------------------|-------------------------------|
| node | node | Local node of the DR Group. |
| partner | partner | Partner node of the DR Group. |

cluster

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

local

| Name | Type | Description |
|------------------------------|-------------------------|--|
| automatic_uso_failure_domain | string | This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only. |
| cluster | cluster | |
| configuration_state | string | Indicates the state of the local cluster configuration. |
| mode | string | Specifies the mode of operation of the local cluster. |
| partner_cluster_reachable | boolean | Specifies whether the partner cluster is reachable from the local cluster. |
| periodic_check_enabled | boolean | Indicates whether or not a periodic check is enabled on the local cluster. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

l3_config

| Name | Type | Description |
|----------------|--------------------------------|---|
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |

node

Node information

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mccip_ports

Port configuration specification. l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

| Name | Type | Description |
|-----------|---------------------------|------------------|
| l3_config | l3_config | |
| name | string | Port name |
| node | node | Node information |
| uuid | string | Port UUID |
| vlan_id | integer | VLAN ID |

dr_group

DR group reference.

| Name | Type | Description |
|------|---------|-------------|
| id | integer | DR Group ID |

peer_cluster

The peer cluster that the mediator service is used for.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mediator

Mediator information

| Name | Type | Description |
|----------------------------|------------------------------|--|
| ca_certificate | string | CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. <ul style="list-style-type: none">• x-ntap-createOnly: true• Introduced in: 9.8• x-nullable: true |
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |

| Name | Type | Description |
|-----------|---------|--|
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

partner_cluster

Partner cluster information.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

remote

| Name | Type | Description |
|------------------------------|-------------------------|--|
| automatic_uso_failure_domain | string | This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only. |
| cluster | cluster | |
| configuration_state | string | Indicates the state of the remote cluster configuration. |

| Name | Type | Description |
|------------------------|---------|---|
| mode | string | Specifies the mode of operation of the remote cluster. |
| periodic_check_enabled | boolean | Indicates whether or not a periodic check is enabled on the remote cluster. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Initiate a switchover, heal, or switchback operation

PATCH /cluster/metrocluster

Introduced In: 9.8

Initiates a switchover, heal or switchback operation.

Related ONTAP commands *metrocluster switchover *metrocluster switchback *metrocluster heal

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| action | string | query | False | <p>Action to perform on the MetroCluster.</p> <ul style="list-style-type: none"> • enum: ["switchover", "negotiated_switchover", "negotiated_switchover_simulate", "switchback", "switchback_simulate", "heal_aggregates", "heal_root_aggregates"] |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| Name | Type | Description |
|--------------------|--------------------------------------|---|
| _links | self_link | |
| configuration_type | string | Displays the MetroCluster configuration type. |
| dr_pairs | array[dr_pairs] | DR Pairs to create as part of a MetroCluster configure. |
| local | local | |
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| mediator | mediator | Mediator information |
| partner_cluster | partner_cluster | Partner cluster information. |
| remote | remote | |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "configuration_type": "invalid",
  "dr_pairs": {
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "partner": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "local": {
    "automatic_uso_failure_domain": "dr_group",
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "configuration_error",
    "mode": "normal"
  },
  "mccip_ports": {
    "l3_config": {
      "ipv4_interface": {
```

```

        "address": "10.10.10.7",
        "gateway": "10.1.1.1",
        "netmask": "24"
    }
},
"name": "elb",
"node": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"vlan_id": 200
},
"mediator": {
    "dr_group": {
        "id": 0
    },
    "ip_address": "10.10.10.7",
    "password": "mypassword",
    "peer_cluster": {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "name": "cluster2",
        "uuid": "ebe27c49-1adf-4496-8335-ab862aebef2"
    },
    "peer_mediator_connectivity": "connected",
    "port": 31784,
    "reachable": 1,
    "user": "myusername",
    "uuid": "string"
},
"partner_cluster": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}

```



```

},
"remote": {
  "automatic_uso_failure_domain": "dr_group",
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "configuration_error",
  "mode": "normal"
}
}

```

Response

Status: 200, Ok

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

```

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

```

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 2424873 | Failed to validate the node and cluster components before the "action" operation. |
| 2425138 | Switchover cannot be performed in the current DR mode. Run "metrocluster show" to view the DR mode of the local cluster, and run "switchover" only in one of the following situations: 1. The DR mode of the local cluster is "normal". 2. The DR mode of the local cluster is "partial-switchover". |
| 2425333 | Heal DR data aggregates cannot be performed in the current DR mode. Run "metrocluster show" and "metrocluster node show" to view the DR mode of the local cluster and the DR mode of the local nodes respectively, and run "heal aggregates" only in one of the following situations: 1. The DR mode of the local cluster is "switchover", and the DR mode of all local nodes is "switchover completed". 2. The DR mode of at least one local node is "heal aggrs failed". |
| 2425335 | Heal DR root aggregates cannot be performed in the current DR mode. Run "metrocluster node show" to view the DR mode of the local nodes, and run "heal root-aggregates" only in one of the following situations: 1. The DR mode of all local nodes is "heal aggrs completed". 2. The DR mode of at least one local node is "heal roots failed". |
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2427558 | This MetroCluster operation cannot be run because another "action" operation is currently in progress. Run "metrocluster operation history show -job-id id -instance" to view the status of the currently running operation. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

Local node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

partner

Partner node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_pairs

| Name | Type | Description |
|---------|-------------------------|-------------------------------|
| node | node | Local node of the DR Group. |
| partner | partner | Partner node of the DR Group. |

cluster

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

local

| Name | Type | Description |
|------------------------------|-------------------------|--|
| automatic_uso_failure_domain | string | This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only. |
| cluster | cluster | |
| configuration_state | string | Indicates the state of the local cluster configuration. |
| mode | string | Specifies the mode of operation of the local cluster. |
| partner_cluster_reachable | boolean | Specifies whether the partner cluster is reachable from the local cluster. |
| periodic_check_enabled | boolean | Indicates whether or not a periodic check is enabled on the local cluster. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

l3_config

| Name | Type | Description |
|----------------|--------------------------------|---|
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |

node

Node information

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mccip_ports

Port configuration specification. l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

| Name | Type | Description |
|-----------|---------------------------|------------------|
| l3_config | l3_config | |
| name | string | Port name |
| node | node | Node information |
| uuid | string | Port UUID |
| vlan_id | integer | VLAN ID |

dr_group

DR group reference.

| Name | Type | Description |
|------|---------|-------------|
| id | integer | DR Group ID |

peer_cluster

The peer cluster that the mediator service is used for.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mediator

Mediator information

| Name | Type | Description |
|----------------------------|------------------------------|--|
| ca_certificate | string | CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. <ul style="list-style-type: none">• x-ntap-createOnly: true• Introduced in: 9.8• x-nullable: true |
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |

| Name | Type | Description |
|-----------|---------|--|
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

partner_cluster

Partner cluster information.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

remote

| Name | Type | Description |
|------------------------------|-------------------------|--|
| automatic_uso_failure_domain | string | This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only. |
| cluster | cluster | |
| configuration_state | string | Indicates the state of the remote cluster configuration. |

| Name | Type | Description |
|------------------------|---------|---|
| mode | string | Specifies the mode of operation of the remote cluster. |
| periodic_check_enabled | boolean | Indicates whether or not a periodic check is enabled on the remote cluster. |

metrocluster

Holds MetroCluster status and configuration parameters for the local and remote clusters. REST: `/api/cluster/metrocluster`

| Name | Type | Description |
|------------------------|--------------------------------------|---|
| _links | self_link | |
| configuration_type | string | Displays the MetroCluster configuration type. |
| dr_pairs | array[dr_pairs] | DR Pairs to create as part of a MetroCluster configure. |
| local | local | |
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| mediator | mediator | Mediator information |
| partner_cluster | partner_cluster | Partner cluster information. |
| remote | remote | |

job_link

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

error_arguments

| Name | Type | Description |
|------|--------|---------------|
| code | string | Argument code |

| Name | Type | Description |
|---------|--------|------------------|
| message | string | Message argument |

returned_error

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

Set up a MetroCluster configuration

POST /cluster/metrocluster

Introduced In: 9.8

Sets up a MetroCluster.

Required properties

- partner_cluster.name
- dr_pairs

Recommended optional properties

- mediator.*
- mccip_ports

Learn more

- [DOC /cluster/metrocluster](#)

Related ONTAP commands

- metrocluster configuration-settings dr-group create
- metrocluster configuration-settings interface create
- metrocluster configuration-settings connection connect
- metrocluster configuration-settings mediator add
- storage aggregate create

- storage aggregate mirror
- metrocluster configure

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| Name | Type | Description |
|--------------------|-----------------------------------|---|
| _links | self_link | |
| configuration_type | string | Displays the MetroCluster configuration type. |
| dr_pairs | array[dr_pairs] | DR Pairs to create as part of a MetroCluster configure. |

| Name | Type | Description |
|-----------------|------------------------------------|------------------------------|
| local | local | |
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| mediator | mediator | Mediator information |
| partner_cluster | partner_cluster | Partner cluster information. |
| remote | remote | |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "configuration_type": "invalid",
  "dr_pairs": {
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "partner": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "local": {
    "automatic_uso_failure_domain": "dr_group",
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "configuration_error",
    "mode": "normal"
  },
  "mccip_ports": {
    "l3_config": {
      "ipv4_interface": {
```

```

        "address": "10.10.10.7",
        "gateway": "10.1.1.1",
        "netmask": "24"
    }
},
"name": "elb",
"node": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"vlan_id": 200
},
"mediator": {
    "dr_group": {
        "id": 0
    },
    "ip_address": "10.10.10.7",
    "password": "mypassword",
    "peer_cluster": {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "name": "cluster2",
        "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
    },
    "peer_mediator_connectivity": "connected",
    "port": 31784,
    "reachable": 1,
    "user": "myusername",
    "uuid": "string"
},
"partner_cluster": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}

```

```

},
"remote": {
  "automatic_uso_failure_domain": "dr_group",
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "configuration_error",
  "mode": "normal"
}
}

```

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

```

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

```

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Response

Status: 201, Created

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2432832 | Required environment variables are not set. |
| 2432833 | Operation is already running. |
| 2432834 | MetroCluster is already configured. |
| 2432835 | Operation not supported. |
| 2432836 | There are not enough disks in Pool1. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2432839 | Required parameters not set. |
| 2432840 | Configuring DR Groups |
| 2432841 | Generating IP addresses |
| 2432843 | Running Aggregate Recommender |
| 2432844 | Checking remote storage pool |
| 2432845 | Mirroring aggregates |
| 2432846 | Configuring MetroCluster and DR mirroring |
| 2432848 | Setting up MetroCluster |
| 2432849 | MetroCluster setup is complete |
| 2432851 | Minimum number of required data aggregates for MetroCluster configuration are still not mirrored. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

Local node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

partner

Partner node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_pairs

| Name | Type | Description |
|---------|-------------------------|-------------------------------|
| node | node | Local node of the DR Group. |
| partner | partner | Partner node of the DR Group. |

cluster

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

local

| Name | Type | Description |
|------------------------------|-------------------------|--|
| automatic_uso_failure_domain | string | This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only. |
| cluster | cluster | |
| configuration_state | string | Indicates the state of the local cluster configuration. |
| mode | string | Specifies the mode of operation of the local cluster. |
| partner_cluster_reachable | boolean | Specifies whether the partner cluster is reachable from the local cluster. |
| periodic_check_enabled | boolean | Indicates whether or not a periodic check is enabled on the local cluster. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

l3_config

| Name | Type | Description |
|----------------|--------------------------------|---|
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |

node

Node information

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mccip_ports

Port configuration specification. l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

| Name | Type | Description |
|-----------|---------------------------|------------------|
| l3_config | l3_config | |
| name | string | Port name |
| node | node | Node information |
| uuid | string | Port UUID |
| vlan_id | integer | VLAN ID |

dr_group

DR group reference.

| Name | Type | Description |
|------|---------|-------------|
| id | integer | DR Group ID |

peer_cluster

The peer cluster that the mediator service is used for.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mediator

Mediator information

| Name | Type | Description |
|----------------------------|------------------------------|--|
| ca_certificate | string | CA certificate for ONTAP Mediator. This is optional if the certificate is already installed. <ul style="list-style-type: none">• x-ntap-createOnly: true• Introduced in: 9.8• x-nullable: true |
| dr_group | dr_group | DR group reference. |
| ip_address | string | The IP address of the mediator. |
| password | string | The password used to connect to the REST server on the mediator. |
| peer_cluster | peer_cluster | The peer cluster that the mediator service is used for. |
| peer_mediator_connectivity | string | Indicates the mediator connectivity status of the peer cluster. Possible values are connected, unreachable, unknown. |
| port | integer | The REST server's port number on the mediator. |

| Name | Type | Description |
|-----------|---------|--|
| reachable | boolean | Indicates the connectivity status of the mediator. |
| user | string | The username used to connect to the REST server on the mediator. |
| uuid | string | The unique identifier for the mediator service. |

partner_cluster

Partner cluster information.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

remote

| Name | Type | Description |
|------------------------------|-------------------------|--|
| automatic_uso_failure_domain | string | This parameter specifies the configuration of automatic switchover. The valid values for the parameter are ':' cluster':' triggers an unplanned switchover if all nodes in a DR cluster are down. dr_group':' triggers an unplanned switchover if both nodes of a DR group are down. disabled':' automatic switchover is disabled. If the cluster is not reachable due to errors, the parameter value will be set to not_reachable. This value is read only. If the cluster configuration is unknown, the parameter value will be set to unknown and the value is read only. |
| cluster | cluster | |
| configuration_state | string | Indicates the state of the remote cluster configuration. |

| Name | Type | Description |
|------------------------|---------|---|
| mode | string | Specifies the mode of operation of the remote cluster. |
| periodic_check_enabled | boolean | Indicates whether or not a periodic check is enabled on the remote cluster. |

metrocluster

Holds MetroCluster status and configuration parameters for the local and remote clusters. REST: `/api/cluster/metrocluster`

| Name | Type | Description |
|------------------------|--------------------------------------|---|
| _links | self_link | |
| configuration_type | string | Displays the MetroCluster configuration type. |
| dr_pairs | array[dr_pairs] | DR Pairs to create as part of a MetroCluster configure. |
| local | local | |
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| mediator | mediator | Mediator information |
| partner_cluster | partner_cluster | Partner cluster information. |
| remote | remote | |

job_link

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

error_arguments

| Name | Type | Description |
|------|--------|---------------|
| code | string | Argument code |

| Name | Type | Description |
|---------|--------|------------------|
| message | string | Message argument |

returned_error

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

Display MetroCluster diagnostics

Cluster MetroCluster diagnostics endpoint overview

Overview

You can use this API to initiate a MetroCluster diagnostics operation and fetch the results of a completed diagnostics operation on a MetroCluster over IP configuration. The GET operation retrieves the results of a completed diagnostics operation for the MetroCluster over IP configuration. These can include the overall high level and details for the checks done for different components. By default, the response does not include the details. If the fields query is used in the request, the response will include the details. The POST request can be used to start a MetroCluster diagnostics operation or set up a schedule for the diagnostics to be run periodically.

Details

Details provide a way to view all the checks done on a component and the result of each check. The details of the checks are not included in the response by default. In order to fetch the details, use the `fields` query parameter.

- `node.details`
- `aggregate.details`
- `cluster.details`
- `volume.details`
- `connection.details`

Starting a MetroCluster diagnostics operation

A new MetroCluster diagnostics operation can be started by issuing a POST to `/cluster/metrocluster/diagnostics`. There are no extra parameters required to initiate a diagnostics operation.

Polling the POST job for status of diagnostics operation

After a successful POST /cluster/diagnostics operation is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The POST job continues asynchronously and can be monitored by using the job UUID and the /cluster/jobs API. The "message" field in the response of the GET /cluster/jobs/{uuid} request shows the current step in the job, and the "state" field shows the overall state of the job.

Examples

Running the diagnostics operation

This example shows the POST request for starting a diagnostic operation for a MetroCluster over IP configuration and the responses returned:

```
#API
/api/cluster/metrocluster/diagnostics
```

POST Request

```
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster/diagnostics
```

POST Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 17:20:53 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster/diagnostics
Content-Length: 189
Content-Type: application/hal+json
{
  "job": {
    "uuid": "f7d3804c-fcf7-11ea-acaf-005056bb47c1",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f7d3804c-fcf7-11ea-acaf-005056bb47c1"
      }
    }
  }
}
```

Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the diagnostics operation job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/f7d3804c-fcf7-11ea-acaf-005056bb47c1
```

Job status response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 17:21:12 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 345
Content-Type: application/hal+json
{
  "uuid": "f7d3804c-fcf7-11ea-acaf-005056bb47c1",
  "description": "POST /api/cluster/metrocluster/diagnostics",
  "state": "running",
  "message": "Checking nodes...",
  "code": 2432853,
  "start_time": "2020-09-22T13:20:53-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f7d3804c-fcf7-11ea-acaf-005056bb47c1"
    }
  }
}
```

Final status of the diagnostics job

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 17:29:04 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 372
Content-Type: application/hal+json
{
  "uuid": "f7d3804c-fcf7-11ea-acaf-005056bb47c1",
  "description": "POST /api/cluster/metrocluster/diagnostics",
  "state": "success",
  "message": "success",
  "code": 0,
  "start_time": "2020-09-22T13:20:53-04:00",
  "end_time": "2020-09-22T13:22:04-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f7d3804c-fcf7-11ea-acaf-005056bb47c1"
    }
  }
}
```

Retrieving the diagnostics operation

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/diagnostics
```

Response

```
HTTP/1.1 202 Accepted
Date: Tue, 22 Sep 2020 18:04:28 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 1005
Content-Type: application/hal+json
{
  "node": {
    "timestamp": "2020-09-22T13:47:01-04:00",
    "state": "ok",
    "summary": {
      "message": ""
    }
  }
}
```

```
},
"interface": {
  "timestamp": "2020-09-22T13:47:01-04:00",
  "state": "ok",
  "summary": {
    "message": ""
  }
},
"aggregate": {
  "timestamp": "2020-09-22T13:47:01-04:00",
  "state": "ok",
  "summary": {
    "message": ""
  }
},
"cluster": {
  "timestamp": "2020-09-22T13:47:01-04:00",
  "state": "ok",
  "summary": {
    "message": ""
  }
},
"connection": {
  "timestamp": "2020-09-22T13:47:01-04:00",
  "state": "ok",
  "summary": {
    "message": ""
  }
},
"volume": {
  "timestamp": "2020-09-22T13:47:01-04:00",
  "state": "ok",
  "summary": {
    "message": ""
  }
},
"config_replication": {
  "timestamp": "2020-09-22T13:47:01-04:00",
  "state": "ok",
  "summary": {
    "message": ""
  }
},
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/diagnostics"
```

```
}  
}  
}
```

Retrieving check details for the node component

Request

```
curl -X GET https://<mgmt-  
ip>/api/cluster/metrocluster/diagnostics?fields=node.details
```

Response

```
HTTP/1.1 200 OK  
Date: Thu, 10 Feb 2022 00:05:12 GMT  
Server: libzapid-httpd  
X-Content-Type-Options: nosniff  
Cache-Control: no-cache,no-store,must-revalidate  
Content-Length: 4506  
Content-Type: application/hal+json  
{  
  "node": {  
    "details": [  
      {  
        "node": {  
          "uuid": "11111111-1111-1111-1111-111111111111",  
          "name": "node1",  
          "_links": {  
            "self": {  
              "href": "/api/cluster/nodes/11111111-1111-1111-1111-  
111111111111"  
            }  
          }  
        },  
        "cluster": {  
          "uuid": "12121212-1212-1212-1212-121212121212",  
          "name": "clusterA",  
          "_links": {  
            "self": {  
              "href": "/api/cluster/12121212-1212-1212-1212-121212121212"  
            }  
          }  
        },  
        "timestamp": "2022-02-09T18:47:00-05:00",  
        "checks": [  

```

```
{
  "name": "node_reachable",
  "result": "ok"
},
{
  "name": "metrocluster_ready",
  "result": "ok"
},
{
  "name": "local_ha_partner",
  "result": "ok"
},
{
  "name": "ha_mirroring_on",
  "result": "ok"
},
{
  "name": "ha_mirroring_op_state",
  "result": "ok"
},
{
  "name": "symmetric_ha_relationship",
  "result": "ok"
},
{
  "name": "remote_dr_partner",
  "result": "ok"
},
{
  "name": "dr_mirroring_on",
  "result": "ok"
},
{
  "name": "dr_mirroring_op_state",
  "result": "ok"
},
{
  "name": "symmetric_dr_relationship",
  "result": "ok"
},
{
  "name": "remote_dr_auxiliary_partner",
  "result": "ok"
},
{
  "name": "symmetric_dr_auxiliary_relationship",
```

```

    "result": "ok"
  },
  {
    "name": "storage_failover_enabled",
    "result": "ok"
  },
  {
    "name": "has_intercluster_lif",
    "result": "ok"
  },
  {
    "name": "node_object_limit",
    "result": "ok"
  },
  {
    "name": "automatic_uso",
    "result": "ok"
  }
]
},
{
  "node": {
    "uuid": "22222222-2222-2222-2222-222222222222",
    "name": "node2",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/22222222-2222-2222-2222-222222222222"
      }
    }
  },
  "cluster": {
    "uuid": "23232323-2323-2323-2323-232323232323",
    "name": "clusterB",
    "_links": {
      "self": {
        "href": "/api/cluster/23232323-2323-2323-2323-232323232323"
      }
    }
  },
  "timestamp": "2022-02-09T18:47:00-05:00",
  "checks": [
    {
      "name": "node_reachable",
      "result": "ok"
    }
  ],

```

```
{
  "name": "metrocluster_ready",
  "result": "ok"
},
{
  "name": "local_ha_partner",
  "result": "ok"
},
{
  "name": "ha_mirroring_on",
  "result": "ok"
},
{
  "name": "ha_mirroring_op_state",
  "result": "ok"
},
{
  "name": "symmetric_ha_relationship",
  "result": "ok"
},
{
  "name": "remote_dr_partner",
  "result": "ok"
},
{
  "name": "dr_mirroring_on",
  "result": "ok"
},
{
  "name": "dr_mirroring_op_state",
  "result": "ok"
},
{
  "name": "symmetric_dr_relationship",
  "result": "ok"
},
{
  "name": "remote_dr_auxiliary_partner",
  "result": "ok"
},
{
  "name": "symmetric_dr_auxiliary_relationship",
  "result": "ok"
},
{
  "name": "storage_failover_enabled",
```



```

        "result": "ok"
    },
    {
        "name": "has_intercluster_lif",
        "result": "ok"
    },
    {
        "name": "node_object_limit",
        "result": "ok"
    },
    {
        "name": "automatic_uso",
        "result": "ok"
    }
]
}
]
},
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/diagnostics"
  }
}
}
}

```

Retrieving check details for the volume component

Request

```

curl -X GET https://<mgmt-
ip>/api/cluster/metrocluster/diagnostics?fields=volume.details

```

Response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Fri, 08 Apr 2022 20:07:38 GMT
Server: libzapid-httpd
Vary: Accept-Encoding
Content-Length: 928
Content-Type: application/hal+json
{
  "volume": {
    "details": [
      {
        "checks": [
          {
            "name": "unmirrored_flexgroups",
            "result": "ok",
          }
        ]
      },
      {
        "checks": [
          {
            "name": "mixed_flexgroups",
            "result": "ok",
          }
        ]
      }
    ]
  },
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/diagnostics"
    }
  }
}
```

Related ONTAP Commands

- metrocluster check run
- metrocluster check show
- metrocluster check node show
- metrocluster check aggregate show
- metrocluster check cluster show

- `metrocluster check connection show`
- `metrocluster check volume show`

Retrieve diagnostic operation results for a MetroCluster configuration

GET `/cluster/metrocluster/diagnostics`

Introduced In: 9.8

Retrieves the results of a completed diagnostic operation for the MetroCluster configuration.

Parameters

| Name | Type | In | Required | Description |
|-------------|---------------|-------|----------|---------------------------------------|
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |

Response

Status: 200, Ok

| Name | Type | Description |
|--------------------|------------------------------------|-------------|
| aggregate | aggregate | |
| cluster | cluster | |
| config-replication | config-replication | |
| connection | connection | |
| interface | interface | |
| node | node | |
| volume | volume | |

Example response

```
{
  "aggregate": {
    "details": {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "checks": {
        "additional_info": {
          "code": "string",
          "message": "string"
        },
        "name": "mirrror_status",
        "result": "ok"
      },
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "timestamp": "2016-03-10 17:35:16 -0500",
      "volume": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      }
    }
  }
}
```

```

    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
},
"state": "ok",
"summary": {
  "code": "string",
  "message": "string"
},
"timestamp": "2016-03-10 17:35:16 -0500"
},
"cluster": {
  "details": {
    "aggregate": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "checks": {
      "additional_info": {
        "code": "string",
        "message": "string"
      },
      "name": "mirror_status",
      "result": "ok"
    },
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  },

```

```

    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "timestamp": "2016-03-10 17:35:16 -0500",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
},
"state": "ok",
"summary": {
  "code": "string",
  "message": "string"
},
"timestamp": "2016-03-10 17:35:16 -0500"
},
"config-replication": {
  "state": "ok",
  "summary": {
    "code": "string",
    "message": "string"
  },
  "timestamp": "2016-03-14 18:35:16 -0400"
},
"connection": {
  "details": {
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "connections": {
    "destination_address": "string",
    "partner": {
      "node": {
        "_links": {
          "self": {

```

```

        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "type": "ha"
},
"port": "string",
"result": "ok",
"source_address": "string",
"state": "disconnected"
},
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
},
"state": "ok",
"summary": {
  "code": "string",
  "message": "string"
},
"timestamp": "2016-03-10 17:35:16 -0500"
},
"interface": {
  "state": "ok",
  "summary": {
    "code": "string",
    "message": "string"
  },
  "timestamp": "2016-03-10 17:35:16 -0500"
},
"node": {
  "details": {
    "aggregate": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  },

```

```

    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "checks": {
    "additional_info": {
      "code": "string",
      "message": "string"
    },
    "name": "mirror_status",
    "result": "ok"
  },
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "timestamp": "2016-03-10 17:35:16 -0500",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
},
"state": "ok",
"summary": {
  "code": "string",
  "message": "string"
},
"timestamp": "2016-03-10 17:35:16 -0500"

```



```

},
"volume": {
  "details": {
    "aggregate": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "aggr1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "checks": {
      "additional_info": {
        "code": "string",
        "message": "string"
      },
      "name": "mirrror_status",
      "result": "ok"
    },
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "timestamp": "2016-03-10 17:35:16 -0500",
    "volume": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "volumel",

```

```

    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  }
},
"state": "ok",
"summary": {
  "code": "string",
  "message": "string"
},
"timestamp": "2016-03-10 17:35:16 -0500"
}
}

```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2426405 | MetroCluster is not configured in cluster "cluster". Run "metrocluster show" to verify both the local and the remote clusters are configured as MetroCluster, and then try the command again. |
| 2432856 | MetroCluster diagnostics result is not available. Use the REST API GET method on "/api/cluster/metrocluster/operations?type=check&fields=*" for more information. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

aggregate

Aggregate

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

additional_info

Additional information or recovery steps to take on this component.

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

metrocluster_diag_check

Generic object which can be used for various components which holds details of the checks of a component.

| Name | Type | Description |
|-----------------|---------------------------------|---|
| additional_info | additional_info | Additional information or recovery steps to take on this component. |
| name | string | Name of type of diagnostic operation run for the component. |
| result | string | Result of the diagnostic operation on this component. |

cluster

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

volume

| Name | Type | Description |
|--------|------------------------|--|
| _links | _links | |
| name | string | The name of the volume. This field cannot be specified in a POST or PATCH method. |
| uuid | string | <p>Unique identifier for the volume. This corresponds to the instance-uuid that is exposed in the CLI and ONTAPI. It does not change due to a volume move.</p> <ul style="list-style-type: none"> • example: 028baa66-41bd-11e9-81d5-00a0986138f7 • Introduced in: 9.6 • x-nullable: true |

metrocluster_diag_details

| Name | Type | Description |
|-----------|--|---|
| aggregate | aggregate | Aggregate |
| checks | array[metrocluster_diag_check] | Collection of MetroCluster checks done for component. |
| cluster | cluster | |
| node | node | |

| Name | Type | Description |
|-----------|------------------------|----------------------|
| timestamp | string | Time check was done. |
| volume | volume | |

summary

Additional information or recovery steps to take.

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

aggregate

| Name | Type | Description |
|-----------|--|---|
| details | array[metrocluster_diag_details] | Display details of the MetroCluster check for aggregates. |
| state | string | Status of diagnostic operation for this component. |
| summary | summary | Additional information or recovery steps to take. |
| timestamp | string | Time of the most recent diagnostic operation for this component |

cluster

| Name | Type | Description |
|---------|--|---|
| details | array[metrocluster_diag_details] | Display details of the MetroCluster check for clusters. |
| state | string | Status of diagnostic operation for this component. |
| summary | summary | Additional information or recovery steps to take. |

| Name | Type | Description |
|-----------|--------|---|
| timestamp | string | Time of the most recent diagnostic operation for this component |

config-replication

| Name | Type | Description |
|-----------|-------------------------|---|
| state | string | Status of diagnostic operation for this component. |
| summary | summary | Additional information or recovery steps to take. |
| timestamp | string | Time of the most recent diagnostic operation for this component |

partner

| Name | Type | Description |
|------|----------------------|-------------|
| node | node | |
| type | string | |

metrocluster_diag_connection

| Name | Type | Description |
|---------------------|-------------------------|---|
| destination_address | string | |
| partner | partner | |
| port | string | |
| result | string | Result of the diagnostic operation on this component. |
| source_address | string | |
| state | string | |

metrocluster_diag_connection_details

| Name | Type | Description |
|-------------|---|-------------|
| cluster | cluster | |
| connections | array[metrocluster_diag_connection] | |

| Name | Type | Description |
|------|----------------------|-------------|
| node | node | |

connection

| Name | Type | Description |
|-----------|---|---|
| details | array[metrocluster_diag_connection_details] | Display details of the MetroCluster check for connections. |
| state | string | Status of diagnostic operation for this component. |
| summary | summary | Additional information or recovery steps to take. |
| timestamp | string | Time of the most recent diagnostic operation for this component |

interface

| Name | Type | Description |
|-----------|-------------------------|---|
| state | string | Status of diagnostic operation for this component. |
| summary | summary | Additional information or recovery steps to take. |
| timestamp | string | Time of the most recent diagnostic operation for this component |

node

| Name | Type | Description |
|---------|--|---|
| details | array[metrocluster_diag_details] | Displays details of the MetroCluster check for nodes. |
| state | string | Status of diagnostic operation for this component. |
| summary | summary | Additional information or recovery steps to take. |

| Name | Type | Description |
|-----------|--------|---|
| timestamp | string | Time of the most recent diagnostic operation for this component |

volume

| Name | Type | Description |
|-----------|--|---|
| details | array[metrocluster_diag_details] | Display details of the MetroCluster check for volumes. |
| state | string | Status of diagnostic operation for this component. |
| summary | summary | Additional information or recovery steps to take. |
| timestamp | string | Time of the most recent diagnostic operation for this component |

Start MetroCluster diagnostics or set up a periodic diagnostic schedule

POST `/cluster/metrocluster/diagnostics`

Introduced In: 9.8

Start a MetroCluster diagnostic operation or set up a schedule for the diagnostics to be run periodically.

Parameters

| Name | Type | In | Required | Description |
|----------|---------|-------|----------|--|
| schedule | integer | query | False | Shows the minutes of every hour when a job runs. Setting this parameter schedules the periodic job to be run to perform MetroCluster diagnostic. |

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Response

Status: 201, Created

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2427132 | MetroCluster is not configured on this cluster. |
| 2432833 | Operation is already running. |
| 2432852 | MetroCluster diagnostics start |
| 2432853 | MetroCluster diagnostics job scheduled |
| 2432854 | MetroCluster diagnostics complete |

| Error Code | Description |
|------------|---|
| 2432855 | MetroCluster diagnostics operation failed. Use the REST API GET method on <code>/api/cluster/metrocluster/operations?type=check&fields=*</code> for more information. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

job_link

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

Manage MetroCluster DR groups

Cluster MetroCluster dr-groups endpoint overview

Overview

You can use this API to create, perform operations, and retrieve relevant information pertaining to MetroCluster DR groups. The GET operation retrieves all the DR groups in the MetroCluster over IP configuration or a DR group information specified by the DR group id. The POST request can be used to create a new DR group in the MetroCluster over IP configuration. The DELETE operation removes a DR group information specified by the DR group id from the existing MetroCluster over IP configuration.

Creating a new DR group

A new DR group in MetroCluster over IP configuration is created by issuing a POST to `/cluster/metrocluster/dr-groups`. Parameters are provided in the body of the POST request. This operation requires a valid MetroCluster over IP configuration. The new nodes added belong to either the local or partner cluster.

Fields used for setting up a new DR group

The fields used for MetroCluster APIs are either required or optional and are described as follows:

Required configuration fields

These fields are always required for any POST `/cluster/dr-groups` request.

- `partner_cluster.name` - Specifies the partner cluster name to which cluster peering has been established.
- `dr_pairs` - Specifies local and DR partner node pairs. Each pair uniquely identifies a DR group.

Optional configuration fields

This field is used to set up additional MetroCluster DR configuration.

- `mccip_ports` - Specifies relevant layer 3 network configuration information for each port. These include port name, node name, IP address, gateway, and netmask. If `mccip_ports` is not provided, then the API automatically generates IP addresses for the ports and creates an layer 2 network configuration.

Polling the create job

After a successful POST `/cluster/metrocluster/dr-groups` is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The create job continues asynchronously and can be monitored by using the job UUID and the `/cluster/jobs` API. The "message" field in the response of the GET `/cluster/jobs/{uuid}` request shows the current step in the job, and the "state" field shows the overall state of the job.

Deleting a DR group using ID

A DR group in MetroCluster over IP configuration can be deleted by issuing a DELETE to `/cluster/metrocluster/dr-groups/{id}`. No parameters are required for the DELETE request. The following preparation steps must be completed on the local and partner clusters before removing a DR group.

- Move all the data volumes to another DR group.
- Move all the MDV_CRS metadata volumes to another DR group.
- Delete all the MDV_aud metadata volumes that may exist in the DR group to be removed.
- Delete all the data aggregates in the DR group to be removed. Root aggregates are not deleted.
- Migrate all the data LIFs to home nodes in another DR group.
- Migrate the cluster management LIF to a home node in another DR group. Node management and inter-cluster LIFs are not migrated.
- Transfer epsilon to a node in another DR group. The operation is refused if the preparation steps are not completed on the local and partner clusters.

Polling the delete job

After a successful DELETE `/cluster/metrocluster/dr-groups` is issued, an HTTP status code of 202 (Accepted) is returned along with a job UUID and a link in the body of the response. The delete job continues asynchronously and can be monitored by using the job UUID and the `/cluster/jobs` API. The "message" field in the response of the GET `/cluster/jobs/{uuid}` request shows the current step in the job, and the "state" field shows the overall state of the job.

Examples

Creating a DR group for MetroCluster over IP configuration

This example shows the POST body when creating a DR group for MetroCluster.

```
# API
/api/cluster/metrocluster/dr-groups
```

POST body included from file

```
dr_group_post_body.txt:
{
  "partner_cluster" : {
    "name": "mcc_siteB"
  },
  "dr_pairs" : [
    {
      "node" : {
        "name" : "node-e"
      },
      "partner" : {
        "name" : "node-g"
      }
    }
  ]
}
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster/dr-groups -H
"Content-Type: application+hal/json" -d "@dr_group_post_body.txt"
```

Inline POST body

```
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster/dr-groups -H
"Content-Type: application+hal/json" -d '{"partner_cluster" : {"name":
"mcc_siteB" }, "dr_pairs" : [{"node" : {"name" : "node-e" }, "partner" :
{"name" : "node-g" }]}]}'
```

POST Response

```
HTTP/1.1 202 Accepted
Date: Fri, 18 Sep 2020 20:38:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster/dr-groups
Content-Length: 189
Content-Type: application/hal+json
{
  "job": {
    "uuid": "5b89472e-f9e8-11ea-9c31-005056bb42f7",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/5b89472e-f9e8-11ea-9c31-005056bb42f7"
      }
    }
  }
}
```

Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the DR group job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/5b89472e-f9e8-11ea-9c31-005056bb42f7
```

Job status response

The following is an example of the job status response returned by the running DR group job:

```
HTTP/1.1 200 OK
Date: Fri, 18 Sep 2020 20:40:20 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 373
Content-Type: application/hal+json
{
  "uuid": "5b89472e-f9e8-11ea-9c31-005056bb42f7",
  "description": "POST /api/cluster/metrocluster/dr-groups/",
  "state": "running",
  "message": "Mirroring aggregates",
  "code": 2432845,
  "start_time": "2020-09-18T15:38:08-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/5b89472e-f9e8-11ea-9c31-005056bb42f7"
    }
  }
}
```

Final status of a successful DR Group create workflow

When the create job completes, the 'end_time' field is populated, and the 'state' and 'message' fields report final status.

```
HTTP/1.1 200 OK
Date: Fri, 18 Sep 2020 20:43:54 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 373
Content-Type: application/hal+json
{
  "uuid": "5b89472e-f9e8-11ea-9c31-005056bb42f7",
  "description": "POST /api/cluster/metrocluster/dr-groups/",
  "state": "success",
  "message": "success",
  "code": 0,
  "start_time": "2020-09-18T15:51:35-04:00",
  "end_time": "2020-09-18T16:10:17-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/5b89472e-f9e8-11ea-9c31-005056bb42f7"
    }
  }
}
```

Retrieving the MetroCluster DR Groups configured in the MetroCluster over IP configuration

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/dr-groups
```

Response


```
HTTP/1.1 200 OK
Date: Fri, 18 Sep 2020 20:47:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 849
Content-Type: application/hal+json
{
  "records": [
    {
      "id": 1,
      "_links": {
        "self": {
          "href": "/api/cluster/metrocluster/dr-groups/1"
        }
      }
    },
    {
      "id": 2,
      "_links": {
        "self": {
          "href": "/api/cluster/metrocluster/dr-groups/2"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/dr-groups"
    }
  }
}
```

Retrieving a Specific MetroCluster DR Group

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/dr-groups/2
```

Response

```
HTTP/1.1 200 OK
Date: Fri, 18 Sep 2020 20:49:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 1049
Content-Type: application/hal+json
{
  "id": 2,
  "partner_cluster": {
    "name": "mcc_siteB",
    "uuid": "ea4d7114-f97f-11ea-a4bf-005056bb070a"
  },
  "dr_pairs": [
    {
      "node": {
        "name": "node-e",
        "uuid": "28f71e17-f988-11ea-b1dd-005056bb47e8"
      },
      "partner": {
        "name": "node-g",
        "uuid": "1af02867-f989-11ea-b86c-005056bbe97f"
      }
    },
    {
      "node": {
        "name": "node-f",
        "uuid": "b34ae3b8-f988-11ea-866b-005056bb0934"
      },
      "partner": {
        "name": "node-h",
        "uuid": "a21a2b16-f989-11ea-98d0-005056bb321d"
      }
    }
  ],
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/dr-groups/2"
    }
  }
}
```

Deleting a MetroCluster DR Group

Request

```
curl -X DELETE https://<mgmt-ip>/api/cluster/metrocluster/dr-groups/{id}
```

Response

```
HTTP/1.1 200 OK
Date: Tue, 22 Sep 2020 03:29:01 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json
{
  "job": {
    "uuid": "c24d1083-fc83-11ea-acaf-005056bb47c1",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/c24d1083-fc83-11ea-acaf-005056bb47c1"
      }
    }
  }
}
```

Monitoring the job progress

Use the link provided in the response to the DELETE request to fetch information for the delete job.

Request

```
curl -X GET https://<mgmt-ip>/api/cluster/jobs/c24d1083-fc83-11ea-acaf-005056bb47c1
```

Job status response

The following is an example of the job status response returned by the MetroCluster DR Group delete job.

```
HTTP/1.1 200 OK
Date: Tue, 22 Sep 2020 03:30:01 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 374
Content-Type: application/hal+json
{
  "uuid": "c24d1083-fc83-11ea-acaf-005056bb47c1",
  "description": "DELETE /api/cluster/metrocluster/dr-groups/2",
  "state": "running",
  "message": "Unconfiguring Metrocluster DR Group",
  "code": 2432859,
  "start_time": "2020-09-21T23:29:01-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c24d1083-fc83-11ea-acaf-005056bb47c1"
    }
  }
}
```

Final Status of a successful MetroCluster DR Group delete workflow

When the delete job completes, the 'end_time' field is populated, and the 'state' and 'message' fields report the final status.

```

HTTP/1.1 200 OK
Date: Tue, 22 Sep 2020 03:38:08 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 374
Content-Type: application/hal+json
{
  "uuid": "c24d1083-fc83-11ea-acaf-005056bb47c1",
  "description": "DELETE /api/cluster/metrocluster/dr-groups/2",
  "state": "success",
  "message": "success",
  "code": 0,
  "start_time": "2020-09-21T23:29:01-04:00",
  "end_time": "2020-09-21T23:36:36-04:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/c24d1083-fc83-11ea-acaf-005056bb47c1"
    }
  }
}

```

Retrieve all DR groups in a MetroCluster IP configuration

GET /cluster/metrocluster/dr-groups

Introduced In: 9.8

Retrieves all the DR group in the MetroCluster over IP configuration.

Related ONTAP commands

- metrocluster configuration-settings dr-group show

Parameters

| Name | Type | In | Required | Description |
|-----------------------|---------|-------|----------|---------------------------------|
| id | integer | query | False | Filter by id |
| dr_pairs.partner.name | string | query | False | Filter by dr_pairs.partner.name |
| dr_pairs.partner.uuid | string | query | False | Filter by dr_pairs.partner.uuid |

| Name | Type | In | Required | Description |
|----------------------|---------------|-------|----------|---|
| dr_pairs.node.name | string | query | False | Filter by dr_pairs.node.name |
| dr_pairs.node.uuid | string | query | False | Filter by dr_pairs.node.uuid |
| partner_cluster.uuid | string | query | False | Filter by partner_cluster.uuid |
| partner_cluster.name | string | query | False | Filter by partner_cluster.name |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

| Name | Type | In | Required | Description |
|----------|---------------|-------|----------|---|
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|--|-------------------|
| _links | _links | |
| num_records | integer | Number of Records |
| records | array[metrocluster_dr_group] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "dr_pairs": {
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "partner": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      }
    },
    "id": 0,
    "mccip_ports": {
      "l3_config": {
        "ipv4_interface": {
          "address": "10.10.10.7",
          "gateway": "10.1.1.1",
          "netmask": "24"
        }
      }
    }
  }
}
```



```

    },
    "name": "e1b",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "vlan_id": 200
  },
  "partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}

```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

Local node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

partner

Partner node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_pair

| Name | Type | Description |
|---------|-------------------------|-------------------------------|
| node | node | Local node of the DR Group. |
| partner | partner | Partner node of the DR Group. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

l3_config

| Name | Type | Description |
|----------------|--------------------------------|---|
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |

node

Node information

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mccip_ports

Port configuration specification. l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

| Name | Type | Description |
|-----------|---------------------------|-------------|
| l3_config | l3_config | |

| Name | Type | Description |
|---------|----------------------|------------------|
| name | string | Port name |
| node | node | Node information |
| uuid | string | Port UUID |
| vlan_id | integer | VLAN ID |

partner_cluster

Partner cluster information.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

metrocluster_dr_group

DR group information.

| Name | Type | Description |
|-----------------|--------------------------------------|------------------------------|
| _links | self_link | |
| dr_pairs | array[dr_pair] | |
| id | integer | DR Group ID |
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| partner_cluster | partner_cluster | Partner cluster information. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Create a new DR group in a MetroCluster IP configuration

POST `/cluster/metrocluster/dr-groups`

Introduced In: 9.8

Creates a new DR group in the MetroCluster over IP configuration.

Required properties

- `partner_cluster.name`
- `dr_pairs`

Recommended optional properties

- `mccip_ports`

Learn more

- [DOC /cluster/metrocluster/dr-groups](#)

Related ONTAP commands

- `metrocluster configuration-settings dr-group create`

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value: |

Request Body

| Name | Type | Description |
|----------|----------------------------------|-------------|
| _links | self_link | |
| dr_pairs | array[dr_pair] | |
| id | integer | DR Group ID |

| Name | Type | Description |
|-----------------|--------------------|------------------------------|
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| partner_cluster | partner_cluster | Partner cluster information. |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dr_pairs": {
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "partner": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "id": 0,
  "mccip_ports": {
    "l3_config": {
      "ipv4_interface": {
        "address": "10.10.10.7",
        "gateway": "10.1.1.1",
        "netmask": "24"
      }
    }
  },
  "name": "elb",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

```

    },
    "vlan_id": 200
  },
  "partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}

```

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

```

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

```

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Response

Status: 201, Created

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2430034 | Node "node" is not found in partner cluster "cluster". Use the "cluster show" command on the partner cluster to see the list of valid node names. |
| 2430060 | The DR group cannot be created while node "node" on cluster "cluster" is configured for MetroCluster. |
| 2432833 | Operation is already running. |
| 2432836 | There are not enough disks in Pool1. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2432840 | Configuring DR Groups |
| 2432841 | Generating IP addresses |
| 2432844 | Checking remote storage pool |
| 2432845 | Mirroring aggregates |
| 2432846 | Configuring MetroCluster and DR mirroring |
| 2432857 | Adding new MetroCluster DR Group |
| 2432858 | MetroCluster DR Group setup done |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

Local node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

partner

Partner node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_pair

| Name | Type | Description |
|---------|-------------------------|-------------------------------|
| node | node | Local node of the DR Group. |
| partner | partner | Partner node of the DR Group. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

l3_config

| Name | Type | Description |
|----------------|--------------------------------|---|
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |

node

Node information

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mccip_ports

Port configuration specification. l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

| Name | Type | Description |
|-----------|---------------------------|------------------|
| l3_config | l3_config | |
| name | string | Port name |
| node | node | Node information |
| uuid | string | Port UUID |
| vlan_id | integer | VLAN ID |

partner_cluster

Partner cluster information.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

metrocluster_dr_group

DR group information.

| Name | Type | Description |
|-----------------|--------------------------------------|------------------------------|
| _links | self_link | |
| dr_pairs | array[dr_pair] | |
| id | integer | DR Group ID |
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| partner_cluster | partner_cluster | Partner cluster information. |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

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

Remove a DR group from a MetroCluster IP configuration

DELETE /cluster/metrocluster/dr-groups/{id}

Introduced In: 9.8

Remove the DR group from the current MetroCluster over IP configuration specified by the DR group id.

Related ONTAP commands

- `metrocluster configuration-settings dr-group delete`

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|-------------|
| id | string | path | True | |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425574 | Two or more DR groups must be configured to remove a DR group from the MetroCluster configuration. |
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2432833 | Operation is already running. |
| 2432859 | Unconfiguring MetroCluster DR Group |
| 2432860 | Unmirroring Aggregates |
| 2432861 | Unassigning Remote Disks |
| 2432862 | Disabling Cluster HA and Storage Failover HA |
| 2432863 | Disconnecting and deleting network connections |
| 2432864 | Unconfiguring and deleting the DR Group |
| 2432865 | Deleting MetroCluster DR Group |
| 2432866 | MetroCluster DR Group delete done |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|----------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve DR group information using the DR group ID

GET /cluster/metrocluster/dr-groups/{id}

Introduced In: 9.8

Retrieves the DR group information specified by the DR group id.

Related ONTAP commands

- `metrocluster configuration-settings dr-group show`

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| id | string | path | True | |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|---------------------------------|--------------------------------------|------------------------------|
| _links | self_link | |
| dr_pairs | array[dr_pair] | |
| id | integer | DR Group ID |
| mccip_ports | array[mccip_ports] | List of Port specifications. |
| partner_cluster | partner_cluster | Partner cluster information. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dr_pairs": {
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "partner": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "id": 0,
  "mccip_ports": {
    "l3_config": {
      "ipv4_interface": {
        "address": "10.10.10.7",
        "gateway": "10.1.1.1",
        "netmask": "24"
      }
    }
  },
  "name": "elb",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

```
    },
    "vlan_id": 200
  },
  "partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

Local node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

partner

Partner node of the DR Group.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_pair

| Name | Type | Description |
|---------|-------------------------|-------------------------------|
| node | node | Local node of the DR Group. |
| partner | partner | Partner node of the DR Group. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

l3_config

| Name | Type | Description |
|----------------|--------------------------------|---|
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |

node

Node information

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

mccip_ports

Port configuration specification. l3_config information is only needed when configuring a MetroCluster IP for use in a layer 3 network.

| Name | Type | Description |
|-----------|---------------------------|------------------|
| l3_config | l3_config | |
| name | string | Port name |
| node | node | Node information |
| uuid | string | Port UUID |
| vlan_id | integer | VLAN ID |

partner_cluster

Partner cluster information.

| Name | Type | Description |
|---------------------|------------------------|-------------|
| <code>_links</code> | _links | |
| <code>name</code> | string | |
| <code>uuid</code> | string | |

error_arguments

| Name | Type | Description |
|----------------------|--------|------------------|
| <code>code</code> | string | Argument code |
| <code>message</code> | string | Message argument |

returned_error

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

View and update MetroCluster interconnects

Cluster MetroCluster interconnects endpoint overview

Overview

You can use this API to retrieve and display relevant information pertaining to MetroCluster interconnect status. The `/cluster/metrocluster/interconnects` endpoint returns a list of all the interconnects in MetroCluster and their status. Each individual interconnect can be queried individually using the `/cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}` endpoint. You can also use this API to modify relevant information related to MetroCluster interconnect. These include address, netmask, and gateway. Modify a MetroCluster interconnect using the `/cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}` endpoint.

Examples

Retrieving MetroCluster interconnects

```
GET https://<mgmt-ip>/api/cluster/metrocluster/interconnects
{
  "records": [
    {
      "node": {
        "name": "cluster1_01",
        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-005056826931"
          }
        }
      },
      "partner_type": "ha",
      "adapter": "e0f",
      "_links": {
        "self": {
          "href": "/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-005056826931/ha/e0f"
        }
      }
    },
    {
      "node": {
        "name": "cluster1_01",
        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-005056826931"
          }
        }
      },
      "partner_type": "ha",
      "adapter": "e0g",
      "_links": {
        "self": {
          "href": "/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-005056826931/ha/e0g"
        }
      }
    }
  ]
}
```

```

    },
    {
      "node": {
        "name": "cluster1_01",
        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-005056826931"
          }
        }
      },
      "partner_type": "dr",
      "adapter": "e0f",
      "_links": {
        "self": {
          "href": "/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-005056826931/dr/e0f"
        }
      }
    },
    {
      "node": {
        "name": "cluster1_01",
        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-005056826931"
          }
        }
      },
      "partner_type": "dr",
      "adapter": "e0g",
      "_links": {
        "self": {
          "href": "/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-005056826931/dr/e0g"
        }
      }
    },
    {
      "node": {
        "name": "cluster1_01",

```

```

        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
            }
        },
        "partner_type": "aux",
        "adapter": "e0f",
        "_links": {
            "self": {
                "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/aux/e0f"
            }
        }
    },
    {
        "node": {
            "name": "cluster1_01",
            "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
            "_links": {
                "self": {
                    "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
                }
            }
        },
        "partner_type": "aux",
        "adapter": "e0g",
        "_links": {
            "self": {
                "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/aux/e0g"
            }
        }
    },
    {
        "node": {
            "name": "cluster1_02",
            "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
            "_links": {
                "self": {
                    "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-

```

```

00505682dc8b"
    }
  },
  "partner_type": "ha",
  "adapter": "e0f",
  "_links": {
    "self": {
      "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/ha/e0f"
    }
  }
},
{
  "node": {
    "name": "cluster1_02",
    "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
      }
    }
  },
  "partner_type": "ha",
  "adapter": "e0g",
  "_links": {
    "self": {
      "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/ha/e0g"
    }
  }
},
{
  "node": {
    "name": "cluster1_02",
    "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
      }
    }
  },

```

```

    "partner_type": "dr",
    "adapter": "e0f",
    "_links": {
      "self": {
        "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/dr/e0f"
      }
    }
  },
  {
    "node": {
      "name": "cluster1_02",
      "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
        }
      }
    },
    "partner_type": "dr",
    "adapter": "e0g",
    "_links": {
      "self": {
        "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/dr/e0g"
      }
    }
  },
  {
    "node": {
      "name": "cluster1_02",
      "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
        }
      }
    },
    "partner_type": "aux",
    "adapter": "e0f",
    "_links": {
      "self": {

```

```

        "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/aux/e0f"
    }
}
},
{
    "node": {
        "name": "cluster1_02",
        "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
            }
        }
    },
    "partner_type": "aux",
    "adapter": "e0g",
    "_links": {
        "self": {
            "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/aux/e0g"
        }
    }
}
],
"num_records": 12,
"_links": {
    "self": {
        "href": "/api/cluster/metrocluster/interconnects"
    }
}
}

```

Retrieves information about a specific MetroCluster interconnect


```

https://<mgmt-ip>/api/cluster/metrocluster/interconnects/774b4fbc-86f9-
11e9-9051-005056825c71/aux/e0f
{
  "node": {
    "name": "cluster1_01",
    "uuid": "46147363-9857-11e9-9a55-005056828eb9",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/46147363-9857-11e9-9a55-
005056828eb9"
      }
    }
  },
  "partner_type": "aux",
  "adapter": "e0f",
  "state": "up",
  "type": "iwarp",
  "interfaces": [
    {
      "address": "10.2.3.5",
      "netmask": "255.255.255.0"
    }
  ],
  "mirror": {
    "state": "online",
    "enabled": true
  },
  "multipath_policy": "static_map",
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/interconnects/46147363-9857-
11e9-9a55-005056828eb9/ha/e0f"
    }
  }
}

```

This example shows how to modify the network address assigned to the home port. Fields required: address.

```

curl -X PATCH https://<mgmt-
ip>/api/cluster/metrocluster/interconnects/3e1bfd38-ffd2-11eb-bcb7-
005056aceaa9/ha/e0g -d '{"interfaces": [{"address": "1.2.3.4"}]}'

```

PATCH Response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Fri, 20 Aug 2021 21:58:36 GMT
Server: libzapid-httpd
Content-Length: 3
Content-Type: application/hal+json
X-Content-Type-Options: nosniff
{
}
```

This example shows how to modify the netmask assigned to the interface. Be sure to change to a valid subnet. Fields required: netmask.

```
curl -X PATCH https://<mgmt-
ip>/api/cluster/metrocluster/interconnects/3e1bfd38-ffd2-11eb-bcb7-
005056aceaa9/ha/e0g -d '{"interfaces": [{"netmask": "2.2.2.2"}]}'
```

PATCH Response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Fri, 20 Aug 2021 22:11:35 GMT
Server: libzapid-httpd
Content-Length: 3
Content-Type: application/hal+json
X-Content-Type-Options: nosniff
{
}
```

This example shows how to modify the gateway assigned to the interface. Please make sure to update it on the switch/router first. Assuming it is a new one, the new gateway and IP address must reside in the same subnet range as the interface IP address. Fields required: gateway.

```
curl -X PATCH https://<mgmt-
ip>/api/cluster/metrocluster/interconnects/3e1bfd38-ffd2-11eb-bcb7-
005056aceaa9/ha/e0g -d '{"interfaces": [{"gateway": "1.2.3.4"}]}'
```

PATCH Response

```
HTTP/1.1 200 OK
Cache-Control: no-cache,no-store,must-revalidate
Connection: close
Date: Fri, 20 Aug 2021 22:11:35 GMT
Server: libzapid-httpd
Content-Length: 3
Content-Type: application/hal+json
X-Content-Type-Options: nosniff
{
}
```

Retrieve interconnect adapter information for nodes in MetroCluster

GET /cluster/metrocluster/interconnects

Introduced In: 9.8

Retrieves a list of interconnect adapter information for nodes in the MetroCluster.

Related ONTAP Commands

- `metrocluster interconnect show`

Learn more

- [DOC /cluster/metrocluster/interconnects](#)

Parameters

| Name | Type | In | Required | Description |
|--------------|---------|-------|----------|--|
| partner_type | string | query | False | Filter by partner_type |
| node.name | string | query | False | Filter by node.name |
| node.uuid | string | query | False | Filter by node.uuid |
| vlan_id | integer | query | False | Filter by vlan_id <ul style="list-style-type: none">• Introduced in: 9.9• Max value: 4095• Min value: 10 |
| state | string | query | False | Filter by state |

| Name | Type | In | Required | Description |
|--------------------|---------------|-------|----------|--|
| adapter | string | query | False | Filter by adapter |
| interfaces.gateway | string | query | False | Filter by interfaces.gateway • Introduced in: 9.9 |
| interfaces.netmask | string | query | False | Filter by interfaces.netmask • Introduced in: 9.9 |
| interfaces.address | string | query | False | Filter by interfaces.address • Introduced in: 9.9 |
| mirror.enabled | boolean | query | False | Filter by mirror.enabled • Introduced in: 9.11 |
| mirror.state | string | query | False | Filter by mirror.state • Introduced in: 9.11 |
| type | string | query | False | Filter by type |
| multipath_policy | string | query | False | Filter by multipath_policy • Introduced in: 9.11 |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Max value: 120 • Min value: 0 • Default value: 1 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|--|-------------------|
| _links | collection_links | |
| num_records | integer | Number of Records |
| records | array[metrocluster_interconnect] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "adapter": "string",
    "interfaces": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    },
    "mirror": {
      "state": "online"
    },
    "multipath_policy": "no_mp",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "partner_type": "aux",
    "state": "down",
    "type": "roce",
    "vlan_id": 0
  }
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 2424994 | MetroCluster is not supported when HAOSC is not set to "mcc", "mcc-2n" or "mccip". Run the "ha-config modify chassis" and "ha-config modify controller" commands in maintenance mode to change the HAOSC settings on node "node" in cluster "cluster". |
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2427132 | MetroCluster is not configured on this cluster. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

collection_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

interfaces

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

mirror

| Name | Type | Description |
|---------|---------|---|
| enabled | boolean | Specifies the administrative state of the NVRAM mirror between partner nodes. |
| state | string | Specifies the operational state of the NVRAM mirror between partner nodes. |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

| Name | Type | Description |
|------------------------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

metrocluster_interconnect

Data for a MetroCluster interconnect. REST: /api/cluster/metrocluster/interconnects

| Name | Type | Description |
|------------------------|-------------------------------------|--|
| _links | self_link | |
| adapter | string | Adapter |
| interfaces | array[interfaces] | List of objects which contain interface information such as its IP address, netmask and gateway. |
| mirror | mirror | |
| multipath_policy | string | Displays the NVRAM mirror multipath policy for the nodes configured in a MetroCluster. |
| node | node | |
| partner_type | string | Partner type |
| state | string | Adapter status |
| type | string | Adapter type |
| vlan_id | integer | VLAN ID |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve information about a MetroCluster interconnect for a partner type and adapter

GET /cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}

Introduced In: 9.8

Retrieves information about a MetroCluster Interconnect for a specific partner type and adapter.

Related ONTAP Commands

- `metrocluster interconnect show`

Parameters

| Name | Type | In | Required | Description |
|--------------|---------------|-------|----------|-------------------------------|
| node.uuid | string | path | True | Node UUID |
| partner_type | string | path | True | DR Partner type |
| adapter | string | path | True | Interconnect adapter. |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|--------|---------------------------|-------------|
| _links | self_link | |

| Name | Type | Description |
|------------------|-------------------------------------|--|
| adapter | string | Adapter |
| interfaces | array[interfaces] | List of objects which contain interface information such as its IP address, netmask and gateway. |
| mirror | mirror | |
| multipath_policy | string | Displays the NVRAM mirror multipath policy for the nodes configured in a MetroCluster. |
| node | node | |
| partner_type | string | Partner type |
| state | string | Adapter status |
| type | string | Adapter type |
| vlan_id | integer | VLAN ID |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "adapter": "string",
  "interfaces": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "mirror": {
    "state": "online"
  },
  "multipath_policy": "no_mp",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "partner_type": "aux",
  "state": "down",
  "type": "roce",
  "vlan_id": 0
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |

| Error Code | Description |
|------------|---|
| 2427132 | MetroCluster is not configured on this cluster. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

interfaces

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

mirror

| Name | Type | Description |
|---------|---------|---|
| enabled | boolean | Specifies the administrative state of the NVRAM mirror between partner nodes. |
| state | string | Specifies the operational state of the NVRAM mirror between partner nodes. |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update a MetroCluster interconnect interface

PATCH /cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}

Introduced In: 9.10

Updates a MetroCluster interconnect interface.

Related ONTAP commands * metrocluster configuration-settings interface modify

Parameters

| Name | Type | In | Required | Description |
|--------------|--------|------|----------|----------------------|
| node.uuid | string | path | True | Node UUID |
| partner_type | string | path | True | DR Partner type |
| adapter | string | path | True | Interconnect adapter |

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| Name | Type | Description |
|------------------|-------------------------------------|--|
| _links | self_link | |
| adapter | string | Adapter |
| interfaces | array[interfaces] | List of objects which contain interface information such as its IP address, netmask and gateway. |
| mirror | mirror | |
| multipath_policy | string | Displays the NVRAM mirror multipath policy for the nodes configured in a MetroCluster. |

| Name | Type | Description |
|--------------|---------|----------------|
| node | node | |
| partner_type | string | Partner type |
| state | string | Adapter status |
| type | string | Adapter type |
| vlan_id | integer | VLAN ID |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "adapter": "string",
  "interfaces": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "mirror": {
    "state": "online"
  },
  "multipath_policy": "no_mp",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "partner_type": "aux",
  "state": "down",
  "type": "roce",
  "vlan_id": 0
}
```

Response

Status: 200, Ok

| Name | Type | Description |
|------|----------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 2425734 | An internal error has occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |
| 2430347 | The interface is already configured for port "adapter" with IP address "interfaces.address" on node "node.name". To configure a new IP address, run the "metrocluster configuration-settings interface delete" command to delete this interface and then run the "metrocluster configuration-settings interface create" command with the new IP address. |

| Error Code | Description |
|------------|---|
| 2430348 | The interface is already configured for port "adapter" with gateway "interfaces.gateway" on node "node.name". To configure a new gateway or no gateway, run the "metrocluster configuration-settings interface delete" command to delete this interface and then run the "metrocluster configuration-settings interface create" command with the new gateway or no gateway. |
| 2430352 | The interface is already configured for port "adapter" with netmask "interfaces.netmask" on node "node.name". To configure a new netmask, run the "metrocluster configuration-settings interface delete" command to delete this interface and then run the "metrocluster configuration-settings interface create" command with the new netmask. |
| 2430445 | Configuration for the interface "port" on node "node.name" in cluster "cluster" does not exist. Use the "metrocluster configuration-settings interface show" command to list the valid interfaces configured for MetroCluster over IP. |
| 2432885 | Unable to modify the interface for adapter "port". Reason: At least one interface parameter is required to modify the interface. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

interfaces

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|--------|---|
| address | string | IPv4 or IPv6 address |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |

mirror

| Name | Type | Description |
|---------|---------|---|
| enabled | boolean | Specifies the administrative state of the NVRAM mirror between partner nodes. |
| state | string | Specifies the operational state of the NVRAM mirror between partner nodes. |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

metrocluster_interconnect

Data for a MetroCluster interconnect. REST: /api/cluster/metrocluster/interconnects

| Name | Type | Description |
|------------------|-------------------------------------|--|
| _links | self_link | |
| adapter | string | Adapter |
| interfaces | array[interfaces] | List of objects which contain interface information such as its IP address, netmask and gateway. |
| mirror | mirror | |
| multipath_policy | string | Displays the NVRAM mirror multipath policy for the nodes configured in a MetroCluster. |
| node | node | |
| partner_type | string | Partner type |
| state | string | Adapter status |
| type | string | Adapter type |
| vlan_id | integer | VLAN ID |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve MetroCluster node configurations

Cluster MetroCluster nodes endpoint overview

Overview

Retrieves the configuration information for the nodes in the MetroCluster configuration.

Example

```
GET https://<mgmt-ip>/api/cluster/metrocluster/nodes
{
  "records": [
    {
      "dr_group_id": 1,
      "cluster": {
        "name": "cluster1",
        "uuid": "8f77de32-9857-11e9-9a55-005056828eb9",
        "_links": {
          "self": {
            "href": "/api/cluster"
          }
        }
      },
      "node": {
```

```

        "name": "cluster1_01",
        "uuid": "46147363-9857-11e9-9a55-005056828eb9",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/46147363-9857-11e9-9a55-005056828eb9"
            }
        }
    },
    "dr_mirroring_state": "enabled",
    "configuration_state": "configured",
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/nodes/46147363-9857-11e9-9a55-005056828eb9"
        }
    }
},
{
    "dr_group_id": 1,
    "cluster": {
        "name": "cluster1",
        "uuid": "8f77de32-9857-11e9-9a55-005056828eb9",
        "_links": {
            "self": {
                "href": "/api/cluster"
            }
        }
    },
    "node": {
        "name": "cluster1_02",
        "uuid": "cf1dc67f-9857-11e9-bf80-005056829db6",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/cf1dc67f-9857-11e9-bf80-005056829db6"
            }
        }
    },
    "dr_mirroring_state": "enabled",
    "configuration_state": "configured",
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/nodes/cf1dc67f-9857-11e9-bf80-005056829db6"
        }
    }
}

```



```

    }
  },
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "cluster3",
      "uuid": "aa8aa15a-9857-11e9-80c9-00505682e684",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/aa8aa15a-9857-11e9-80c9-00505682e684/cluster"
        }
      }
    },
    "node": {
      "name": "cluster3_01",
      "uuid": "5b3b983b-9857-11e9-80c9-00505682e684",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/5b3b983b-9857-11e9-80c9-00505682e684"
        }
      }
    },
    "dr_mirroring_state": "enabled",
    "configuration_state": "configured",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/5b3b983b-9857-11e9-80c9-00505682e684"
      }
    }
  },
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "cluster3",
      "uuid": "aa8aa15a-9857-11e9-80c9-00505682e684",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/aa8aa15a-9857-11e9-80c9-00505682e684/cluster"
        }
      }
    },
    "node": {

```

```

        "name": "cluster3_02",
        "uuid": "45bff538-9858-11e9-a624-005056820377",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/45bff538-9858-11e9-a624-005056820377"
            }
        }
    },
    "dr_mirroring_state": "enabled",
    "configuration_state": "configured",
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/nodes/45bff538-9858-11e9-a624-005056820377"
        }
    }
}
],
"num_records": 4,
"_links": {
    "self": {
        "href": "/api/cluster/metrocluster/nodes?fields=%2A"
    }
}
}

```

Retrieve MetroCluster nodes and configurations

GET /cluster/metrocluster/nodes

Introduced In: 9.8

Retrieves MetroCluster nodes and their configurations.

Related ONTAP Commands

- metrocluster node show

Learn more

- [DOC /cluster/metrocluster/nodes](#)

Parameters

| Name | Type | In | Required | Description |
|---------------------------|---------|-------|----------|--|
| dr_group_id | integer | query | False | Filter by dr_group_id |
| cluster.uuid | string | query | False | Filter by cluster.uuid |
| cluster.name | string | query | False | Filter by cluster.name |
| node.name | string | query | False | Filter by node.name |
| node.system_id | string | query | False | Filter by node.system_id • Introduced in: 9.12 |
| node.uuid | string | query | False | Filter by node.uuid |
| dr_auxiliary_cluster.uuid | string | query | False | Filter by dr_auxiliary_cluster.uuid • Introduced in: 9.12 |
| dr_auxiliary_cluster.name | string | query | False | Filter by dr_auxiliary_cluster.name • Introduced in: 9.12 |
| dr_partner.name | string | query | False | Filter by dr_partner.name • Introduced in: 9.12 |
| dr_partner.system_id | string | query | False | Filter by dr_partner.system_id • Introduced in: 9.12 |

| Name | Type | In | Required | Description |
|-------------------------|--------|-------|----------|--|
| dr_partner.uuid | string | query | False | Filter by dr_partner.uuid • Introduced in: 9.12 |
| dr_partner_cluster.uuid | string | query | False | Filter by dr_partner_cluster.uuid • Introduced in: 9.12 |
| dr_partner_cluster.name | string | query | False | Filter by dr_partner_cluster.name • Introduced in: 9.12 |
| ha_partner.name | string | query | False | Filter by ha_partner.name • Introduced in: 9.12 |
| ha_partner.system_id | string | query | False | Filter by ha_partner.system_id • Introduced in: 9.12 |
| ha_partner.uuid | string | query | False | Filter by ha_partner.uuid • Introduced in: 9.12 |
| limit_enforcement | string | query | False | Filter by limit_enforcement • Introduced in: 9.12 |

| Name | Type | In | Required | Description |
|--------------------------------|---------|-------|----------|---|
| ha_partner_cluster.uid | string | query | False | Filter by ha_partner_cluster.uid • Introduced in: 9.12 |
| ha_partner_cluster.name | string | query | False | Filter by ha_partner_cluster.name • Introduced in: 9.12 |
| dr_auxiliary_partner.name | string | query | False | Filter by dr_auxiliary_partner.name • Introduced in: 9.12 |
| dr_auxiliary_partner.system_id | string | query | False | Filter by dr_auxiliary_partner.system_id • Introduced in: 9.12 |
| dr_auxiliary_partner.uuid | string | query | False | Filter by dr_auxiliary_partner.uuid • Introduced in: 9.12 |
| dr_mirroring_state | string | query | False | Filter by dr_mirroring_state |
| automatic_uso | boolean | query | False | Filter by automatic_uso • Introduced in: 9.9 |
| is_mccip | boolean | query | False | Filter by is_mccip • Introduced in: 9.12 |

| Name | Type | In | Required | Description |
|---------------------|---------------|-------|----------|---|
| dr_operation_state | string | query | False | Filter by dr_operation_state <ul style="list-style-type: none"> • Introduced in: 9.9 |
| configuration_state | string | query | False | Filter by configuration_state |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|--|-------------------|
| _links | collection_links | |
| num_records | integer | Number of Records |
| records | array[metrocluster_node] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "unreachable",
    "dr_auxiliary_cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "dr_auxiliary_partner": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "system_id": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  }
}
```



```

},
"dr_group_id": 0,
"dr_mirroring_state": "enabled",
"dr_operation_state": "normal",
"dr_partner": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
},
"name": "node1",
"system_id": "string",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"dr_partner_cluster": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
},
"name": "cluster1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ha_partner": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
},
"name": "node1",
"system_id": "string",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ha_partner_cluster": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
},
"name": "cluster1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"limit_enforcement": "enabled",
"node": {
  "_links": {
    "self": {

```

```

        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
}

```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

```

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

```

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

collection_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cluster

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_auxiliary_cluster

DR AUX cluster.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_auxiliary_partner

AUX partner node.

| Name | Type | Description |
|-----------|---------------------------|-------------|
| _links | self_link | |
| name | string | |
| system_id | string | |
| uuid | string | |

dr_partner

DR partner node.

| Name | Type | Description |
|-----------|---------------------------|-------------|
| _links | self_link | |
| name | string | |
| system_id | string | |
| uuid | string | |

dr_partner_cluster

DR partner cluster.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

ha_partner

HA partner node.

| Name | Type | Description |
|-----------|---------------------------|-------------|
| _links | self_link | |
| name | string | |
| system_id | string | |
| uuid | string | |

ha_partner_cluster

HA partner cluster.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |

| Name | Type | Description |
|------|--------|-------------|
| uuid | string | |

node

| Name | Type | Description |
|-----------|---------------------------|-------------|
| _links | self_link | |
| name | string | |
| system_id | string | |
| uuid | string | |

metrocluster_node

Data for a node in a MetroCluster. REST: /api/cluster/metrocluster/nodes

| Name | Type | Description |
|----------------------|--------------------------------------|---|
| _links | self_link | |
| automatic_uso | boolean | Specifies if automatic unplanned switchover is enabled. |
| cluster | cluster | |
| configuration_state | string | Configuration state of the node. |
| dr_auxiliary_cluster | dr_auxiliary_cluster | DR AUX cluster. |
| dr_auxiliary_partner | dr_auxiliary_partner | AUX partner node. |
| dr_group_id | integer | DR Group ID. |
| dr_mirroring_state | string | State of the DR mirroring configuration. |
| dr_operation_state | string | State of the DR operation. |
| dr_partner | dr_partner | DR partner node. |
| dr_partner_cluster | dr_partner_cluster | DR partner cluster. |
| ha_partner | ha_partner | HA partner node. |
| ha_partner_cluster | ha_partner_cluster | HA partner cluster. |

| Name | Type | Description |
|-------------------|----------------------|---|
| is_mccip | boolean | Indicates whether the configuration type is MCC-IP. |
| limit_enforcement | string | Indicates if the node object limits are enforced. |
| node | node | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve the node configuration in MetroCluster

GET /cluster/metrocluster/nodes/{node.uuid}

Introduced In: 9.8

Retrieves the node configuration in the MetroCluster.

Related ONTAP Commands

- `metrocluster node show`

Parameters

| Name | Type | In | Required | Description |
|-----------|--------|------|----------|-------------|
| node.uuid | string | path | True | Node UUID |

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|----------------------|--------------------------------------|---|
| _links | self_link | |
| automatic_uso | boolean | Specifies if automatic unplanned switchover is enabled. |
| cluster | cluster | |
| configuration_state | string | Configuration state of the node. |
| dr_auxiliary_cluster | dr_auxiliary_cluster | DR AUX cluster. |
| dr_auxiliary_partner | dr_auxiliary_partner | AUX partner node. |
| dr_group_id | integer | DR Group ID. |
| dr_mirroring_state | string | State of the DR mirroring configuration. |
| dr_operation_state | string | State of the DR operation. |
| dr_partner | dr_partner | DR partner node. |
| dr_partner_cluster | dr_partner_cluster | DR partner cluster. |
| ha_partner | ha_partner | HA partner node. |
| ha_partner_cluster | ha_partner_cluster | HA partner cluster. |
| is_mccip | boolean | Indicates whether the configuration type is MCC-IP. |
| limit_enforcement | string | Indicates if the node object limits are enforced. |
| node | node | |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "unreachable",
  "dr_auxiliary_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "dr_auxiliary_partner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "dr_group_id": 0,
  "dr_mirroring_state": "enabled",
  "dr_operation_state": "normal",
  "dr_partner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
}
```

```
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "dr_partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "ha_partner": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "ha_partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "limit_enforcement": "enabled",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "system_id": "string",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cluster

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_auxiliary_cluster

DR AUX cluster.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

dr_auxiliary_partner

AUX partner node.

| Name | Type | Description |
|-----------|---------------------------|-------------|
| _links | self_link | |
| name | string | |
| system_id | string | |
| uuid | string | |

dr_partner

DR partner node.

| Name | Type | Description |
|-----------|---------------------------|-------------|
| _links | self_link | |
| name | string | |
| system_id | string | |
| uuid | string | |

dr_partner_cluster

DR partner cluster.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

ha_partner

HA partner node.

| Name | Type | Description |
|-----------|---------------------------|-------------|
| _links | self_link | |
| name | string | |
| system_id | string | |
| uuid | string | |

ha_partner_cluster

HA partner cluster.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

node

| Name | Type | Description |
|-----------|---------------------------|-------------|
| _links | self_link | |
| name | string | |
| system_id | string | |

| Name | Type | Description |
|------|--------|-------------|
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve MetroCluster operations

Cluster MetroCluster operations endpoint overview

Overview

Retrieves a list of recent MetroCluster operations. To view more information about a specific operation, use the `/cluster/metrocluster/operations/{uuid}` API endpoint.

Examples

Retrieves all MetroCluster operations

```
GET https://<mgmt-ip>/api/cluster/metrocluster/operations?fields=*
{
  "records": [
    {
      "uuid": "a14ae39f-8d85-11e9-b4a7-00505682dc8b",
      "type": "check",
      "state": "successful",
```

```

    "start_time": "2019-06-14T11:15:00-07:00",
    "end_time": "2019-06-14T11:16:08-07:00",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/operations/a14ae39f-
8d85-11e9-b4a7-00505682dc8b"
      }
    }
  },
  {
    "uuid": "7058df27-8d85-11e9-bbc9-005056826931",
    "type": "configure",
    "state": "successful",
    "start_time": "2019-06-12T19:46:27-07:00",
    "end_time": "2019-06-12T19:48:17-07:00",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/operations/7058df27-
8d85-11e9-bbc9-005056826931"
      }
    }
  },
  {
    "uuid": "7849515d-8d84-11e9-bbc9-005056826931",
    "type": "connect",
    "state": "successful",
    "start_time": "2019-06-12T19:39:30-07:00",
    "end_time": "2019-06-12T19:42:02-07:00",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/operations/7849515d-
8d84-11e9-bbc9-005056826931"
      }
    }
  },
  {
    "uuid": "331c79ad-8d84-11e9-b4a7-00505682dc8b",
    "type": "interface_create",
    "state": "successful",
    "start_time": "2019-06-12T19:37:35-07:00",
    "end_time": "2019-06-12T19:37:41-07:00",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/operations/331c79ad-
8d84-11e9-b4a7-00505682dc8b"
      }
    }
  }
}

```

```

    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/operations?fields=%2A"
  }
}
}

```

Retrieves Information about a specific MetroCluster operation

```

GET https://<mgmt-ip>/api/cluster/metrocluster/operations/0db12274-86fd-
11e9-8053-00505682c342
{
  "uuid": "0db12274-86fd-11e9-8053-00505682c342",
  "name": "check",
  "state": "successful",
  "start_time": "2019-06-06T16:15:01-07:00",
  "end_time": "2019-06-06T16:16:05-07:00",
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/operations/0db12274-86fd-
11e9-8053-00505682c342"
    }
  }
}

```

Retrieve MetroCluster operations on the local cluster

GET /cluster/metrocluster/operations

Introduced In: 9.8

Retrieves the list of MetroCluster operations on the local cluster.

Related ONTAP Commands

- metrocluster operation history show

Learn more

- [DOC /cluster/metrocluster/operations](#)

Parameters

| Name | Type | In | Required | Description |
|-----------------|---------------|-------|----------|---|
| uuid | string | query | False | Filter by uuid |
| state | string | query | False | Filter by state |
| end_time | string | query | False | Filter by end_time |
| start_time | string | query | False | Filter by start_time |
| node.name | string | query | False | Filter by node.name <ul style="list-style-type: none">• Introduced in: 9.9 |
| node.uuid | string | query | False | Filter by node.uuid <ul style="list-style-type: none">• Introduced in: 9.9 |
| errors | string | query | False | Filter by errors |
| type | string | query | False | Filter by type |
| command_line | string | query | False | Filter by command_line |
| additional_info | string | query | False | Filter by additional_info |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none">• Default value: 1 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|---|-------------------|
| _links | collection_links | |
| num_records | integer | Number of Records |
| records | array[metrocluster_operation] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "additional_info": "MetroCluster switchover with auto heal
completed successfully.",
    "command_line": "metrocluster switchover",
    "end_time": "2016-03-10 17:35:16 -0500",
    "errors": [
      "siteB (warning): Unable to prepare the partner cluster for a
pending switchback operation. Reason: entry doesn't exist. Reboot the
nodes in the partner cluster before using the \"metrocluster
switchback\" command."
    ],
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "start_time": "2016-03-10 17:33:16 -0500",
    "state": "completed_with_warnings",
    "type": "switchover",
    "uuid": "11111111-2222-3333-4444-abcdefabcdef"
  }
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

collection_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

Node from where the command is executed.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

metrocluster_operation

Data for a MetroCluster operation. REST: /api/cluster/metrocluster/operations

| Name | Type | Description |
|-----------------|---------------------------|---|
| _links | self_link | |
| additional_info | string | Additional information for the auto heal. |
| command_line | string | Command line executed with the options specified. |

| Name | Type | Description |
|------------|----------------------|--|
| end_time | string | End Time |
| errors | array[string] | List of errors in the operation. |
| node | node | Node from where the command is executed. |
| start_time | string | Start Time |
| state | string | Indicates the state of the operation. |
| type | string | Name of the operation. |
| uuid | string | Identifier for the operation. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve information about a MetroCluster operation

GET /cluster/metrocluster/operations/{uuid}

Introduced In: 9.8

Retrieves information about a specific MetroCluster operation.

Related ONTAP Commands

- `metrocluster operation show`

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|--------------------------------------|
| uuid | string | path | True | Unique identifier for the operation. |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|---------------------------|---|
| _links | self_link | |
| additional_info | string | Additional information for the auto heal. |
| command_line | string | Command line executed with the options specified. |
| end_time | string | End Time |
| errors | array[string] | List of errors in the operation. |
| node | node | Node from where the command is executed. |
| start_time | string | Start Time |
| state | string | Indicates the state of the operation. |
| type | string | Name of the operation. |
| uuid | string | Identifier for the operation. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "additional_info": "MetroCluster switchover with auto heal completed successfully.",
  "command_line": "metrocluster switchover",
  "end_time": "2016-03-10 17:35:16 -0500",
  "errors": [
    "siteB (warning): Unable to prepare the partner cluster for a pending switchback operation. Reason: entry doesn't exist. Reboot the nodes in the partner cluster before using the \"metrocluster switchback\" command."
  ],
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"start_time": "2016-03-10 17:33:16 -0500",
"state": "completed_with_warnings",
"type": "switchover",
"uuid": "11111111-2222-3333-4444-abcdefabcdef"
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2425734 | An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|----------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

Node from where the command is executed.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve MetroCluster SVMs

Cluster MetroCluster svms endpoint overview

Overview

Retrieves configuration information for all pairs of SVMs in MetroCluster.

Related ONTAP commands

- `metrocluster vserver show`

Examples

```
GET https://<mgmt-ip>/api/cluster/metrocluster/svms/?fields=*"
{
  "records": [
    {
      "cluster": {
        "uuid": "9623385a-6c4c-11ec-a8cc-005056aca0c8",
        "name": "cluster1"
      },
      "svm": {
        "uuid": "2ea76ca7-6c5f-11ec-b430-005056aca0c8",
        "name": "svm1"
      },
      "partner_svm": {
        "uuid": "2ea76ca7-6c5f-11ec-b430-005056aca0c8",
        "name": "svm1-mc"
      },
      "configuration_state": "healthy",
      "_links": {
        "self": {
          "href": "/api/cluster/metrocluster/svms/9623385a-6c4c-11ec-a8cc-005056aca0c8/2ea76ca7-6c5f-11ec-b430-005056aca0c8"
        }
      }
    },
    {
      "cluster": {
        "uuid": "988d33a0-6c4c-11ec-8e28-005056aceeed",
        "name": "cluster2"
      },
      "svm": {
        "uuid": "2fa16461-6c5f-11ec-8f69-005056aceeed",
```

```

    "name": "svm2"
  },
  "partner_svm": {
    "uuid": "2fa16461-6c5f-11ec-8f69-005056aceeed",
    "name": "svm2-mc"
  },
  "configuration_state": "healthy",
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/svms/988d33a0-6c4c-11ec-8e28-005056aceeed/2fa16461-6c5f-11ec-8f69-005056aceeed"
    }
  }
},
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/svms/?fields=*"
  }
}
}
}

```

Retrieve configuration information for all SVM pairs in a MetroCluster configuration

GET /cluster/metrocluster/svms

Introduced In: 9.11

Retrieves configuration information for all pairs of SVMs in MetroCluster. REST
/api/cluster/metrocluster/svms/?

Parameters

| Name | Type | In | Required | Description |
|--------------|--------|-------|----------|------------------------|
| svm.uuid | string | query | False | Filter by svm.uuid |
| svm.name | string | query | False | Filter by svm.name |
| cluster.name | string | query | False | Filter by cluster.name |
| cluster.uuid | string | query | False | Filter by cluster.uuid |

| Name | Type | In | Required | Description |
|---------------------|---------------|-------|----------|---|
| configuration_state | string | query | False | Filter by configuration_state |
| failed_reason | string | query | False | Filter by failed_reason |
| partner_svm.name | string | query | False | Filter by partner_svm.name |
| partner_svm.uuid | string | query | False | Filter by partner_svm.uuid |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|---|-------------------|
| _links | collection_links | |
| num_records | integer | Number of Records |
| records | array[metrocluster_svm] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "degraded",
    "failed_reason": {
      "arguments": {
        "code": "string",
        "message": "string"
      },
      "code": "4",
      "message": "entry doesn't exist"
    },
    "partner_svm": {
      "name": "string",
      "uuid": "string"
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  },
}
```

```
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

collection_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cluster

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

error

Reason for SVM object replication failure.

| Name | Type | Description |
|-----------|--|-------------------|
| arguments | array[error_arguments] | Message arguments |

| Name | Type | Description |
|---------|--------|---------------|
| code | string | Error code |
| message | string | Error message |

partner_svm

| Name | Type | Description |
|------|--------|--------------------------------|
| name | string | MetroCluster partner SVM name. |
| uuid | string | MetroCluster partner SVM UUID. |

svm

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

metrocluster_svm

Retrieves configuration information for all pairs of SVMs in MetroCluster. REST
/api/cluster/metrocluster/svms/?

| Name | Type | Description |
|------------------------|-----------------------------|--|
| _links | self_link | |
| cluster | cluster | |
| configuration_state | string | Configuration state. |
| failed_reason | error | Reason for SVM object replication failure. |
| partner_svm | partner_svm | |
| svm | svm | SVM, applies only to SVM-scoped objects. |

returned_error

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

Retrieve configuration information for an SVM

GET /cluster/metrocluster/svms/{cluster.uuid}/{svm.uuid}

Introduced In: 9.11

Retrieves configuration information for an SVM in a MetroCluster relationship.

Parameters

| Name | Type | In | Required | Description |
|--------------|---------------|-------|----------|-------------------------------|
| cluster.uuid | string | path | True | Cluster ID |
| svm.uuid | string | path | True | SVM UUID |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|---------------------|---------------------------|--|
| _links | self_link | |
| cluster | cluster | |
| configuration_state | string | Configuration state. |
| failed_reason | error | Reason for SVM object replication failure. |

| Name | Type | Description |
|-------------|-----------------------------|--|
| partner_svm | partner_svm | |
| svm | svm | SVM, applies only to SVM-scoped objects. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "degraded",
  "failed_reason": {
    "arguments": {
      "code": "string",
      "message": "string"
    },
    "code": "4",
    "message": "entry doesn't exist"
  },
  "partner_svm": {
    "name": "string",
    "uuid": "string"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cluster

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

error

Reason for SVM object replication failure.

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

partner_svm

| Name | Type | Description |
|------|--------|--------------------------------|
| name | string | MetroCluster partner SVM name. |
| uuid | string | MetroCluster partner SVM UUID. |

svm

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|--------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

returned_error

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

Manage cluster nodes

Cluster nodes endpoint overview

Overview

You can use this API to add nodes to a cluster, update node-specific configurations, and retrieve the current node configuration details.

Adding a node to a cluster

You can add a node to a cluster by issuing a POST `/cluster/nodes` request to a node currently in the cluster. All nodes must be running the same version of ONTAP to use this API. Mixed version joins are not supported in

this release. You can provide properties as fields in the body of the POST request to configure node-specific settings. On a successful request, POST /cluster/nodes returns a status code of 202 and job information in the body of the request. You can use the /cluster/jobs APIs to track the status of the node add job.

Fields used for adding a node

Fields used for the /cluster/nodes APIs fall into the following categories:

- Required node fields
- Optional fields
- Network interface fields
- Records field

Required node fields

The following field is required for any POST /cluster/nodes request:

- cluster_interface.ip.address

Optional fields

All of the following fields are used to set up additional cluster-wide configurations:

- name
- location
- records

Network interface fields

You can set a node-specific configuration for each node by using the POST /cluster/nodes API. If you provide a field in the body of a node, provide it for all nodes in the POST body. You can provide the node management interface for each node if all node management interfaces in the cluster use the same subnet mask. If the node management interfaces use different subnet masks, use the /network/ip/interfaces API to configure the node management interfaces.

The records field

To add multiple nodes to the cluster in one request, provide an array named "records" with multiple node entries. Each node entry in "records" must follow the required and optional fields listed previously. When only adding a single node, you do not need a "records" field. See "Examples" for an example of how to use the "records" field.

Create recommended aggregates parameter

When you set the "create_recommended_aggregates" parameter to "true", aggregates based on an optimal layout recommended by the system are created on each of the nodes being added to the cluster. The default setting is "false".

Modifying node configurations

The following fields can be used to modify a node configuration:

- name
 - location
-

Modifying service processor configurations

When modifying the "service_processor" properties, the job returns success immediately if valid network information is passed in. The values remain in their old state until the network information changes have taken effect on the service processor. You can poll the modified properties until the values are updated.

Deleting a node from a cluster

You can delete a node from the cluster. Before deleting a node from the cluster, shut down all of the node's shared resources, such as virtual interfaces to clients. If any of the node's shared resources are still active, the command fails. You can use the "force" flag to forcibly remove a node that is down and cannot be brought online to remove its shared resources. This flag is set to "false" by default.

Node state

The node "state" field in the /cluster/nodes API represents the current operational state of individual nodes. Note that the state of a node is a transient value and can change depending on the current condition of the node, especially during reboot, takeover, and giveback. Possible values for the node state are:

- *up* - Node is fully operational and is able to accept and handle management requests. It is connected to a majority of healthy (up) nodes in the cluster through the cluster interconnect and all critical services are online.
 - *booting* - Node is starting up and is not yet fully functional. It might not yet be accessible through the management interface or cluster interconnect. One or more critical services are offline on the node and the node is not taken over. The HA partner reports the node's firmware state as "SF_BOOTING", "SF_BOOTED", or "SF_CLUSTERWAIT".
 - *down* - Node is known to be down. It cannot be reached through the management interface or cluster interconnect. The HA partner can be reached and reports that the node is halted/rebooted without takeover. Or, the HA partner cannot be reached (or no SFO configured) but the node shutdown request has been recorded by the quorum change coordinator. The state is reported by the node's HA partner.
 - *taken_over* - Node is taken over by its HA partner. The state is reported by the node's HA partner.
 - *waiting_for_giveback* - Node is taken over by its HA partner and is now ready and waiting for giveback. To bring the node up, either issue the "giveback" command to the HA partner node or wait for auto-giveback, if enabled. The state is reported by the node's HA partner.
 - *degraded* - Node is known to be up but is not yet fully functional. The node can be reached through the cluster interconnect but one or more critical services are offline. Or, the node is not reachable but the node's HA partner can be reached and reports that the node is up with firmware state "SF_UP".
 - *unknown* - Node state cannot be determined.
-

HA

The "ha" field in the /cluster/nodes API shows the takeover and giveback states of the node along with the current values of the HA fields "enabled" and "auto_giveback". You can modify the HA fields "enabled" and "auto_giveback", which will change the HA states of the node.

Takeover

The takeover "state" field shows the different takeover states of the node. When the state is "failed", the "code" and "message" fields display. Possible values for takeover states are:

- *not_attempted* - Takeover operation is not started and takeover is possible.
- *not_possible* - Takeover operation is not possible. Check the failure message.
- *in_progress* - Takeover operation is in progress. The node is taking over its partner.
- *in_takeover* - Takeover operation is complete.
- *failed* - Takeover operation failed. Check the failure message.

Possible values for takeover failure code and messages are:

- *code: 852130 message: Failed to initiate takeover. Run the "storage failover show-takeover" command for more information.*
- *code: 852131 message: Takeover cannot be completed. Reason: disabled.*

Giveback

The giveback "state" field shows the different giveback states of the node. When the state is "failed", the "code" and "message" fields display. Possible values for giveback states are:

- *nothing_to_giveback* - Node does not have partner aggregates to giveback.
- *not_attempted* - Giveback operation is not started.
- *in_progress* - Giveback operation is in progress.
- *failed* - Giveback operation failed. Check the failure message.

Possible values for giveback failure codes and messages are:

- *code: 852126 message: Failed to initiate giveback. Run the "storage failover show-giveback" command for more information.*

Performance monitoring

Performance of a node can be monitored by observing the `metric.*` and `statistics.*` properties. These properties show the performance of a node in terms of cpu utilization. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

Examples

The following examples show how to add nodes to a cluster, update node properties, shutdown and reboot a node, and remove a node from the cluster.

Adding a single node with a minimal configuration

```
# Body
add_single_node.txt(body):
{
  "cluster_interface": {
    "ip": {
      "address": "1.1.1.1"
    }
  }
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/nodes" -d
"@add_single_node.txt"
```

Adding multiple nodes in the same request and creating recommended aggregates

```
# Body
add_multiple_nodes.txt(body):
{
  "records": [
    {
      "name": "node1",
      "cluster_interface": {
        "ip": {
          "address": "1.1.1.1"
        }
      }
    },
    {
      "name": "node2",
      "cluster_interface": {
        "ip": {
          "address": "2.2.2.2"
        }
      }
    }
  ]
}

# Request
curl -X POST "https://<mgmt-
ip>/api/cluster/nodes?create_recommended_aggregates=true" -d
"@add_multiple_nodes.txt"
```

Modifying a cluster-wide configuration

```
# Body
modify_name_and_location.txt(body):
{
  "name": "renamedNode",
  "location": "newLocation"
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster/nodes" -d
"@modify_name_and_location.txt"
```

Shutting down a node

```
curl -X PATCH "https://<mgmt-ip>/api/cluster/nodes/{uuid}?action=shutdown"
```

Powering off a node using SP assistance

```
curl -X PATCH "https://<mgmt-  
ip>/api/cluster/nodes/{uuid}?action=power_off"
```

Deleting a node from a cluster

```
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}"
```

Force a node deletion from a cluster

```
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}?force=true"
```

Retrieving the state of all nodes in a cluster

```
#Request
curl -siku admin -X GET "https://<mgmt-ip>/api/cluster/nodes?fields=state"

#Response
{
  "records": [
    {
      "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
      "name": "node2",
      "state": "up",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
        }
      }
    },
    {
      "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
      "name": "node1",
      "state": "up",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/nodes?fields=state"
    }
  }
}
```

Retrieving nodes that are in the spare low condition in a cluster

```

# Request
curl -siku admin -X GET "https://<mgmt-
ip>/api/cluster/nodes?fields=is_spares_low"

#Response
{
  "records": [
    {
      "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
      "name": "node2",
      "spares_low": true,
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
        }
      }
    },
    {
      "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
      "name": "node1",
      "spares_low": false,
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/nodes?fields=state"
    }
  }
}

```

Retrieving statistics and metric for a node

In this example, the API returns the "statistics" and "metric" properties.


```

#Request
curl -siku admin -X GET "https://<mgmt-
ip>/api/cluster/nodes?fields=statistics,metric"

#Response
{
  "records": [
    {
      "uuid": "6b29327b-21ca-11ea-99aa-005056bb420b",
      "name": "prij-vsml1",
      "metric": {
        "timestamp": "2019-12-19T15:50:45Z",
        "duration": "PT15S",
        "status": "ok",
        "processor_utilization": 3
      },
      "statistics": {
        "timestamp": "2019-12-19T15:50:48Z",
        "status": "ok",
        "processor_utilization_raw": 6409411622,
        "processor_utilization_base": 74330229886
      }
    }
  ],
  "num_records": 1
}

```

Retrieving takeover and giveback failure codes and messages

```

#Request
curl -siku admin -X GET "https://<mgmt-ip>/api/cluster/nodes?fields=ha"

#Response
{
  "records": [
    {
      "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
      "name": "node2",
      "ha": {
        "enabled": false,
        "auto_giveback": false,
        "partners": [
          {

```

```

        "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
        "name": "node1"
    }
],
"giveback": {
    "state": "nothing_to_giveback"
},
"takeover": {
    "state": "not_possible",
    "failure": {
        "message": "Takeover cannot be completed. Reason: disabled.",
        "code": 852131
    }
},
"ports": [
    {
        "name": "e0h"
    },
    {
        "name": "N/A"
    }
]
},
"_links": {
    "self": {
        "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
    }
}
},
{
    "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
    "name": "node1",
    "ha": {
        "enabled": false,
        "auto_giveback": false,
        "partners": [
            {
                "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
                "name": "node2"
            }
        ],
        "giveback": {
            "state": "nothing_to_giveback"
        },
        "takeover": {
            "state": "not_possible",

```

```
    "failure": {
      "message": "Takeover cannot be completed. Reason: disabled.",
      "code": 852131
    }
  },
  "ports": [
    {
      "name": "e0h"
    },
    {
      "name": "N/A"
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
  }
}
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=state"
  }
}
}
```

Retrieving external cache information for a node

In this example, the API returns the `external_cache` property.

```

#Request
curl -siku admin -X GET "https://<mgmt-
ip>/api/cluster/nodes?fields=external_cache"

#Response
{
  "records": [
    {
      "uuid": "71af8235-bea9-11eb-874a-005056bbab13",
      "name": "node2",
      "external_cache": {
        "is_enabled": false,
        "is_hya_enabled": true,
        "is_rewarm_enabled": false,
        "pcs_size": 256
      },
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/71af8235-bea9-11eb-874a-005056bbab13"
        }
      }
    },
    {
      "uuid": "8c4cbf08-bea9-11eb-b8ae-005056bb16aa",
      "name": "node1",
      "external_cache": {
        "is_enabled": false,
        "is_hya_enabled": true,
        "is_rewarm_enabled": false,
        "pcs_size": 256
      },
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/8c4cbf08-bea9-11eb-b8ae-005056bb16aa"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/nodes?fields=external_cache"
    }
  }
}

```

Retrieve the nodes in a cluster

GET `/cluster/nodes`

Introduced In: 9.6

Retrieves the nodes in the cluster.

Expensive properties

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

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `system node show`

Parameters

| Name | Type | In | Required | Description |
|---|---------|-------|----------|---|
| <code>management_interfaces.uuid</code> | string | query | False | Filter by <code>management_interfaces.uuid</code> |
| <code>management_interfaces.ip.address</code> | string | query | False | Filter by <code>management_interfaces.ip.address</code> |
| <code>management_interfaces.name</code> | string | query | False | Filter by <code>management_interfaces.name</code> |
| <code>membership</code> | string | query | False | Filter by <code>membership</code> |
| <code>snaplock.compliance_clock_time</code> | string | query | False | Filter by <code>snaplock.compliance_clock_time</code> <ul style="list-style-type: none">• Introduced in: 9.12 |
| <code>service_processor.dhcp_enabled</code> | boolean | query | False | Filter by <code>service_processor.dhcp_enabled</code> |

| Name | Type | In | Required | Description |
|--|---------|-------|----------|---|
| service_processor.automupdate_enabled | boolean | query | False | Filter by service_processor.automupdate_enabled • Introduced in: 9.10 |
| service_processor.backup.version | string | query | False | Filter by service_processor.backup.version • Introduced in: 9.10 |
| service_processor.backup.state | string | query | False | Filter by service_processor.backup.state • Introduced in: 9.10 |
| service_processor.backup.is_current | boolean | query | False | Filter by service_processor.backup.is_current • Introduced in: 9.10 |
| service_processor.ipv4_interface.setup_state | string | query | False | Filter by service_processor.ipv4_interface.setup_state • Introduced in: 9.14 |
| service_processor.ipv4_interface.enabled | boolean | query | False | Filter by service_processor.ipv4_interface.enabled • Introduced in: 9.14 |
| service_processor.ipv4_interface.address | string | query | False | Filter by service_processor.ipv4_interface.address |

| Name | Type | In | Required | Description |
|---|---------|-------|----------|--|
| service_processor.ipv4_interface.netmask | string | query | False | Filter by service_processor.ipv4_interface.netmask |
| service_processor.ipv4_interface.gateway | string | query | False | Filter by service_processor.ipv4_interface.gateway |
| service_processor.type | string | query | False | Filter by service_processor.type • Introduced in: 9.10 |
| service_processor.link_status | string | query | False | Filter by service_processor.link_status |
| service_processor.is_ip_configured | boolean | query | False | Filter by service_processor.is_ip_configured • Introduced in: 9.10 |
| service_processor.ipv6_interface.is_ipv6_ra_enabled | boolean | query | False | Filter by service_processor.ipv6_interface.is_ipv6_ra_enabled • Introduced in: 9.14 |
| service_processor.ipv6_interface.link_local_ip | string | query | False | Filter by service_processor.ipv6_interface.link_local_ip • Introduced in: 9.14 |

| Name | Type | In | Required | Description |
|--|---------|-------|----------|---|
| service_processor.ipv6_interface.setup_state | string | query | False | Filter by service_processor.ipv6_interface.setup_state • Introduced in: 9.14 |
| service_processor.ipv6_interface.enabled | boolean | query | False | Filter by service_processor.ipv6_interface.enabled • Introduced in: 9.14 |
| service_processor.ipv6_interface.router_ip | string | query | False | Filter by service_processor.ipv6_interface.router_ip • Introduced in: 9.14 |
| service_processor.ipv6_interface.netmask | integer | query | False | Filter by service_processor.ipv6_interface.netmask |
| service_processor.ipv6_interface.address | string | query | False | Filter by service_processor.ipv6_interface.address |
| service_processor.ipv6_interface.gateway | string | query | False | Filter by service_processor.ipv6_interface.gateway |
| service_processor.primary.state | string | query | False | Filter by service_processor.primary.state • Introduced in: 9.10 |

| Name | Type | In | Required | Description |
|---|---------|-------|----------|--|
| service_processor.primary.is_current | boolean | query | False | Filter by service_processor.primary.is_current • Introduced in: 9.10 |
| service_processor.primary.version | string | query | False | Filter by service_processor.primary.version • Introduced in: 9.10 |
| service_processor.last_update_state | string | query | False | Filter by service_processor.last_update_state • Introduced in: 9.10 |
| service_processor.auto_config.ipv4_subnet | string | query | False | Filter by service_processor.auto_config.ipv4_subnet • Introduced in: 9.11 |
| service_processor.auto_config.ipv6_subnet | string | query | False | Filter by service_processor.auto_config.ipv6_subnet • Introduced in: 9.11 |
| service_processor.sh_info.allowed_addresses | string | query | False | Filter by service_processor.sh_info.allowed_addresses • Introduced in: 9.10 |

| Name | Type | In | Required | Description |
|--|---------|-------|----------|---|
| service_processor.web_service.enabled | boolean | query | False | Filter by service_processor.web_service.enabled • Introduced in: 9.14 |
| service_processor.web_service.limit_access | boolean | query | False | Filter by service_processor.web_service.limit_access • Introduced in: 9.14 |
| service_processor.mac_address | string | query | False | Filter by service_processor.mac_address |
| service_processor.state | string | query | False | Filter by service_processor.state |
| service_processor.firmware_version | string | query | False | Filter by service_processor.firmware_version |
| service_processor.api_service.port | integer | query | False | Filter by service_processor.api_service.port • Introduced in: 9.11 |
| service_processor.api_service.limit_access | boolean | query | False | Filter by service_processor.api_service.limit_access • Introduced in: 9.11 |
| service_processor.api_service.enabled | boolean | query | False | Filter by service_processor.api_service.enabled • Introduced in: 9.11 |

| Name | Type | In | Required | Description |
|----------------------------------|---------|-------|----------|---|
| external_cache.pcs_size | integer | query | False | Filter by external_cache.pcs_size • Introduced in: 9.10 |
| external_cache.is_enabled | boolean | query | False | Filter by external_cache.is_enabled • Introduced in: 9.10 |
| external_cache.is_rewarm_enabled | boolean | query | False | Filter by external_cache.is_rewarm_enabled • Introduced in: 9.10 |
| external_cache.is_hya_enabled | boolean | query | False | Filter by external_cache.is_hya_enabled • Introduced in: 9.10 |
| nvrn.battery_state | string | query | False | Filter by nvrn.battery_state • Introduced in: 9.9 |
| nvrn.id | integer | query | False | Filter by nvrn.id • Introduced in: 9.9 |
| cluster_interfaces.uuid | string | query | False | Filter by cluster_interfaces.uuid |
| cluster_interfaces.ip.address | string | query | False | Filter by cluster_interfaces.ip.address |

| Name | Type | In | Required | Description |
|---------------------------------------|---------|-------|----------|---|
| cluster_interfaces.name | string | query | False | Filter by cluster_interfaces.name |
| system_aggregate.uid | string | query | False | Filter by system_aggregate.uid • Introduced in: 9.14 |
| system_aggregate.name | string | query | False | Filter by system_aggregate.name • Introduced in: 9.14 |
| owner | string | query | False | Filter by owner • Introduced in: 9.9 |
| statistics.timestamp | string | query | False | Filter by statistics.timestamp • Introduced in: 9.8 |
| statistics.processor_utilization_raw | integer | query | False | Filter by statistics.processor_utilization_raw • Introduced in: 9.8 |
| statistics.status | string | query | False | Filter by statistics.status • Introduced in: 9.8 |
| statistics.processor_utilization_base | integer | query | False | Filter by statistics.processor_utilization_base • Introduced in: 9.8 |

| Name | Type | In | Required | Description |
|---------------------------------|---------|-------|----------|---|
| location | string | query | False | Filter by location |
| controller.frus.id | string | query | False | Filter by controller.frus.id |
| controller.frus.state | string | query | False | Filter by controller.frus.state |
| controller.frus.type | string | query | False | Filter by controller.frus.type |
| controller.cpu.processor | string | query | False | Filter by controller.cpu.processor • Introduced in: 9.9 |
| controller.cpu.count | integer | query | False | Filter by controller.cpu.count • Introduced in: 9.9 |
| controller.cpu.firmware_release | string | query | False | Filter by controller.cpu.firmware_release • Introduced in: 9.9 |
| controller.memory_size | integer | query | False | Filter by controller.memory_size • Introduced in: 9.9 |
| controller.board | string | query | False | Filter by controller.board • Introduced in: 9.9 |

| Name | Type | In | Required | Description |
|--|---------|-------|----------|--|
| controller.failed_power_supply.message.message | string | query | False | Filter by controller.failed_power_supply.message.message • Introduced in: 9.9 |
| controller.failed_power_supply.message.code | string | query | False | Filter by controller.failed_power_supply.message.code • Introduced in: 9.9 |
| controller.failed_power_supply.count | integer | query | False | Filter by controller.failed_power_supply.count • Introduced in: 9.9 |
| controller.flash_cache.capacity | integer | query | False | Filter by controller.flash_cache.capacity |
| controller.flash_cache.firmware_file | string | query | False | Filter by controller.flash_cache.firmware_file • Introduced in: 9.9 |
| controller.flash_cache.serial_number | string | query | False | Filter by controller.flash_cache.serial_number |
| controller.flash_cache.part_number | string | query | False | Filter by controller.flash_cache.part_number |
| controller.flash_cache.device_id | integer | query | False | Filter by controller.flash_cache.device_id • Introduced in: 9.9 |

| Name | Type | In | Required | Description |
|--|---------|-------|----------|---|
| controller.flash_cache.firmware_version | string | query | False | Filter by controller.flash_cache.firmware_version |
| controller.flash_cache.state | string | query | False | Filter by controller.flash_cache.state |
| controller.flash_cache.model | string | query | False | Filter by controller.flash_cache.model |
| controller.flash_cache.hardware_revision | string | query | False | Filter by controller.flash_cache.hardware_revision |
| controller.flash_cache.slot | string | query | False | Filter by controller.flash_cache.slot |
| controller.over_temperature | string | query | False | Filter by controller.over_temperature |
| controller.failed_fan.count | integer | query | False | Filter by controller.failed_fan.count • Introduced in: 9.9 |
| controller.failed_fan.message.message | string | query | False | Filter by controller.failed_fan.message.message • Introduced in: 9.9 |
| controller.failed_fan.message.code | string | query | False | Filter by controller.failed_fan.message.code • Introduced in: 9.9 |
| serial_number | string | query | False | Filter by serial_number |

| Name | Type | In | Required | Description |
|-------------------------------|---------|-------|----------|--|
| date | string | query | False | Filter by date |
| system_machine_type | string | query | False | Filter by system_machine_type • Introduced in: 9.7 |
| system_id | string | query | False | Filter by system_id • Introduced in: 9.7 |
| hw_assist.status.local.port | integer | query | False | Filter by hw_assist.status.local.port • Introduced in: 9.11 |
| hw_assist.status.local.ip | string | query | False | Filter by hw_assist.status.local.ip • Introduced in: 9.11 |
| hw_assist.status.local.state | string | query | False | Filter by hw_assist.status.local.state • Introduced in: 9.11 |
| hw_assist.status.partner.port | integer | query | False | Filter by hw_assist.status.partner.port • Introduced in: 9.11 |
| hw_assist.status.partner.ip | string | query | False | Filter by hw_assist.status.partner.ip • Introduced in: 9.11 |

| Name | Type | In | Required | Description |
|-------------------------------------|---------|-------|----------|--|
| hw_assist.status.partner.state | string | query | False | Filter by hw_assist.status.partner.state • Introduced in: 9.11 |
| hw_assist.status.enabled | boolean | query | False | Filter by hw_assist.status.enabled • Introduced in: 9.11 |
| ha.takeover_check.takeover_possible | boolean | query | False | Filter by ha.takeover_check.takeover_possible • Introduced in: 9.14 |
| ha.takeover_check.reasons | string | query | False | Filter by ha.takeover_check.reasons • Introduced in: 9.14 |
| ha.auto_giveback | boolean | query | False | Filter by ha.auto_giveback |
| ha.partners.name | string | query | False | Filter by ha.partners.name |
| ha.partners.uuid | string | query | False | Filter by ha.partners.uuid |
| ha.ports.state | string | query | False | Filter by ha.ports.state • Introduced in: 9.7 |
| ha.ports.number | integer | query | False | Filter by ha.ports.number • Introduced in: 9.7 |

| Name | Type | In | Required | Description |
|-----------------------------|---------|-------|----------|---|
| ha.interconnect.adapter | string | query | False | Filter by ha.interconnect.adapter • Introduced in: 9.11 |
| ha.interconnect.state | string | query | False | Filter by ha.interconnect.state • Introduced in: 9.11 |
| ha.enabled | boolean | query | False | Filter by ha.enabled |
| ha.takeover.state | string | query | False | Filter by ha.takeover.state • Introduced in: 9.7 |
| ha.takeover.failure.code | integer | query | False | Filter by ha.takeover.failure.code • Introduced in: 9.7 |
| ha.takeover.failure.message | string | query | False | Filter by ha.takeover.failure.message • Introduced in: 9.7 |
| ha.giveback.state | string | query | False | Filter by ha.giveback.state • Introduced in: 9.7 |
| ha.giveback.failure.code | integer | query | False | Filter by ha.giveback.failure.code • Introduced in: 9.7 |

| Name | Type | In | Required | Description |
|-----------------------------------|--------|-------|----------|--|
| ha.giveback.failure.message | string | query | False | Filter by ha.giveback.failure.message • Introduced in: 9.7 |
| ha.giveback.status.aggregate.uuid | string | query | False | Filter by ha.giveback.status.aggregate.uuid • Introduced in: 9.11 |
| ha.giveback.status.aggregate.name | string | query | False | Filter by ha.giveback.status.aggregate.name • Introduced in: 9.11 |
| ha.giveback.status.state | string | query | False | Filter by ha.giveback.status.state • Introduced in: 9.11 |
| ha.giveback.status.error.code | string | query | False | Filter by ha.giveback.status.error.code • Introduced in: 9.11 |
| ha.giveback.status.error.message | string | query | False | Filter by ha.giveback.status.error.message • Introduced in: 9.11 |
| metrocluster.ports.name | string | query | False | Filter by metrocluster.ports.name • Introduced in: 9.8 |

| Name | Type | In | Required | Description |
|----------------------------------|---------|-------|----------|--|
| metrocluster.type | string | query | False | Filter by metrocluster.type • Introduced in: 9.8 |
| metrocluster.custom_vlan_capable | boolean | query | False | Filter by metrocluster.custom_vlan_capable • Introduced in: 9.8 |
| version.minor | integer | query | False | Filter by version.minor |
| version.generation | integer | query | False | Filter by version.generation |
| version.full | string | query | False | Filter by version.full |
| version.major | integer | query | False | Filter by version.major |
| name | string | query | False | Filter by name |
| metric.processor_utilization | integer | query | False | Filter by metric.processor_utilization • Introduced in: 9.8 |
| metric.timestamp | string | query | False | Filter by metric.timestamp • Introduced in: 9.8 |
| metric.duration | string | query | False | Filter by metric.duration • Introduced in: 9.8 |

| Name | Type | In | Required | Description |
|-----------------------|---------|-------|----------|---|
| metric.status | string | query | False | Filter by metric.status • Introduced in: 9.8 |
| metric.uuid | string | query | False | Filter by metric.uuid • Introduced in: 9.10 |
| vm.provider_type | string | query | False | Filter by vm.provider_type • Introduced in: 9.7 |
| uptime | integer | query | False | Filter by uptime |
| is_spares_low | boolean | query | False | Filter by is_spares_low • Introduced in: 9.10 |
| uuid | string | query | False | Filter by uuid |
| state | string | query | False | Filter by state • Introduced in: 9.7 |
| model | string | query | False | Filter by model |
| vendor_serial_number | string | query | False | Filter by vendor_serial_number • Introduced in: 9.7 |
| storage_configuration | string | query | False | Filter by storage_configuration • Introduced in: 9.9 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "cluster_interface": {
      "ip": {
        "address": "10.10.10.7"
      }
    },
    "cluster_interfaces": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "controller": {
      "board": "System Board XXVIII",
      "cpu": {
        "count": 20,
        "firmware_release": "string",
        "processor": "string"
      },
      "failed_fan": {
        "count": 1,
        "message": {
          "code": "111411207",
```

```

    "message": "There are no failed fans."
  }
},
"failed_power_supply": {
  "count": 1,
  "message": {
    "code": "111411208",
    "message": "There are no failed power supplies."
  }
},
"flash_cache": {
  "capacity": 102400000000,
  "device_id": 0,
  "firmware_file": "X9170_O000Z6300NVM",
  "firmware_version": "NA05",
  "hardware_revision": "A1",
  "model": "X1970A",
  "part_number": "119-00207",
  "serial_number": "A22P5061550000187",
  "slot": "6-1",
  "state": "ok"
},
"frus": {
  "id": "string",
  "state": "ok",
  "type": "fan"
},
"memory_size": 1024000000,
"over_temperature": "over"
},
"date": "2019-04-17 11:49:26 -0400",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed",
    "status": {
      "aggregate": {

```



```

    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "error": {
    "code": "852126",
    "message": "shutdown"
  },
  "state": "done"
}
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "down"
},
"partners": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ports": {
  "number": 0,
  "state": "active"
},
"takeover": {
  "failure": {
    "code": 852130,
    "message": "Failed to initiate takeover. Run the \"storage failover show-takeover\" command for more information."
  },
  "state": "failed"
},
"takeover_check": {
  "reasons": {
  }
}
},
"hw_assist": {

```

```
"status": {
  "local": {
    "state": "active"
  },
  "partner": {
    "state": "active"
  }
},
"location": "rack 2 row 5",
"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"membership": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "processor_utilization": 13,
  "status": "ok",
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "e1b"
  },
  "type": "fc"
},
```

```
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "battery_ok",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {
    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "installed",
    "version": "11.6"
  },
  "firmware_version": "string",
  "ipv4_interface": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24",
    "setup_state": "not_setup"
  },
  "ipv6_interface": {
    "address": "fd20:8b1e:b255:5011:10:141:4:97",
    "gateway": "fd20:8b1e:b255:5011:10::1",
    "link_local_ip": "FE80::/10",
    "netmask": 64,
    "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
    "setup_state": "not_setup"
  },
  "last_update_state": "failed",
  "link_status": "up",
  "mac_address": "string",
  "primary": {
    "state": "installed",
    "version": "11.6"
  },
  "ssh_info": {
    "allowed_addresses": {
    }
  },
}
```

```
    "state": "online",
    "type": "sp"
  },
  "snaplock": {
    "compliance_clock_time": "2018-06-04 15:00:00 -0400"
  },
  "state": "up",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "storage_configuration": "unknown",
  "system_aggregate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "system_id": 92027651,
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": 300536,
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": 791603000068,
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  },
  "vm": {
    "provider_type": "GoogleCloud"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node_setup_ip

The IP configuration for cluster setup.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interface

The cluster network IP address of the node to be added.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

ip

IP information

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interfaces

Network interface

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

cpu

CPU information.

| Name | Type | Description |
|------------------|---------|---|
| count | integer | Number of CPUs on the node. |
| firmware_release | string | Firmware release number. Defined by the CPU manufacturer. |
| processor | string | CPU type on the node. |

message

| Name | Type | Description |
|---------|--------|---|
| code | string | Error code describing the current condition of chassis fans. |
| message | string | Message describing the current condition of chassis fans. It is only of use when <code>failed_fan.count</code> is not zero. |

failed_fan

| Name | Type | Description |
|---------|-------------------------|--|
| count | integer | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | message | |

message

| Name | Type | Description |
|---------|--------|--|
| code | string | Error code describing the current condition of power supply. |
| message | string | Message describing the state of any power supplies that are currently degraded. It is only of use when <code>failed_power_supply.count</code> is not zero. |

failed_power_supply

| Name | Type | Description |
|---------|-------------------------|--------------------------------------|
| count | integer | Number of failed power supply units. |
| message | message | |

flash_cache

| Name | Type | Description |
|-------------------|---------|---------------|
| capacity | integer | Size in bytes |
| device_id | integer | |
| firmware_file | string | |
| firmware_version | string | |
| hardware_revision | string | |
| model | string | |
| part_number | string | |
| serial_number | string | |
| slot | string | |
| state | string | |

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

controller

Controller information

| Name | Type | Description |
|---------------------|--------------------------------------|---|
| board | string | Type of the system board. This is defined by vendor. |
| cpu | cpu | CPU information. |
| failed_fan | failed_fan | |
| failed_power_supply | failed_power_supply | |
| flash_cache | array[flash_cache] | A list of Flash-Cache devices. Only returned when requested by name. |
| frus | array[frus] | List of FRUs on the node. Only returned when requested by name. |
| memory_size | integer | Memory available on the node, in bytes. |
| over_temperature | string | Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds. |

external_cache

Cache used for buffer management.

| Name | Type | Description |
|-------------------|---------|--|
| is_enabled | boolean | Indicates whether the external cache is enabled. |
| is_hya_enabled | boolean | Indicates whether HyA caching is enabled. |
| is_rewarm_enabled | boolean | Indicates whether rewarm is enabled. |
| pcs_size | integer | PCS size in gigabytes. |

failure

Indicates the failure code and message.

| Name | Type | Description |
|---------|---------|--------------------------------------|
| code | integer | Message code |
| message | string | Detailed message based on the state. |

aggregate

Aggregate name and UUID.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error

Indicates the failed aggregate giveback code and message.

| Name | Type | Description |
|---------|--------|--------------------------------------|
| code | string | Message code. |
| message | string | Detailed message based on the state. |

status

| Name | Type | Description |
|-----------|---------------------------|---|
| aggregate | aggregate | Aggregate name and UUID. |
| error | error | Indicates the failed aggregate giveback code and message. |

| Name | Type | Description |
|-------|--------|---|
| state | string | Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks). |

giveback

Represents the state of the node that is giving storage back to its HA partner.

| Name | Type | Description |
|---------|---------------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |
| status | array[status] | Giveback status of each aggregate. |

interconnect

| Name | Type | Description |
|---------|--------|---------------------------------------|
| adapter | string | HA interconnect device name. |
| state | string | Indicates the HA interconnect status. |

partners

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

ports

| Name | Type | Description |
|--------|---------|---|
| number | integer | HA port number |
| state | string | <p>HA port state:</p> <ul style="list-style-type: none"> • <i>down</i> - Logical HA link is down. • <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • <i>armed</i> - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • <i>active</i> - Logical HA link is active. • <i>reserved</i> - Logical HA link is active, but the physical link is down. |

takeover

This represents the state of the node that is taking over storage from its HA partner.

| Name | Type | Description |
|---------|-------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |

takeover_check

The takeover check response.

| Name | Type | Description |
|-------------------|---------------|---|
| reasons | array[string] | Reasons why the takeover is not possible. |
| takeover_possible | boolean | Indicates whether the takeover is possible. |

ha

| Name | Type | Description |
|----------------|-----------------------------------|---|
| auto_giveback | boolean | Specifies whether giveback is automatically initiated when the node that owns the storage is ready. |
| enabled | boolean | Specifies whether or not storage failover is enabled. |
| giveback | giveback | Represents the state of the node that is giving storage back to its HA partner. |
| interconnect | interconnect | |
| partners | array[partners] | Nodes in this node's High Availability (HA) group. |
| ports | array[ports] | |
| takeover | takeover | This represents the state of the node that is taking over storage from its HA partner. |
| takeover_check | takeover_check | The takeover check response. |

local

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

partner

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

status

| Name | Type | Description |
|---------|-------------------------|---|
| enabled | boolean | Indicates whether hardware assist is enabled on the node. |
| local | local | |
| partner | partner | |

hw_assist

The hardware assist information.

| Name | Type | Description |
|--------|------------------------|-------------|
| status | status | |

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

management_interfaces

Network interface

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

metric

CPU performance for the nodes.

| Name | Type | Description |
|-----------------------|------------------------|---|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| processor_utilization | integer | Average CPU Utilization for the node |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |
| uuid | string | |

ports

| Name | Type | Description |
|------|--------|-------------|
| name | string | |

metrocluster

Metrocluster

| Name | Type | Description |
|---------------------|--------------|---|
| custom_vlan_capable | boolean | Indicates whether the MetroCluster over IP platform supports custom VLAN IDs. |
| ports | array[ports] | MetroCluster over IP ports. |
| type | string | The Metrocluster configuration type |

nvrाम

| Name | Type | Description |
|---------------|---------|--|
| battery_state | string | Specifies status of the NVRAM battery. Possible values: <ul style="list-style-type: none">• <i>battery_ok</i>• <i>battery_partially_discharged</i>• <i>battery_fully_discharged</i>• <i>battery_not_present</i>• <i>battery_near_end_of_life</i>• <i>battery_at_end_of_life</i>• <i>battery_unknown</i>• <i>battery_over_charged</i>• <i>battery_fully_charged</i> |
| id | integer | Vendor specific NVRAM ID of the node. |

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts SP API service access to cluster nodes only. By default, limit_access is set to true. |
| port | integer | Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used. |

auto_config

Provides the properties of the service processor auto configuration.

| Name | Type | Description |
|-------------|--------|--|
| ipv4_subnet | string | Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |
| ipv6_subnet | string | Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |

backup

Provides the properties of the service processor backup partition.

| Name | Type | Description |
|------------|---------|--|
| is_current | boolean | Indicates whether the service processor is currently booted from the backup partition. |
| state | string | Status of the backup partition. |
| version | string | Firmware version of the backup partition. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|-------------|---------|---|
| address | string | IPv4 or IPv6 address |
| enabled | boolean | Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |
| setup_state | string | Indicates the setup state of the interface. |

ipv6_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|---------|--|
| address | string | IPv6 address |
| enabled | boolean | Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true". |

| Name | Type | Description |
|--------------------|---------|---|
| gateway | string | The IPv6 address of the default router. |
| is_ipv6_ra_enabled | boolean | Indicates whether IPv6 RA is enabled. |
| link_local_ip | string | Link local IP address. |
| netmask | integer | The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127. |
| router_ip | string | Router assigned IP address. |
| setup_state | string | Indicates the setup state of the interface. |

primary

Provides the properties of the service processor primary partition.

| Name | Type | Description |
|------------|---------|---|
| is_current | boolean | Indicates whether the service processor is currently booted from the primary partition. |
| state | string | Status of the primary partition. |
| version | string | Firmware version of the primary partition. |

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

| Name | Type | Description |
|-------------------|---------------|----------------------|
| allowed_addresses | array[string] | Allowed IP addresses |

web_service

Provides the properties of SP or BMC web service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts web service access to cluster nodes only. By default, limit_access is set to true. |

service_processor

| Name | Type | Description |
|--------------------|-----------------------------|---|
| api_service | api_service | Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service. |
| auto_config | auto_config | Provides the properties of the service processor auto configuration. |
| autoupdate_enabled | boolean | Indicates whether the service processor can be automatically updated from ONTAP. <ul style="list-style-type: none"> • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true |
| backup | backup | Provides the properties of the service processor backup partition. |
| dhcp_enabled | boolean | Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true". |

| Name | Type | Description |
|-------------------|--------------------------------|--|
| firmware_version | string | The version of firmware installed. |
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |
| ipv6_interface | ipv6_interface | Object to setup an interface along with its default router. |
| is_ip_configured | boolean | Indicates whether the service processor network is configured. |
| last_update_state | string | Provides the "update status" of the last service processor update. |
| link_status | string | |
| mac_address | string | |
| primary | primary | Provides the properties of the service processor primary partition. |
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state | string | |
| type | string | |
| web_service | web_service | Provides the properties of SP or BMC web service. |

snaplock

SnapLock-related properties.

| Name | Type | Description |
|-----------------------|--------|---------------------------------|
| compliance_clock_time | string | SnapLock compliance clock time. |

statistics

Raw CPU performance for the nodes.

| Name | Type | Description |
|----------------------------|---------|-----------------------------------|
| processor_utilization_base | integer | Base counter for CPU Utilization. |

| Name | Type | Description |
|---------------------------|---------|---|
| processor_utilization_raw | integer | Raw CPU Utilization for the node. This should be divided by the processor_utilization_base to calculate the percentage CPU utilization for the node. |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |

system_aggregate

Aggregate

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------------|---------|--|
| full | string | The full cluster version string. |
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

vm

| Name | Type | Description |
|---------------|--------|--|
| provider_type | string | Cloud provider where the VM is hosted. |

records

Complete node information

| Name | Type | Description |
|--------------------|---|--|
| _links | _links | |
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | <p>The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting.</p> <ul style="list-style-type: none"> • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |

| Name | Type | Description |
|-----------------------|--|--|
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |
| hw_assist | hw_assist | The hardware assist information. |
| is_spares_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |
| model | string | |
| name | string | |
| nvrn | nvrn | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |

| Name | Type | Description |
|-----------------------|----------------------------------|---|
| storage_configuration | string | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

error_arguments

| Name | Type | Description |
|------|--------|---------------|
| code | string | Argument code |

| Name | Type | Description |
|---------|--------|------------------|
| message | string | Message argument |

returned_error

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

Add a node or nodes to a cluster

POST /cluster/nodes

Introduced In: 9.6

Adds a node or nodes to the cluster.

Required properties

- `cluster_interface.ip.address`

Related ONTAP commands

- `cluster add-node`
- `network interface create`
- `storage aggregate auto-provision`
- `system node modify`
- `system service-processor network modify`

Parameters

| Name | Type | In | Required | Description |
|-------------------------------|---------|-------|----------|--|
| create_recommended_aggregates | boolean | query | False | <p>Creates aggregates based on an optimal layout recommended by the system.</p> <ul style="list-style-type: none"> • Default value: • Introduced in: 9.7 |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value: |

Request Body

| Name | Type | Description |
|-----------------------|--|---|
| _links | _links | |
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none">• example: 2019-04-17 11:49:26 -0400• format: date-time• readOnly: 1• Introduced in: 9.6• x-nullable: true |
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |
| hw_assist | hw_assist | The hardware assist information. |
| is_spare_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |
| model | string | |
| name | string | |
| nvrnm | nvrnm | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |

| Name | Type | Description |
|-----------------------|----------------------------------|--|
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |
| storage_configuration | string | <p>The storage configuration in the system. Possible values:</p> <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |

| Name | Type | Description |
|----------------------|---------|---|
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    }
  },
}
```

```

"flash_cache": {
  "capacity": 102400000000,
  "device_id": 0,
  "firmware_file": "X9170_O000Z6300NVM",
  "firmware_version": "NA05",
  "hardware_revision": "A1",
  "model": "X1970A",
  "part_number": "119-00207",
  "serial_number": "A22P5061550000187",
  "slot": "6-1",
  "state": "ok"
},
"frus": {
  "id": "string",
  "state": "ok",
  "type": "fan"
},
"memory_size": 1024000000,
"over_temperature": "over"
},
"date": "2019-04-17 11:49:26 -0400",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed",
    "status": {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resource/link"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "error": {
        "code": "852126",

```

```

    "message": "shutdown"
  },
  "state": "done"
}
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "down"
},
"partners": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ports": {
  "number": 0,
  "state": "active"
},
"takeover": {
  "failure": {
    "code": 852130,
    "message": "Failed to initiate takeover. Run the \"storage
failover show-takeover\" command for more information."
  },
  "state": "failed"
},
"takeover_check": {
  "reasons": {
  }
}
},
"hw_assist": {
  "status": {
    "local": {
      "state": "active"
    },
    "partner": {
      "state": "active"
    }
  }
}
},
"location": "rack 2 row 5",

```

```

"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"membership": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "processor_utilization": 13,
  "status": "ok",
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "e1b"
  },
  "type": "fc"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "battery_ok",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {

```

```

    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "installed",
    "version": "11.6"
  },
  "firmware_version": "string",
  "ipv4_interface": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24",
    "setup_state": "not_setup"
  },
  "ipv6_interface": {
    "address": "fd20:8b1e:b255:5011:10:141:4:97",
    "gateway": "fd20:8b1e:b255:5011:10::1",
    "link_local_ip": "FE80::/10",
    "netmask": 64,
    "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
    "setup_state": "not_setup"
  },
  "last_update_state": "failed",
  "link_status": "up",
  "mac_address": "string",
  "primary": {
    "state": "installed",
    "version": "11.6"
  },
  "ssh_info": {
    "allowed_addresses": {
    }
  },
  "state": "online",
  "type": "sp"
},
"snaplock": {
  "compliance_clock_time": "2018-06-04 15:00:00 -0400"
},
"state": "up",
"statistics": {
  "processor_utilization_base": 12345123,
  "processor_utilization_raw": 13,

```

```

    "status": "ok",
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "storage_configuration": "unknown",
  "system_aggregate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "system_id": 92027651,
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": 300536,
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": 791603000068,
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  },
  "vm": {
    "provider_type": "GoogleCloud"
  }
}

```

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Response

Status: 201, Created

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 262245 | The value provided was invalid. |
| 1179795 | A node being added is already in the cluster. |
| 1179813 | Fields set for one node must be set for all nodes. |
| 1179817 | The IP address, subnet mask, and gateway must all be provided for cluster management interface. |
| 1179818 | The IP address and gateway must be of the same family. |
| 1179821 | An IP address and subnet mask conflicts with an existing entry. |

| Error Code | Description |
|------------|---|
| 9240591 | The name is not valid. The name is already in use by a cluster node, SVM, or it is the name of the local cluster. |
| 131727360 | A node cannot be added to the cluster. This is a generic code, see response message for details. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node_setup_ip

The IP configuration for cluster setup.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interface

The cluster network IP address of the node to be added.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

ip

IP information

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interfaces

Network interface

| Name | Type | Description |
|--------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

cpu

CPU information.

| Name | Type | Description |
|------------------|---------|---|
| count | integer | Number of CPUs on the node. |
| firmware_release | string | Firmware release number. Defined by the CPU manufacturer. |
| processor | string | CPU type on the node. |

message

| Name | Type | Description |
|---------|--------|---|
| code | string | Error code describing the current condition of chassis fans. |
| message | string | Message describing the current condition of chassis fans. It is only of use when <code>failed_fan.count</code> is not zero. |

failed_fan

| Name | Type | Description |
|---------|-------------------------|--|
| count | integer | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | message | |

message

| Name | Type | Description |
|---------|--------|--|
| code | string | Error code describing the current condition of power supply. |
| message | string | Message describing the state of any power supplies that are currently degraded. It is only of use when <code>failed_power_supply.count</code> is not zero. |

failed_power_supply

| Name | Type | Description |
|---------|-------------------------|--------------------------------------|
| count | integer | Number of failed power supply units. |
| message | message | |

flash_cache

| Name | Type | Description |
|-------------------|---------|---------------|
| capacity | integer | Size in bytes |
| device_id | integer | |
| firmware_file | string | |
| firmware_version | string | |
| hardware_revision | string | |
| model | string | |
| part_number | string | |
| serial_number | string | |
| slot | string | |
| state | string | |

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

controller

Controller information

| Name | Type | Description |
|---------------------|---------------------|---|
| board | string | Type of the system board. This is defined by vendor. |
| cpu | cpu | CPU information. |
| failed_fan | failed_fan | |
| failed_power_supply | failed_power_supply | |
| flash_cache | array[flash_cache] | A list of Flash-Cache devices. Only returned when requested by name. |
| frus | array[frus] | List of FRUs on the node. Only returned when requested by name. |
| memory_size | integer | Memory available on the node, in bytes. |
| over_temperature | string | Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds. |

external_cache

Cache used for buffer management.

| Name | Type | Description |
|-------------------|---------|--|
| is_enabled | boolean | Indicates whether the external cache is enabled. |
| is_hya_enabled | boolean | Indicates whether HyA caching is enabled. |
| is_rewarm_enabled | boolean | Indicates whether rewarm is enabled. |
| pcs_size | integer | PCS size in gigabytes. |

failure

Indicates the failure code and message.

| Name | Type | Description |
|---------|---------|--------------------------------------|
| code | integer | Message code |
| message | string | Detailed message based on the state. |

aggregate

Aggregate name and UUID.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error

Indicates the failed aggregate giveback code and message.

| Name | Type | Description |
|---------|--------|--------------------------------------|
| code | string | Message code. |
| message | string | Detailed message based on the state. |

status

| Name | Type | Description |
|-----------|---------------------------|---|
| aggregate | aggregate | Aggregate name and UUID. |
| error | error | Indicates the failed aggregate giveback code and message. |

| Name | Type | Description |
|-------|--------|---|
| state | string | Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks). |

giveback

Represents the state of the node that is giving storage back to its HA partner.

| Name | Type | Description |
|---------|---------------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |
| status | array[status] | Giveback status of each aggregate. |

interconnect

| Name | Type | Description |
|---------|--------|---------------------------------------|
| adapter | string | HA interconnect device name. |
| state | string | Indicates the HA interconnect status. |

partners

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

ports

| Name | Type | Description |
|--------|---------|--|
| number | integer | HA port number |
| state | string | HA port state: <ul style="list-style-type: none"> • <i>down</i> - Logical HA link is down. • <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • <i>armed</i> - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • <i>active</i> - Logical HA link is active. • <i>reserved</i> - Logical HA link is active, but the physical link is down. |

takeover

This represents the state of the node that is taking over storage from its HA partner.

| Name | Type | Description |
|---------|-------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |

takeover_check

The takeover check response.

| Name | Type | Description |
|-------------------|---------------|---|
| reasons | array[string] | Reasons why the takeover is not possible. |
| takeover_possible | boolean | Indicates whether the takeover is possible. |

ha

| Name | Type | Description |
|----------------|-----------------------------------|---|
| auto_giveback | boolean | Specifies whether giveback is automatically initiated when the node that owns the storage is ready. |
| enabled | boolean | Specifies whether or not storage failover is enabled. |
| giveback | giveback | Represents the state of the node that is giving storage back to its HA partner. |
| interconnect | interconnect | |
| partners | array[partners] | Nodes in this node's High Availability (HA) group. |
| ports | array[ports] | |
| takeover | takeover | This represents the state of the node that is taking over storage from its HA partner. |
| takeover_check | takeover_check | The takeover check response. |

local

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

partner

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

status

| Name | Type | Description |
|---------|-------------------------|---|
| enabled | boolean | Indicates whether hardware assist is enabled on the node. |
| local | local | |
| partner | partner | |

hw_assist

The hardware assist information.

| Name | Type | Description |
|--------|------------------------|-------------|
| status | status | |

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

management_interfaces

Network interface

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

metric

CPU performance for the nodes.

| Name | Type | Description |
|-----------------------|------------------------|---|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| processor_utilization | integer | Average CPU Utilization for the node |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |
| uuid | string | |

ports

| Name | Type | Description |
|------|--------|-------------|
| name | string | |

metrocluster

Metrocluster

| Name | Type | Description |
|---------------------|--------------|---|
| custom_vlan_capable | boolean | Indicates whether the MetroCluster over IP platform supports custom VLAN IDs. |
| ports | array[ports] | MetroCluster over IP ports. |
| type | string | The Metrocluster configuration type |

nvrाम

| Name | Type | Description |
|---------------|---------|--|
| battery_state | string | Specifies status of the NVRAM battery. Possible values: <ul style="list-style-type: none">• <i>battery_ok</i>• <i>battery_partially_discharged</i>• <i>battery_fully_discharged</i>• <i>battery_not_present</i>• <i>battery_near_end_of_life</i>• <i>battery_at_end_of_life</i>• <i>battery_unknown</i>• <i>battery_over_charged</i>• <i>battery_fully_charged</i> |
| id | integer | Vendor specific NVRAM ID of the node. |

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts SP API service access to cluster nodes only. By default, limit_access is set to true. |
| port | integer | Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used. |

auto_config

Provides the properties of the service processor auto configuration.

| Name | Type | Description |
|-------------|--------|--|
| ipv4_subnet | string | Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |
| ipv6_subnet | string | Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |

backup

Provides the properties of the service processor backup partition.

| Name | Type | Description |
|------------|---------|--|
| is_current | boolean | Indicates whether the service processor is currently booted from the backup partition. |
| state | string | Status of the backup partition. |
| version | string | Firmware version of the backup partition. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|-------------|---------|---|
| address | string | IPv4 or IPv6 address |
| enabled | boolean | Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |
| setup_state | string | Indicates the setup state of the interface. |

ipv6_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|---------|--|
| address | string | IPv6 address |
| enabled | boolean | Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true". |

| Name | Type | Description |
|--------------------|---------|---|
| gateway | string | The IPv6 address of the default router. |
| is_ipv6_ra_enabled | boolean | Indicates whether IPv6 RA is enabled. |
| link_local_ip | string | Link local IP address. |
| netmask | integer | The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127. |
| router_ip | string | Router assigned IP address. |
| setup_state | string | Indicates the setup state of the interface. |

primary

Provides the properties of the service processor primary partition.

| Name | Type | Description |
|------------|---------|---|
| is_current | boolean | Indicates whether the service processor is currently booted from the primary partition. |
| state | string | Status of the primary partition. |
| version | string | Firmware version of the primary partition. |

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

| Name | Type | Description |
|-------------------|---------------|----------------------|
| allowed_addresses | array[string] | Allowed IP addresses |

web_service

Provides the properties of SP or BMC web service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts web service access to cluster nodes only. By default, limit_access is set to true. |

service_processor

| Name | Type | Description |
|--------------------|-----------------------------|---|
| api_service | api_service | Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service. |
| auto_config | auto_config | Provides the properties of the service processor auto configuration. |
| autoupdate_enabled | boolean | Indicates whether the service processor can be automatically updated from ONTAP. <ul style="list-style-type: none"> • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true |
| backup | backup | Provides the properties of the service processor backup partition. |
| dhcp_enabled | boolean | Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true". |

| Name | Type | Description |
|-------------------|--------------------------------|--|
| firmware_version | string | The version of firmware installed. |
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |
| ipv6_interface | ipv6_interface | Object to setup an interface along with its default router. |
| is_ip_configured | boolean | Indicates whether the service processor network is configured. |
| last_update_state | string | Provides the "update status" of the last service processor update. |
| link_status | string | |
| mac_address | string | |
| primary | primary | Provides the properties of the service processor primary partition. |
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state | string | |
| type | string | |
| web_service | web_service | Provides the properties of SP or BMC web service. |

snaplock

SnapLock-related properties.

| Name | Type | Description |
|-----------------------|--------|---------------------------------|
| compliance_clock_time | string | SnapLock compliance clock time. |

statistics

Raw CPU performance for the nodes.

| Name | Type | Description |
|----------------------------|---------|-----------------------------------|
| processor_utilization_base | integer | Base counter for CPU Utilization. |

| Name | Type | Description |
|---------------------------|---------|---|
| processor_utilization_raw | integer | Raw CPU Utilization for the node. This should be divided by the processor_utilization_base to calculate the percentage CPU utilization for the node. |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |

system_aggregate

Aggregate

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------------|---------|--|
| full | string | The full cluster version string. |
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

vm

| Name | Type | Description |
|---------------|--------|--|
| provider_type | string | Cloud provider where the VM is hosted. |

node

Complete node information

| Name | Type | Description |
|--------------------|---|--|
| _links | _links | |
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | <p>The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting.</p> <ul style="list-style-type: none"> • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |

| Name | Type | Description |
|-----------------------|--|--|
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |
| hw_assist | hw_assist | The hardware assist information. |
| is_spares_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |
| model | string | |
| name | string | |
| nvrnm | nvrnm | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |

| Name | Type | Description |
|-----------------------|----------------------------------|---|
| storage_configuration | string | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

job_link

| Name | Type | Description |
|------------------------|------------------------|-------------|
| _links | _links | |

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Delete a node from a cluster

DELETE /cluster/nodes/{uuid}

Introduced In: 9.7

Deletes a node from the cluster. Note that before deleting a node from the cluster, you must shut down all of the node's shared resources, such as virtual interfaces to clients. If any of the node's shared resources are still active, the command fails.

Optional parameters:

- `force` - Forcibly removes a node that is down and cannot be brought online to remove its shared resources. This flag is set to "false" by default.

Related ONTAP commands

- `cluster remove-node`

Learn more

- [DOC /cluster/nodes](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| uuid | string | path | True | |
| force | boolean | query | False | <p>Set the force flag to "true" to forcibly remove a node that is down and cannot be brought online to remove its shared resources.</p> <ul style="list-style-type: none">• Default value: |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |

Response

Status: 200, Ok

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 458755 | Replication service is offline. |
| 458758 | Failed to load job for cluster remove node operation as the job exists. |
| 1179732 | Cannot remove a node in a single-node cluster. |
| 1179735 | Node is not part of a cluster. |
| 1182805 | Cannot remove a node from the node network address of the node to be removed. |

| Error Code | Description |
|------------|---|
| 2293765 | Removing a node only works for nodes not in failover configuration. |
| 2293767 | Node has volumes. Either move or delete them from the node before removing the node. |
| 2293768 | Node is the home node for one or more logical interfaces. |
| 2293769 | Node is the current node for one or more logical interfaces. |
| 2293770 | Node has data logical interfaces configured as target node. |
| 2293789 | Removing a node only works for nodes not in HA configuration. |
| 2293796 | Cluster ring is offline on the node |
| 2293798 | Cannot forcibly remove a node that is online. |
| 2293800 | Node is configured with MetroCluster. |
| 2293801 | Cannot remove node because it has foreign LUN Imports. |
| 2293812 | Node is a member of MetroCluster DR group. |
| 2293813 | Cannot remove a node from the cluster because a controller replacement is in progress. |
| 2293814 | The DELETE operation is not supported until the cluster is upgraded. |
| 2293816 | Cannot remove node because its Storage Encryption devices use authentication keys (AKs) that will not be available to the node after it leaves the cluster. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve node information

GET /cluster/nodes/{uuid}

Introduced In: 9.6

Retrieves information for the node.

Related ONTAP commands

- `cluster add-node-status`
- `cluster date show`
- `cluster ha show`
- `network interface show`
- `network port show`
- `storage failover show`
- `system controller show`
- `system node show`
- `system node show-discovered`
- `system service-processor network show`
- `system service-processor show`
- `system service-processor ssh show`
- `system service-processor image show`
- `version`
- `system service-processor api-service show`
- `system service-processor network auto-configuration show`

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| uuid | string | path | True | • format: uuid |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|---------------------|-------------------------------------|-------------|
| <code>_links</code> | <code>_links</code> | |

| Name | Type | Description |
|-----------------------|--|--|
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | <p>The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting.</p> <ul style="list-style-type: none"> • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |
| hw_assist | hw_assist | The hardware assist information. |
| is_spares_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |
| model | string | |
| name | string | |
| nvrnm | nvrnm | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |

| Name | Type | Description |
|-----------------------|----------------------------------|--|
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |
| storage_configuration | string | <p>The storage configuration in the system. Possible values:</p> <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |

| Name | Type | Description |
|----------------------|-------------------------|---|
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    }
  },
}
```

```

"flash_cache": {
  "capacity": 102400000000,
  "device_id": 0,
  "firmware_file": "X9170_O000Z6300NVM",
  "firmware_version": "NA05",
  "hardware_revision": "A1",
  "model": "X1970A",
  "part_number": "119-00207",
  "serial_number": "A22P5061550000187",
  "slot": "6-1",
  "state": "ok"
},
"frus": {
  "id": "string",
  "state": "ok",
  "type": "fan"
},
"memory_size": 1024000000,
"over_temperature": "over"
},
"date": "2019-04-17 11:49:26 -0400",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed",
    "status": {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourceLink"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "error": {
        "code": "852126",

```

```
    "message": "shutdown"
  },
  "state": "done"
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "down"
},
"partners": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ports": {
  "number": 0,
  "state": "active"
},
"takeover": {
  "failure": {
    "code": 852130,
    "message": "Failed to initiate takeover. Run the \"storage failover show-takeover\" command for more information."
  },
  "state": "failed"
},
"takeover_check": {
  "reasons": {
  }
}
},
"hw_assist": {
  "status": {
    "local": {
      "state": "active"
    },
    "partner": {
      "state": "active"
    }
  }
}
},
"location": "rack 2 row 5",
```

```

"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"membership": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "processor_utilization": 13,
  "status": "ok",
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "e1b"
  },
  "type": "fc"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "battery_ok",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {

```

```

    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "installed",
    "version": "11.6"
  },
  "firmware_version": "string",
  "ipv4_interface": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24",
    "setup_state": "not_setup"
  },
  "ipv6_interface": {
    "address": "fd20:8b1e:b255:5011:10:141:4:97",
    "gateway": "fd20:8b1e:b255:5011:10::1",
    "link_local_ip": "FE80::/10",
    "netmask": 64,
    "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
    "setup_state": "not_setup"
  },
  "last_update_state": "failed",
  "link_status": "up",
  "mac_address": "string",
  "primary": {
    "state": "installed",
    "version": "11.6"
  },
  "ssh_info": {
    "allowed_addresses": {
    }
  },
  "state": "online",
  "type": "sp"
},
"snaplock": {
  "compliance_clock_time": "2018-06-04 15:00:00 -0400"
},
"state": "up",
"statistics": {
  "processor_utilization_base": 12345123,
  "processor_utilization_raw": 13,

```

```

    "status": "ok",
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "storage_configuration": "unknown",
  "system_aggregate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "system_id": 92027651,
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": 300536,
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": 791603000068,
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  },
  "vm": {
    "provider_type": "GoogleCloud"
  }
}

```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node_setup_ip

The IP configuration for cluster setup.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interface

The cluster network IP address of the node to be added.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

ip

IP information

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interfaces

Network interface

| Name | Type | Description |
|--------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

cpu

CPU information.

| Name | Type | Description |
|------------------|---------|---|
| count | integer | Number of CPUs on the node. |
| firmware_release | string | Firmware release number. Defined by the CPU manufacturer. |
| processor | string | CPU type on the node. |

message

| Name | Type | Description |
|---------|--------|---|
| code | string | Error code describing the current condition of chassis fans. |
| message | string | Message describing the current condition of chassis fans. It is only of use when <code>failed_fan.count</code> is not zero. |

failed_fan

| Name | Type | Description |
|---------|-------------------------|--|
| count | integer | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | message | |

message

| Name | Type | Description |
|---------|--------|--|
| code | string | Error code describing the current condition of power supply. |
| message | string | Message describing the state of any power supplies that are currently degraded. It is only of use when <code>failed_power_supply.count</code> is not zero. |

failed_power_supply

| Name | Type | Description |
|---------|-------------------------|--------------------------------------|
| count | integer | Number of failed power supply units. |
| message | message | |

flash_cache

| Name | Type | Description |
|-------------------|---------|---------------|
| capacity | integer | Size in bytes |
| device_id | integer | |
| firmware_file | string | |
| firmware_version | string | |
| hardware_revision | string | |
| model | string | |
| part_number | string | |
| serial_number | string | |
| slot | string | |
| state | string | |

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

controller

Controller information

| Name | Type | Description |
|---------------------|---------------------|---|
| board | string | Type of the system board. This is defined by vendor. |
| cpu | cpu | CPU information. |
| failed_fan | failed_fan | |
| failed_power_supply | failed_power_supply | |
| flash_cache | array[flash_cache] | A list of Flash-Cache devices. Only returned when requested by name. |
| frus | array[frus] | List of FRUs on the node. Only returned when requested by name. |
| memory_size | integer | Memory available on the node, in bytes. |
| over_temperature | string | Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds. |

external_cache

Cache used for buffer management.

| Name | Type | Description |
|-------------------|---------|--|
| is_enabled | boolean | Indicates whether the external cache is enabled. |
| is_hya_enabled | boolean | Indicates whether HyA caching is enabled. |
| is_rewarm_enabled | boolean | Indicates whether rewarm is enabled. |
| pcs_size | integer | PCS size in gigabytes. |

failure

Indicates the failure code and message.

| Name | Type | Description |
|---------|---------|--------------------------------------|
| code | integer | Message code |
| message | string | Detailed message based on the state. |

aggregate

Aggregate name and UUID.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error

Indicates the failed aggregate giveback code and message.

| Name | Type | Description |
|---------|--------|--------------------------------------|
| code | string | Message code. |
| message | string | Detailed message based on the state. |

status

| Name | Type | Description |
|-----------|---------------------------|---|
| aggregate | aggregate | Aggregate name and UUID. |
| error | error | Indicates the failed aggregate giveback code and message. |

| Name | Type | Description |
|-------|--------|---|
| state | string | Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks). |

giveback

Represents the state of the node that is giving storage back to its HA partner.

| Name | Type | Description |
|---------|---------------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |
| status | array[status] | Giveback status of each aggregate. |

interconnect

| Name | Type | Description |
|---------|--------|---------------------------------------|
| adapter | string | HA interconnect device name. |
| state | string | Indicates the HA interconnect status. |

partners

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

ports

| Name | Type | Description |
|--------|---------|---|
| number | integer | HA port number |
| state | string | <p>HA port state:</p> <ul style="list-style-type: none"> • <i>down</i> - Logical HA link is down. • <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • <i>armed</i> - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • <i>active</i> - Logical HA link is active. • <i>reserved</i> - Logical HA link is active, but the physical link is down. |

takeover

This represents the state of the node that is taking over storage from its HA partner.

| Name | Type | Description |
|---------|-------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |

takeover_check

The takeover check response.

| Name | Type | Description |
|-------------------|---------------|---|
| reasons | array[string] | Reasons why the takeover is not possible. |
| takeover_possible | boolean | Indicates whether the takeover is possible. |

ha

| Name | Type | Description |
|----------------|-----------------------------------|---|
| auto_giveback | boolean | Specifies whether giveback is automatically initiated when the node that owns the storage is ready. |
| enabled | boolean | Specifies whether or not storage failover is enabled. |
| giveback | giveback | Represents the state of the node that is giving storage back to its HA partner. |
| interconnect | interconnect | |
| partners | array[partners] | Nodes in this node's High Availability (HA) group. |
| ports | array[ports] | |
| takeover | takeover | This represents the state of the node that is taking over storage from its HA partner. |
| takeover_check | takeover_check | The takeover check response. |

local

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

partner

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

status

| Name | Type | Description |
|---------|-------------------------|---|
| enabled | boolean | Indicates whether hardware assist is enabled on the node. |
| local | local | |
| partner | partner | |

hw_assist

The hardware assist information.

| Name | Type | Description |
|--------|------------------------|-------------|
| status | status | |

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

management_interfaces

Network interface

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

metric

CPU performance for the nodes.

| Name | Type | Description |
|-----------------------|------------------------|---|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| processor_utilization | integer | Average CPU Utilization for the node |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |
| uuid | string | |

ports

| Name | Type | Description |
|------|--------|-------------|
| name | string | |

metrocluster

Metrocluster

| Name | Type | Description |
|---------------------|--------------|---|
| custom_vlan_capable | boolean | Indicates whether the MetroCluster over IP platform supports custom VLAN IDs. |
| ports | array[ports] | MetroCluster over IP ports. |
| type | string | The Metrocluster configuration type |

nvrाम

| Name | Type | Description |
|---------------|---------|--|
| battery_state | string | Specifies status of the NVRAM battery. Possible values: <ul style="list-style-type: none">• <i>battery_ok</i>• <i>battery_partially_discharged</i>• <i>battery_fully_discharged</i>• <i>battery_not_present</i>• <i>battery_near_end_of_life</i>• <i>battery_at_end_of_life</i>• <i>battery_unknown</i>• <i>battery_over_charged</i>• <i>battery_fully_charged</i> |
| id | integer | Vendor specific NVRAM ID of the node. |

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts SP API service access to cluster nodes only. By default, limit_access is set to true. |
| port | integer | Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used. |

auto_config

Provides the properties of the service processor auto configuration.

| Name | Type | Description |
|-------------|--------|--|
| ipv4_subnet | string | Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |
| ipv6_subnet | string | Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |

backup

Provides the properties of the service processor backup partition.

| Name | Type | Description |
|------------|---------|--|
| is_current | boolean | Indicates whether the service processor is currently booted from the backup partition. |
| state | string | Status of the backup partition. |
| version | string | Firmware version of the backup partition. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|-------------|---------|---|
| address | string | IPv4 or IPv6 address |
| enabled | boolean | Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |
| setup_state | string | Indicates the setup state of the interface. |

ipv6_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|---------|--|
| address | string | IPv6 address |
| enabled | boolean | Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true". |

| Name | Type | Description |
|--------------------|---------|---|
| gateway | string | The IPv6 address of the default router. |
| is_ipv6_ra_enabled | boolean | Indicates whether IPv6 RA is enabled. |
| link_local_ip | string | Link local IP address. |
| netmask | integer | The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127. |
| router_ip | string | Router assigned IP address. |
| setup_state | string | Indicates the setup state of the interface. |

primary

Provides the properties of the service processor primary partition.

| Name | Type | Description |
|------------|---------|---|
| is_current | boolean | Indicates whether the service processor is currently booted from the primary partition. |
| state | string | Status of the primary partition. |
| version | string | Firmware version of the primary partition. |

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

| Name | Type | Description |
|-------------------|---------------|----------------------|
| allowed_addresses | array[string] | Allowed IP addresses |

web_service

Provides the properties of SP or BMC web service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts web service access to cluster nodes only. By default, limit_access is set to true. |

service_processor

| Name | Type | Description |
|--------------------|-----------------------------|---|
| api_service | api_service | Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service. |
| auto_config | auto_config | Provides the properties of the service processor auto configuration. |
| autoupdate_enabled | boolean | Indicates whether the service processor can be automatically updated from ONTAP. <ul style="list-style-type: none"> • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true |
| backup | backup | Provides the properties of the service processor backup partition. |
| dhcp_enabled | boolean | Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true". |

| Name | Type | Description |
|-------------------|--------------------------------|--|
| firmware_version | string | The version of firmware installed. |
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |
| ipv6_interface | ipv6_interface | Object to setup an interface along with its default router. |
| is_ip_configured | boolean | Indicates whether the service processor network is configured. |
| last_update_state | string | Provides the "update status" of the last service processor update. |
| link_status | string | |
| mac_address | string | |
| primary | primary | Provides the properties of the service processor primary partition. |
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state | string | |
| type | string | |
| web_service | web_service | Provides the properties of SP or BMC web service. |

snaplock

SnapLock-related properties.

| Name | Type | Description |
|-----------------------|--------|---------------------------------|
| compliance_clock_time | string | SnapLock compliance clock time. |

statistics

Raw CPU performance for the nodes.

| Name | Type | Description |
|----------------------------|---------|-----------------------------------|
| processor_utilization_base | integer | Base counter for CPU Utilization. |

| Name | Type | Description |
|---------------------------|---------|---|
| processor_utilization_raw | integer | Raw CPU Utilization for the node. This should be divided by the processor_utilization_base to calculate the percentage CPU utilization for the node. |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |

system_aggregate

Aggregate

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------------|---------|--|
| full | string | The full cluster version string. |
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

vm

| Name | Type | Description |
|---------------|--------|--|
| provider_type | string | Cloud provider where the VM is hosted. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update node information

PATCH /cluster/nodes/{uuid}

Introduced In: 9.6

Updates the node information or performs shutdown/reboot actions on a node.

Related ONTAP commands

- `cluster ha modify`
- `storage failover modify`
- `system node modify`
- `system node reboot`
- `system node power off`
- `system node power on`
- `system service-processor network modify`
- `system service-processor reboot-sp`
- `system service-processor image modify`
- `system service-processor network auto-configuration enable`
- `system service-processor network auto-configuration disable`

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|--|
| uuid | string | path | True | <ul style="list-style-type: none">• format: uuid |

| Name | Type | In | Required | Description |
|------------------------|--------|-------|----------|--|
| action | string | query | False | <p>The shutdown action shuts the node down and transfers storage control to its HA group if storage failover is enabled. The reboot action reboots the node and transfers storage control to its HA group if storage failover is enabled. The giveback action transfers storage control back to the owner from its HA group. The "power_off" action shuts the node down with the assistance of the service processor. The "power_on" action restores power to the node with the assistance of the service processor.</p> <ul style="list-style-type: none"> • enum: ["shutdown", "reboot", "giveback", "power_off", "power_on", "takeover_check"] |
| shutdown_reboot_reason | string | query | False | <p>Indicates the reason for the reboot or shutdown. This only applies when an action of reboot or shutdown is provided.</p> |

| Name | Type | In | Required | Description |
|----------------------------------|---------|-------|----------|---|
| allow_data_outage | boolean | query | False | <p>This only applies when an action of reboot or shutdown is provided. It allows storage failover to be bypassed along with any failures related to maintaining quorum in the cluster.</p> <ul style="list-style-type: none"> • Default value: |
| service_processor.firmware_image | string | query | False | <p>Service processor image to boot with after a reboot.</p> <ul style="list-style-type: none"> • Introduced in: 9.10 • enum: ["primary", "backup"] |
| service_processor.action | string | query | False | <p>Action used to reboot the service processor (SP).</p> <ul style="list-style-type: none"> • Introduced in: 9.10 • enum: ["reboot"] |
| allow_version_mismatch | boolean | query | False | <p>Applies only when a reboot action is provided. It allows storage failover to be bypassed along with any failures related to software version mismatch.</p> <ul style="list-style-type: none"> • Introduced in: 9.12 • Default value: |

| Name | Type | In | Required | Description |
|-----------------|---------|-------|----------|---|
| override_vetoes | boolean | query | False | <p>Applies only when a giveback action is provided. If giveback is vetoed, you must check the EMS messages to determine the cause. Depending on the reason or reasons, you can decide whether you can safely override the vetoes.</p> <ul style="list-style-type: none"> <li>• Introduced in: 9.13 <li>• Default value: |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> <li>• Default value: 1 <li>• Max value: 120 <li>• Min value: 0 |

Request Body

| Name | Type | Description |
|-----------------------|--|--|
| _links | _links | |
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | <p>The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting.</p> <ul style="list-style-type: none">• example: 2019-04-17 11:49:26 -0400• format: date-time• readOnly: 1• Introduced in: 9.6• x-nullable: true |
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |
| hw_assist | hw_assist | The hardware assist information. |
| is_spares_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |
| model | string | |
| name | string | |
| nvrn | nvrn | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |

| Name | Type | Description |
|-----------------------|----------------------------------|--|
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |
| storage_configuration | string | <p>The storage configuration in the system. Possible values:</p> <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |

| Name | Type | Description |
|----------------------|---------|---|
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    }
  },
}
```

```

"flash_cache": {
  "capacity": 102400000000,
  "device_id": 0,
  "firmware_file": "X9170_O000Z6300NVM",
  "firmware_version": "NA05",
  "hardware_revision": "A1",
  "model": "X1970A",
  "part_number": "119-00207",
  "serial_number": "A22P5061550000187",
  "slot": "6-1",
  "state": "ok"
},
"frus": {
  "id": "string",
  "state": "ok",
  "type": "fan"
},
"memory_size": 1024000000,
"over_temperature": "over"
},
"date": "2019-04-17 11:49:26 -0400",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed",
    "status": {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resource/link"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "error": {
        "code": "852126",

```

```

    "message": "shutdown"
  },
  "state": "done"
}
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "down"
},
"partners": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"ports": {
  "number": 0,
  "state": "active"
},
"takeover": {
  "failure": {
    "code": 852130,
    "message": "Failed to initiate takeover. Run the \"storage
failover show-takeover\" command for more information."
  },
  "state": "failed"
},
"takeover_check": {
  "reasons": {
  }
}
},
"hw_assist": {
  "status": {
    "local": {
      "state": "active"
    },
    "partner": {
      "state": "active"
    }
  }
}
},
"location": "rack 2 row 5",

```

```

"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ip": {
    "address": "10.10.10.7"
  },
  "name": "lif1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"membership": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "processor_utilization": 13,
  "status": "ok",
  "timestamp": "2017-01-25 06:20:13 -0500",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "e1b"
  },
  "type": "fc"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "battery_ok",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {

```

```

    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "installed",
    "version": "11.6"
  },
  "firmware_version": "string",
  "ipv4_interface": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24",
    "setup_state": "not_setup"
  },
  "ipv6_interface": {
    "address": "fd20:8b1e:b255:5011:10:141:4:97",
    "gateway": "fd20:8b1e:b255:5011:10::1",
    "link_local_ip": "FE80::/10",
    "netmask": 64,
    "router_ip": "2001:0db8:85a3:0000:0000:8a2e:0370:7334",
    "setup_state": "not_setup"
  },
  "last_update_state": "failed",
  "link_status": "up",
  "mac_address": "string",
  "primary": {
    "state": "installed",
    "version": "11.6"
  },
  "ssh_info": {
    "allowed_addresses": {
    }
  },
  "state": "online",
  "type": "sp"
},
"snaplock": {
  "compliance_clock_time": "2018-06-04 15:00:00 -0400"
},
"state": "up",
"statistics": {
  "processor_utilization_base": 12345123,
  "processor_utilization_raw": 13,

```

```

    "status": "ok",
    "timestamp": "2017-01-25 06:20:13 -0500"
  },
  "storage_configuration": "unknown",
  "system_aggregate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "system_id": 92027651,
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": 300536,
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": 791603000068,
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  },
  "vm": {
    "provider_type": "GoogleCloud"
  }
}

```

Response

Status: 200, Ok

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 852046 | HA partner node is not running to do takeover. |
| 852115 | The reboot/shutdown is prevented because LIFs cannot be moved away from the node. |
| 3604514 | A reboot or shutdown request is already in progress. |
| 3604515 | Reboot or shutdown of all nodes results in data service failure and client disruption for the entire cluster. Use "allow-data-outage=true" to bypass this check. |
| 9240591 | The name is not valid. The name is already in use by a cluster node, SVM, or it is the name of the local cluster. |
| 9240606 | The reboot/shutdown is prevented due to quorum warnings. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node_setup_ip

The IP configuration for cluster setup.

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interface

The cluster network IP address of the node to be added.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

ip

IP information

| Name | Type | Description |
|---------|--------|----------------------|
| address | string | IPv4 or IPv6 address |

cluster_interfaces

Network interface

| Name | Type | Description |
|--------|------------------------|----------------|
| _links | _links | |
| ip | ip | IP information |

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

cpu

CPU information.

| Name | Type | Description |
|------------------|---------|---|
| count | integer | Number of CPUs on the node. |
| firmware_release | string | Firmware release number. Defined by the CPU manufacturer. |
| processor | string | CPU type on the node. |

message

| Name | Type | Description |
|---------|--------|---|
| code | string | Error code describing the current condition of chassis fans. |
| message | string | Message describing the current condition of chassis fans. It is only of use when <code>failed_fan.count</code> is not zero. |

failed_fan

| Name | Type | Description |
|---------|-------------------------|--|
| count | integer | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | message | |

message

| Name | Type | Description |
|---------|--------|--|
| code | string | Error code describing the current condition of power supply. |
| message | string | Message describing the state of any power supplies that are currently degraded. It is only of use when <code>failed_power_supply.count</code> is not zero. |

failed_power_supply

| Name | Type | Description |
|---------|-------------------------|--------------------------------------|
| count | integer | Number of failed power supply units. |
| message | message | |

flash_cache

| Name | Type | Description |
|-------------------|---------|---------------|
| capacity | integer | Size in bytes |
| device_id | integer | |
| firmware_file | string | |
| firmware_version | string | |
| hardware_revision | string | |
| model | string | |
| part_number | string | |
| serial_number | string | |
| slot | string | |
| state | string | |

frus

| Name | Type | Description |
|-------|--------|-------------|
| id | string | |
| state | string | |
| type | string | |

controller

Controller information

| Name | Type | Description |
|---------------------|---------------------|---|
| board | string | Type of the system board. This is defined by vendor. |
| cpu | cpu | CPU information. |
| failed_fan | failed_fan | |
| failed_power_supply | failed_power_supply | |
| flash_cache | array[flash_cache] | A list of Flash-Cache devices. Only returned when requested by name. |
| frus | array[frus] | List of FRUs on the node. Only returned when requested by name. |
| memory_size | integer | Memory available on the node, in bytes. |
| over_temperature | string | Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds. |

external_cache

Cache used for buffer management.

| Name | Type | Description |
|-------------------|---------|--|
| is_enabled | boolean | Indicates whether the external cache is enabled. |
| is_hya_enabled | boolean | Indicates whether HyA caching is enabled. |
| is_rewarm_enabled | boolean | Indicates whether rewarm is enabled. |
| pcs_size | integer | PCS size in gigabytes. |

failure

Indicates the failure code and message.

| Name | Type | Description |
|---------|---------|--------------------------------------|
| code | integer | Message code |
| message | string | Detailed message based on the state. |

aggregate

Aggregate name and UUID.

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error

Indicates the failed aggregate giveback code and message.

| Name | Type | Description |
|---------|--------|--------------------------------------|
| code | string | Message code. |
| message | string | Detailed message based on the state. |

status

| Name | Type | Description |
|-----------|---------------------------|---|
| aggregate | aggregate | Aggregate name and UUID. |
| error | error | Indicates the failed aggregate giveback code and message. |

| Name | Type | Description |
|-------|--------|---|
| state | string | Giveback state of the aggregate. Possible values include no aggregates to giveback(nothing_to_giveback), failed to disable background disk firmware update(BDFU) on source node(failed_bdfu_source), giveback delayed as disk firmware update is in progress on source node(delayed_bdfu_source), performing veto checks(running_checks). |

giveback

Represents the state of the node that is giving storage back to its HA partner.

| Name | Type | Description |
|---------|---------------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |
| status | array[status] | Giveback status of each aggregate. |

interconnect

| Name | Type | Description |
|---------|--------|---------------------------------------|
| adapter | string | HA interconnect device name. |
| state | string | Indicates the HA interconnect status. |

partners

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

ports

| Name | Type | Description |
|--------|---------|---|
| number | integer | HA port number |
| state | string | <p>HA port state:</p> <ul style="list-style-type: none"> • <i>down</i> - Logical HA link is down. • <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port. • <i>armed</i> - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port. • <i>active</i> - Logical HA link is active. • <i>reserved</i> - Logical HA link is active, but the physical link is down. |

takeover

This represents the state of the node that is taking over storage from its HA partner.

| Name | Type | Description |
|---------|-------------------------|---|
| failure | failure | Indicates the failure code and message. |
| state | string | |

takeover_check

The takeover check response.

| Name | Type | Description |
|-------------------|---------------|---|
| reasons | array[string] | Reasons why the takeover is not possible. |
| takeover_possible | boolean | Indicates whether the takeover is possible. |

ha

| Name | Type | Description |
|----------------|-----------------------------------|---|
| auto_giveback | boolean | Specifies whether giveback is automatically initiated when the node that owns the storage is ready. |
| enabled | boolean | Specifies whether or not storage failover is enabled. |
| giveback | giveback | Represents the state of the node that is giving storage back to its HA partner. |
| interconnect | interconnect | |
| partners | array[partners] | Nodes in this node's High Availability (HA) group. |
| ports | array[ports] | |
| takeover | takeover | This represents the state of the node that is taking over storage from its HA partner. |
| takeover_check | takeover_check | The takeover check response. |

local

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

partner

| Name | Type | Description |
|-------|---------|-------------------------------------|
| ip | string | The hardware assist IP address. |
| port | integer | The hardware assist port. |
| state | string | The hardware assist monitor status. |

status

| Name | Type | Description |
|---------|-------------------------|---|
| enabled | boolean | Indicates whether hardware assist is enabled on the node. |
| local | local | |
| partner | partner | |

hw_assist

The hardware assist information.

| Name | Type | Description |
|--------|------------------------|-------------|
| status | status | |

management_interface

The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.

| Name | Type | Description |
|------|-------------------------------|---|
| ip | node_setup_ip | The IP configuration for cluster setup. |

management_interfaces

Network interface

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

metric

CPU performance for the nodes.

| Name | Type | Description |
|-----------------------|------------------------|---|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| processor_utilization | integer | Average CPU Utilization for the node |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |
| uuid | string | |

ports

| Name | Type | Description |
|------|--------|-------------|
| name | string | |

metrocluster

Metrocluster

| Name | Type | Description |
|---------------------|--------------|---|
| custom_vlan_capable | boolean | Indicates whether the MetroCluster over IP platform supports custom VLAN IDs. |
| ports | array[ports] | MetroCluster over IP ports. |
| type | string | The Metrocluster configuration type |

nvrाम

| Name | Type | Description |
|---------------|---------|--|
| battery_state | string | Specifies status of the NVRAM battery. Possible values: <ul style="list-style-type: none">• <i>battery_ok</i>• <i>battery_partially_discharged</i>• <i>battery_fully_discharged</i>• <i>battery_not_present</i>• <i>battery_near_end_of_life</i>• <i>battery_at_end_of_life</i>• <i>battery_unknown</i>• <i>battery_over_charged</i>• <i>battery_fully_charged</i> |
| id | integer | Vendor specific NVRAM ID of the node. |

api_service

Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the SP API service of the SP or BMC is enabled or disabled. When the SP API service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts SP API service access to cluster nodes only. By default, limit_access is set to true. |
| port | integer | Specifies the port number on the SP or BMC used for the SP API service. By default, port 50000 is used. |

auto_config

Provides the properties of the service processor auto configuration.

| Name | Type | Description |
|-------------|--------|--|
| ipv4_subnet | string | Indicates the service processor auto configuration IPv4 subnet name. To enable IPv4 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |
| ipv6_subnet | string | Indicates the service processor auto configuration IPv6 subnet name. To enable IPv6 auto-config give the subnet name, give the value as null or an empty string "" to disable auto-config. |

backup

Provides the properties of the service processor backup partition.

| Name | Type | Description |
|------------|---------|--|
| is_current | boolean | Indicates whether the service processor is currently booted from the backup partition. |
| state | string | Status of the backup partition. |
| version | string | Firmware version of the backup partition. |

ipv4_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|-------------|---------|---|
| address | string | IPv4 or IPv6 address |
| enabled | boolean | Indicates whether the IPv4 interfaces is enabled. It expects dhcp_enabled as "true" or values for address, netmask and gateway when set to "true". |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| netmask | string | Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, the default value is 64 with a valid range of 1 to 127. Output is always netmask length. |
| setup_state | string | Indicates the setup state of the interface. |

ipv6_interface

Object to setup an interface along with its default router.

| Name | Type | Description |
|---------|---------|--|
| address | string | IPv6 address |
| enabled | boolean | Indicates whether the IPv6 interfaces is enabled. It expects values for address, netmask and gateway when set to "true". |

| Name | Type | Description |
|--------------------|---------|---|
| gateway | string | The IPv6 address of the default router. |
| is_ipv6_ra_enabled | boolean | Indicates whether IPv6 RA is enabled. |
| link_local_ip | string | Link local IP address. |
| netmask | integer | The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127. |
| router_ip | string | Router assigned IP address. |
| setup_state | string | Indicates the setup state of the interface. |

primary

Provides the properties of the service processor primary partition.

| Name | Type | Description |
|------------|---------|---|
| is_current | boolean | Indicates whether the service processor is currently booted from the primary partition. |
| state | string | Status of the primary partition. |
| version | string | Firmware version of the primary partition. |

ssh_info

Service processor SSH allowed IP address configuration applied across the cluster.

| Name | Type | Description |
|-------------------|---------------|----------------------|
| allowed_addresses | array[string] | Allowed IP addresses |

web_service

Provides the properties of SP or BMC web service.

| Name | Type | Description |
|--------------|---------|---|
| enabled | boolean | Indicates whether the web service of the SP or BMC is enabled or disabled. When the web service is disabled, features such as network-based firmware updates and network-based down node log collection are not available, and the slower serial-interface is used for firmware updates and down node log collection. |
| limit_access | boolean | Restricts web service access to cluster nodes only. By default, limit_access is set to true. |

service_processor

| Name | Type | Description |
|--------------------|-----------------------------|---|
| api_service | api_service | Provides the properties of the service processor (SP) or baseboard management controller (BMC) API service. |
| auto_config | auto_config | Provides the properties of the service processor auto configuration. |
| autoupdate_enabled | boolean | Indicates whether the service processor can be automatically updated from ONTAP. <ul style="list-style-type: none"> • Introduced in: 9.10 • x-ntap-readModify: true • x-nullable: true |
| backup | backup | Provides the properties of the service processor backup partition. |
| dhcp_enabled | boolean | Set to "true" to use DHCP to configure an IPv4 interface. Do not provide values for address, netmask and gateway when set to "true". |

| Name | Type | Description |
|-------------------|--------------------------------|--|
| firmware_version | string | The version of firmware installed. |
| ipv4_interface | ipv4_interface | Object to setup an interface along with its default router. |
| ipv6_interface | ipv6_interface | Object to setup an interface along with its default router. |
| is_ip_configured | boolean | Indicates whether the service processor network is configured. |
| last_update_state | string | Provides the "update status" of the last service processor update. |
| link_status | string | |
| mac_address | string | |
| primary | primary | Provides the properties of the service processor primary partition. |
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state | string | |
| type | string | |
| web_service | web_service | Provides the properties of SP or BMC web service. |

snaplock

SnapLock-related properties.

| Name | Type | Description |
|-----------------------|--------|---------------------------------|
| compliance_clock_time | string | SnapLock compliance clock time. |

statistics

Raw CPU performance for the nodes.

| Name | Type | Description |
|----------------------------|---------|-----------------------------------|
| processor_utilization_base | integer | Base counter for CPU Utilization. |

| Name | Type | Description |
|---------------------------|---------|---|
| processor_utilization_raw | integer | Raw CPU Utilization for the node. This should be divided by the processor_utilization_base to calculate the percentage CPU utilization for the node. |
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |

system_aggregate

Aggregate

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------------|---------|--|
| full | string | The full cluster version string. |
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

vm

| Name | Type | Description |
|---------------|--------|--|
| provider_type | string | Cloud provider where the VM is hosted. |

node

Complete node information

| Name | Type | Description |
|--------------------|---|--|
| _links | _links | |
| cluster_interface | cluster_interface | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[cluster_interfaces] | |
| controller | controller | Controller information |
| date | string | <p>The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting.</p> <ul style="list-style-type: none"> • example: 2019-04-17 11:49:26 -0400 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |

| Name | Type | Description |
|-----------------------|--|--|
| external_cache | external_cache | Cache used for buffer management. |
| ha | ha | |
| hw_assist | hw_assist | The hardware assist information. |
| is_spares_low | boolean | Specifies whether or not the node is in spares low condition. |
| location | string | |
| management_interface | management_interface | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes. |
| management_interfaces | array[management_interfaces] | |
| membership | string | <p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster. |

| Name | Type | Description |
|-------------------|-----------------------------------|--|
| metric | metric | CPU performance for the nodes. |
| metrocluster | metrocluster | Metrocluster |
| model | string | |
| name | string | |
| nvrn | nvrn | |
| owner | string | Owner of the node. |
| serial_number | string | |
| service_processor | service_processor | |
| snaplock | snaplock | SnapLock-related properties. |
| state | string | <p>State of the node:</p> <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state. |
| statistics | statistics | Raw CPU performance for the nodes. |

| Name | Type | Description |
|-----------------------|----------------------------------|---|
| storage_configuration | string | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> • <i>mixed_path</i> • <i>single_path</i> • <i>multi_path</i> • <i>tri_path</i> • <i>quad_path</i> • <i>mixed_path_ha</i> • <i>single_path_ha</i> • <i>multi_path_ha</i> • <i>tri_path_ha</i> • <i>quad_path_ha</i> • <i>unknown</i> • <i>virtual</i> |
| system_aggregate | system_aggregate | Aggregate |
| system_id | string | |
| system_machine_type | string | OEM system machine type. |
| uptime | integer | The total time, in seconds, that the node has been up. |
| uuid | string | |
| vendor_serial_number | string | OEM vendor serial number. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm | vm | |

job_link

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve node historical performance metrics

GET /cluster/nodes/{uuid}/metrics

Introduced In: 9.8

Retrieves historical performance metrics for a node.

Parameters

| Name | Type | In | Required | Description |
|-----------------------|---------|-------|----------|---------------------------------|
| processor_utilization | integer | query | False | Filter by processor_utilization |
| timestamp | string | query | False | Filter by timestamp |
| duration | string | query | False | Filter by duration |
| status | string | query | False | Filter by status |

| Name | Type | In | Required | Description |
|----------|--------|-------|----------|---|
| uuid | string | path | True | Unique identifier of the node. |
| interval | string | query | False | <p>The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows:</p> <ul style="list-style-type: none"> • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"] |

| Name | Type | In | Required | Description |
|--|----------------|---------|----------|---|
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |
| desc] direction. Default direction is 'asc' for ascending. | return_records | boolean | query | False |

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "processor_utilization": 13,
    "status": "ok",
    "timestamp": "2017-01-25 06:20:13 -0500",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

records

CPU performance for the nodes.

| Name | Type | Description |
|-----------------------|------------------------|--|
| _links | _links | |
| duration | string | The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations: |
| processor_utilization | integer | Average CPU Utilization for the node |

| Name | Type | Description |
|-----------|--------|---|
| status | string | Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp | string | The timestamp of the performance data. |
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

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

Cluster NTP

Cluster NTP endpoint overview

Overview

ONTAP uses the Network Time Protocol (NTP) for world clock time synchronization of the cluster. Some functional services require the time to be correct to within one second for all the nodes in the cluster.

The success and speed of this synchronization depends on the number, alignment, and consistent network latency of external time servers. It is a best practice to configure ONTAP with four independent external time servers.

To aid set up, the Pre-Cluster API of POST `/cluster` supports a list of NTP time servers using either the host name, IPv4 address, or IPv6 address.

You can enhance time security by acquiring private keys from external time servers, recording those keys and configuring the entries that match the external time servers to use those keys.

To use NTP symmetric authentication keys (keys), the shared private key must be recorded first using the `/cluster/ntp/keys` API associated with the server and enabled to be used.

APIs

There are three sets of APIs. The most basic set is part of the `/api/cluster` APIs, in which a set of NTP servers are provided. The next two sets are used to manage the NTP servers in more detail and optionally record keys to enable NTP symmetric authentication.

[/api/cluster](#)

More details can be found under the documentation for [/api/cluster](#). This API supports a list of NTP servers to start with. It does not take any individual configuration values for the NTP servers themselves.

[/api/cluster/ntp/servers](#)

You can use this API for a more detailed configuration of NTP servers. You must use this API to set and enable NTP symmetric authentication keys.

[/api/cluster/ntp/keys](#)

You can use this API to manage shared NTP symmetric keys that are provided by the remote NTP time server by using the key identifier (ID), type of key, and the private shared key.

Manage cluster NTP keys

Cluster NTP keys endpoint overview

Overview

You can configure NTP to use shared private keys between ONTAP and trusted external NTP time servers.

You acquire the keys from the external NTP time servers and individual entries created for each unique key. You can use the `/cluster/ntp/servers` API to associate a key with an external NTP time server used by ONTAP and enable authentication.

Fields used for adding an NTP shared key

The required fields are:

- `id`
- `digest_type`
- `secret_key`

Example

```
# Body
create_ntp_key.txt (body) :
{
  "id": 10,
  "digest_type": "sha1",
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/keys" -d
"@create_ntp_key.txt"
```

Retrieve the NTP symmetric authentication keys

GET `/cluster/ntp/keys`

Introduced In: 9.7

Retrieves the collection of NTP symmetric authentication keys known by ONTAP that are uniquely indexed by an identifier.

Related ONTAP commands

- `cluster time-service ntp key show`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| id | integer | query | False | Filter by id <ul style="list-style-type: none"> • Max value: 65535 • Min value: 1 |
| value | string | query | False | Filter by value |
| digest_type | string | query | False | Filter by digest_type |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Max value: 120 • Min value: 0 • Default value: 1 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|------------------------|--------------------|
| _links | _links | |
| num_records | integer | Number of records. |
| records | array[ntp_key] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "digest_type": "sha1",
    "id": 10,
    "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

ntp_key

| Name | Type | Description |
|-------------|------------------------|---|
| _links | _links | |
| digest_type | string | The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header. |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header. |
| value | string | <p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p> |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Create an NTP symmetric authentication key entry

POST `/cluster/ntp/keys`

Introduced In: 9.7

Creates an NTP symmetric authentication key entry including the type of key using an unused identifier or index number (ID).

Required properties

- `id` - Shared symmetric key number (ID).
- `digest_type` - Shared private key cryptographic hash type.
- `value` - Value of shared private key.

Related ONTAP commands

- `cluster time-service ntp key create`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|---|
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value: |

Request Body

| Name | Type | Description |
|-------------|------------------------|---|
| _links | _links | |
| digest_type | string | The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header. |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header. |
| value | string | <p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p> |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",
  "id": 10,
  "value": "da39a3ee5e6b4b0d3255bfeef95601890afd80709"
}
```

Response

Status: 201, Created

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 2097187 | Invalid value for an NTP symmetric authentication key. A SHA1 key must be exactly 40 hexadecimal digits. |
| 2097189 | Too many NTP keys have been configured. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

ntp_key

| Name | Type | Description |
|-------------|------------------------|---|
| _links | _links | |
| digest_type | string | The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header. |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header. |
| value | string | <p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p> |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Delete an NTP key

```
DELETE /cluster/ntp/keys/{id}
```

Introduced In: 9.7

Deletes an NTP key.

Related ONTAP commands

- `cluster time-service ntp key delete`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

| Name | Type | In | Required | Description |
|------|---------|------|----------|----------------|
| id | integer | path | True | Key identifier |

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 2097186 | The key cannot be deleted because it is being used by an NTP server. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve NTP symmetric authentication key details

GET /cluster/ntp/keys/{id}

Introduced In: 9.7

Retrieves the details of a specific NTP symmetric authentication key by numeric identifier or index (ID).

Related ONTAP commands

- `cluster time-service ntp key show`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| id | integer | path | True | Key identifier |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| digest_type | string | The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header. |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header. |
| value | string | <p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p> |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",
  "id": 10,
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update NTP symmetric authentication key details

PATCH `/cluster/ntp/keys/{id}`

Introduced In: 9.7

Updates the details of a specific NTP symmetric authentication key by numeric identifier or index (ID).

Required properties

- `digest_type` - Shared private key cryptographic hash type.
- `value` - Value of shared private key.

Related ONTAP commands

- `cluster time-service ntp key modify`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

| Name | Type | In | Required | Description |
|------|---------|------|----------|----------------|
| id | integer | path | True | Key identifier |

Request Body

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| digest_type | string | The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header. |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header. |
| value | string | <p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p> |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",
  "id": 10,
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
```

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|-----------------------------------|
| 2097187 | An invalid SHA1 key was provided. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

ntp_key

| Name | Type | Description |
|-------------|------------------------|---|
| _links | _links | |
| digest_type | string | The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header. |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header. |
| value | string | <p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p> |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage cluster NTP servers

Cluster NTP servers endpoint overview

Overview

You can use this API to add external NTP servers to a cluster, update the configuration, use NTP keys, and retrieve the current NTP server configuration.

Adding an NTP server to a cluster

To add an NTP server to a cluster, issue a POST /cluster/ntp/servers request.

Fields used for adding an NTP server

Except for the name of the NTP server (host name or IP address), which is specified by the server, all fields are optional:

- `version`
- `key`

If the key is provided in POST, `authentication_enabled` is set to `true` by default.

Examples

Adding an NTP server

```
# Body
add_ntp_server.txt(body):
{
  "server": "time.nist.gov"
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/servers" -d
"@add_ntp_server.txt"
```

Adding an NTP server with an authentication key

```
# Body
add_authenticated_ntp_server.txt(body):
{
  "server": "time.nist.gov",
  "key": { "id": 10 }
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/servers" -d
"@add_authenticated_ntp_server.txt"
```

Enabling a previously configured shared key (ID, type, and value) for an NTP server

A combination of key number or identifier (ID), type of key, and shared key value is created with `/api/cluster/ntp/keys`. This operation will validate the NTP authentication works.

```
# Body
enable_shared_key.txt(body):
{
  "key": { "id": 10 },
  "authentication_enabled": true
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster/ntp/servers/time.nist.gov" -d
"@enable_shared_key.txt"
```

Retrieve external NTP time servers

GET /cluster/ntp/servers

Introduced In: 9.7

Retrieves the collection of external NTP time servers ONTAP uses for time adjustment and correction.

Related ONTAP commands

- `cluster time-service ntp server show`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

| Name | Type | In | Required | Description |
|------------------------|---------------|-------|----------|--|
| authentication_enabled | boolean | query | False | Filter by authentication_enabled |
| server | string | query | False | Filter by server |
| version | string | query | False | Filter by version |
| key.id | integer | query | False | Filter by key.id <ul style="list-style-type: none">• Max value: 65535• Min value: 1 |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none">• Default value: 1 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none"> • Max value: 120 • Min value: 0 • Default value: 1 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|-------------------------------------|--------------------|
| _links | _links | |
| num_records | integer | Number of records. |
| records | array[ntp_server] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "authentication_enabled": 1,
    "key": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "id": 10
    },
    "server": "time.nist.gov",
    "version": "auto"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

ntp_key_reference

| Name | Type | Description |
|--------|------------------------|--|
| _links | _links | |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server. |

ntp_server

| Name | Type | Description |
|------------------------|-----------------------------------|--|
| _links | _links | |
| authentication_enabled | boolean | Set NTP symmetric authentication on (true) or off (false). |
| key | ntp_key_reference | |
| server | string | NTP server host name, IPv4, or IPv6 address. |
| version | string | NTP protocol version for server. Valid versions are 3, 4, or auto. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Validate an external NTP time server

POST `/cluster/ntp/servers`

Introduced In: 9.7

Validates the provided external NTP time server for usage and configures ONTAP so that all nodes in the cluster use it. The required fields are:

- `server`

Default property values

If not specified in POST, the following default property values are assigned:

- `version - auto`
- `key - not set`

If the key is provided in POST, `authentication_enabled` is set to `true` by default.

Related ONTAP commands

- `cluster time-service ntp server create`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value: |

Request Body

| Name | Type | Description |
|------------------------|------------------------|--|
| _links | _links | |
| authentication_enabled | boolean | Set NTP symmetric authentication on (true) or off (false). |

| Name | Type | Description |
|---------|-----------------------------------|--|
| key | ntp_key_reference | |
| server | string | NTP server host name, IPv4, or IPv6 address. |
| version | string | NTP protocol version for server. Valid versions are 3, 4, or auto. |

Example request

```

{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_enabled": 1,
  "key": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "id": 10
  },
  "server": "time.nist.gov",
  "version": "auto"
}

```

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Response

Status: 201, Created

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 2097163 | NTP server IPv4 address was invalid. |
| 2097164 | NTP server IPv6 address was invalid. |
| 2097165 | Cannot resolve NTP server name. |
| 2097166 | NTP server address query returned no valid IP addresses. |
| 2097167 | Failed to connect to NTP server. |
| 2097168 | Unable to query NTP server. |
| 2097169 | NTP server provided was not synchronized with a clock or another NTP server. |
| 2097174 | NTP server provided had too high of root distance. |

| Error Code | Description |
|------------|--|
| 2097177 | NTP server provided an invalid stratum. |
| 2097179 | Too many NTP servers have been configured. |
| 2097181 | NTP server address was invalid. It is a special purpose address such as loopback, multicast, or broadcast address. |
| 2097182 | NTP server address was invalid. The address is neither an IPv4 or IPv6. |
| 2097183 | NTP symmetric key authentication cannot be used for a node not in a cluster. |
| 2097185 | NTP key authentication failed for the provided key. |
| 2097193 | An unknown NTP key was provided. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

ntp_key_reference

| Name | Type | Description |
|--------|------------------------|--|
| _links | _links | |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server. |

ntp_server

| Name | Type | Description |
|------------------------|-----------------------------------|--|
| _links | _links | |
| authentication_enabled | boolean | Set NTP symmetric authentication on (true) or off (false). |
| key | ntp_key_reference | |
| server | string | NTP server host name, IPv4, or IPv6 address. |
| version | string | NTP protocol version for server. Valid versions are 3, 4, or auto. |

job_link

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Delete an external NTP server

```
DELETE /cluster/ntp/servers/{server}
```

Introduced In: 9.7

Deletes an external NTP server used by ONTAP.

Related ONTAP commands

- `cluster time-service ntp server delete`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| server | string | path | True | Server address or host name |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Response

Status: 200, Ok

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve an external NTP server configuration

GET /cluster/ntp/servers/{server}

Introduced In: 9.7

Retrieves the configuration of an external NTP server used by ONTAP.

Related ONTAP commands

- `cluster time-service ntp server show`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|--|
| server | string | path | True | NTP server host name, IPv4, or IPv6 address. |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|-----------------------------------|--|
| _links | _links | |
| authentication_enabled | boolean | Set NTP symmetric authentication on (true) or off (false). |
| key | ntp_key_reference | |
| server | string | NTP server host name, IPv4, or IPv6 address. |
| version | string | NTP protocol version for server. Valid versions are 3, 4, or auto. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_enabled": 1,
  "key": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "id": 10
},
"server": "time.nist.gov",
"version": "auto"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

ntp_key_reference

| Name | Type | Description |
|--------|------------------------|--|
| _links | _links | |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update an NTP server configuration after validation

PATCH /cluster/ntp/servers/{server}

Introduced In: 9.7

Updates the configuration of an NTP server used by the ONTAP cluster after validation. Patchable fields are:

- `version`
- `key.id`
- `authentication_enabled`

If `authentication_enabled` is modified to `false`, the associated NTP key is removed from the server instance. If `authentication_enabled` is modified to `true`, you must provide an NTP key ID in the PATCH body.

Related ONTAP commands

- `cluster time-service ntp server modify`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

| Name | Type | In | Required | Description |
|--------|--------|------|----------|-----------------------------|
| server | string | path | True | Server address or host name |

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| Name | Type | Description |
|------------------------|-----------------------------------|--|
| _links | _links | |
| authentication_enabled | boolean | Set NTP symmetric authentication on (true) or off (false). |
| key | ntp_key_reference | |
| server | string | NTP server host name, IPv4, or IPv6 address. |
| version | string | NTP protocol version for server. Valid versions are 3, 4, or auto. |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_enabled": 1,
  "key": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "id": 10
},
"server": "time.nist.gov",
"version": "auto"
}
```

Response

Status: 200, Ok

| Name | Type | Description |
|------|----------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2097163 | NTP server address was invalid. |
| 2097164 | NTP server address was invalid. |
| 2097165 | Could not resolve NTP server hostname. |
| 2097166 | NTP server address query returned no valid IP addresses. |
| 2097167 | Failed to connect to NTP server. |
| 2097169 | NTP server provided was not synchronized. |
| 2097174 | NTP server provided had too high of root distance. |
| 2097177 | NTP server provided had an invalid stratum. |
| 2097181 | NTP server address was invalid. |
| 2097182 | NTP server address was invalid. |
| 2097183 | NTP symmetric key authentication cannot be used for a node not in a cluster. |
| 2097185 | NTP key authentication failed for the provided key. |
| 2097188 | An invalid key identifier was provided. Identifiers must be in the range from 1 to 65535. |
| 2097193 | An unknown key was provided. |
| 2097194 | The field "authentication_enabled" cannot be false when the field NTP key is given. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

ntp_key_reference

| Name | Type | Description |
|--------|------------------------|--|
| _links | _links | |
| id | integer | NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server. |

ntp_server

| Name | Type | Description |
|------------------------|-----------------------------------|--|
| _links | _links | |
| authentication_enabled | boolean | Set NTP symmetric authentication on (true) or off (false). |
| key | ntp_key_reference | |
| server | string | NTP server host name, IPv4, or IPv6 address. |
| version | string | NTP protocol version for server. Valid versions are 3, 4, or auto. |

job_link

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage cluster peers

Cluster peers endpoint overview

Overview

Cluster peering allows administrators of ONTAP systems to establish relationships between two or more independent clusters. When a relationship exists between two clusters, the clusters can exchange user data and configuration information, and coordinate operations. The `/cluster/peers` endpoint supports create, get, modify, and delete operations using GET, PATCH, POST and DELETE HTTP requests.

Create a cluster peer

You can set up a new cluster peer relationship by issuing a POST request to `/cluster/peers`. Parameters in the POST body define the settings of the peering relationship. A successful POST request that succeeds in creating a peer returns HTTP status code "201", along with the details of the created peer, such as peer UUID, name, and authentication information. A failed POST request returns an HTTP error code along with a message indicating the reason for the error. This can include malformed requests and invalid operations.

Examples of creating cluster peers

Creating a cluster peer request with an empty request to accept the defaults

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "86de6c46-bdad-11eb-83cd-005056bb267e",
      "name": "Clus_fghf",
      "authentication": {
        "passphrase": "pLznaomlctesJFq4kt5Qfghf",
        "expiry_time": "2021-05-25T20:04:15-04:00"
      },
      "ip_address": "0.0.0.0",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/86de6c46-bdad-11eb-83cd-005056bb267e"
        }
      }
    }
  ]
}
```

Creating a cluster peer request with a system-generated passphrase that will expire on 05/26/2021 at 12:34:56

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"authentication":
{"expiry_time": "05/26/2021 12:34:56", "generate_passphrase": true}}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "14c817c7-bdad-11eb-83cd-005056bb267e",
      "name": "Clus_F6ht",
      "authentication": {
        "passphrase": "dZNOKkpVfntNZHf3MjpNF6ht",
        "expiry_time": "2021-05-26T12:34:56-04:00"
      },
      "ip_address": "0.0.0.0",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/14c817c7-bdad-11eb-83cd-005056bb267e"
        }
      }
    }
  ]
}
```

Creating a cluster peer request with a peer address and the generated passphrase is returned in the response

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"remote":
{"ip_addresses": ["1.2.3.4"]}]}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
      "name": "",
      "authentication": {
        "passphrase": "yDhdOteVGEOhkeXF+DJYwDro",
        "expiry_time": "2021-05-25T20:28:12-04:00"
      },
      "_links": {
        "self": {
          "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
        }
      }
    }
  ]
}
```

Creating a cluster peer request with a peer name and the generated passphrase is returned in the response


```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"name":
"cp_xyz123", "authentication": {"generate_passphrase": true}}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "125f8dc6-bdb1-11eb-83cd-005056bb267e",
      "name": "cp_xyz123",
      "authentication": {
        "passphrase": "eeGTerZlh2qSAt2akpYEcM1c",
        "expiry_time": "2021-05-25T20:29:38-04:00"
      },
      "ip_address": "1.2.3.5",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/125f8dc6-bdb1-11eb-83cd-005056bb267e"
        }
      }
    }
  ]
}
```

Creating a cluster peer request with a name, a peer address, and a passphrase

```
# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"name":
"cp_xyz123", "remote": {"ip_addresses": ["1.2.3.4"]}, "authentication":
{"passphrase": "xyz12345"}}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
      "authentication": {
        "expiry_time": "2021-05-25T20:32:49-04:00"
      },
      "_links": {
        "self": {
          "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
        }
      }
    }
  ]
}
```

Creating a cluster peer request with a proposed encryption protocol

```

# The API:
/api/cluster/peers

# The call:
curl -X POST 'https://<mgmt-ip>/api/cluster/peers' -d '{"encryption":
{"proposed": "tls-psk"}}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "b33a23a6-bdb1-11eb-83cd-005056bb267e",
      "name": "Clus_Pslc",
      "authentication": {
        "passphrase": "Gy8SqsXVhcUkS1AfepH7Pslc",
        "expiry_time": "2021-05-25T20:34:07-04:00"
      },
      "ip_address": "1.2.3.5",
      "_links": {
        "self": {
          "href": "/api/cluster/peers/b33a23a6-bdb1-11eb-83cd-005056bb267e"
        }
      }
    }
  ]
}

```

Creating local intercluster LIFs

The local cluster must have an intercluster LIF on each node for the correct operation of cluster peering. If no local intercluster LIFs exist, you can optionally specify LIFs to be created for each node in the local cluster. These local interfaces, if specified, are created on each node before proceeding with the creation of the cluster peering relationship. Cluster peering relationships are not established if there is an error preventing the LIFs from being created. After local interfaces have been created, do not specify them for subsequent cluster peering relationships.

Local LIF creation fields

- `local_network.ip_addresses` - List of IP addresses to assign, one per node in the local cluster.
- `local_network.netmask` - IPv4 mask or subnet mask length.
- `local_network.broadcast_domain` - Broadcast domain that is in use within the IPspace.
- `local_network.gateway` - The IPv4 or IPv6 address of the default router.

Additional information on network routes

When creating LIFs, the network route discovery mechanism might take additional time (1-5 seconds) to become visible in the network outside of the cluster. This delay in publishing the routes might cause an initial cluster peer "create" request to fail. This error disappears with a retry of the same request.

This example shows the POST body when creating four intercluster LIFs on a 4-node cluster before creating a cluster peer relationship.

```
# The API:
/api/cluster/peers

# The call:
cluster_peer_4_node.txt:
{
  "local_network":
  {
    "interfaces": [
      {"ip_address": "1.2.3.4"},
      {"ip_address": "1.2.3.5"},
      {"ip_address": "1.2.3.6"}
    ],
    "netmask": "255.255.0.0",
    "broadcast_domain": "Default",
    "gateway": "1.2.0.1"
  },
  "remote": {"ip_addresses": ["1.2.9.9"]},
  "authentication": {"passphrase": "xyz12345"}
}
curl -X POST "https://<mgmt-ip>/api/cluster/peers" -d
"@cluster_peer_4_node.txt"

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
      "local_network": {
        "interfaces": [
          {
            "ip_address": "1.2.3.4"
          },
          {
            "ip_address": "1.2.3.5"
          },
          {

```

```
        "ip_address": "1.2.3.6"
      }
    ]
  },
  "authentication": {
    "expiry_time": "2021-05-25T21:28:26-04:00"
  },
  "_links": {
    "self": {
      "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
    }
  }
}
]
```

Examples of retrieving existing cluster peers

You can retrieve peers in a cluster by issuing a GET request to `/cluster/peers`. It is also possible to retrieve a specific peer when qualified by its UUID to `/cluster/peers/{uuid}`. A GET request might have no query parameters or a valid cluster UUID. The former retrieves all records while the latter retrieves the record for the cluster peer with that UUID.

Retrieving all cluster peer relationships, both established and pending

```

# The API:
/api/cluster/peers

# The call:
curl 'https://<mgmt-ip>/api/cluster/peers'

# The response:
{
"records": [
  {
    "uuid": "a6001076-bdb2-11eb-83cd-005056bb267e",
    "name": "Clus_bH6l",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/a6001076-bdb2-11eb-83cd-005056bb267e"
      },
      "interfaces": {
        "href":
"/api/network/ip/interfaces?services=intercluster_core&ipspace.uuid=0bac5c
ed-a911-11eb-83cd-005056bb267e"
      }
    }
  },
  {
    "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
    "name": "remote-cluster",
    "_links": {
      "self": {
        "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
      },
      "interfaces": {
        "href":
"/api/network/ip/interfaces?services=intercluster_core&ipspace.uuid=0bac5c
ed-a911-11eb-83cd-005056bb267e"
      }
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/peers"
  }
}
}

```

Retrieving all cluster peer relationships which are not in an available state

```
# The API:
/api/cluster/peers

# The call:
curl 'https://<mgmt-ip>/api/cluster/peers?status.state=!available'

# The response:
{
  "records": [
    {
      "uuid": "a6001076-bdb2-11eb-83cd-005056bb267e",
      "name": "Clus_bH6l",
      "status": {
        "state": "unidentified"
      },
      "_links": {
        "self": {
          "href": "/api/cluster/peers/a6001076-bdb2-11eb-83cd-005056bb267e"
        },
        "interfaces": {
          "href":
"/api/network/ip/interfaces?services=intercluster_core&ipspace.uuid=0bac5c
ed-a911-11eb-83cd-005056bb267e"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/cluster/peers?status.state=!available"
    }
  }
}
```

Retrieving information about a single cluster peer relationship

```
# The API:
/api/cluster/peers

# The call:
curl 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-812c-
005056bb0af1'
```

```
# The response:
{
  "uuid": "b404cc52-bdae-11eb-812c-005056bb0af1",
  "name": "remote-cluster",
  "version": {
    "full": "NetApp Release Stormking__9.10.1: Tue May 25 08:08:44 UTC
2021",
    "generation": 9,
    "major": 10,
    "minor": 1
  },
  "status": {
    "state": "available",
    "update_time": "2021-05-25T19:38:55-04:00"
  },
  "ipspace": {
    "uuid": "0bac5ced-a911-11eb-83cd-005056bb267e",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/0bac5ced-a911-11eb-83cd-005056bb267e"
      }
    }
  },
  "remote": {
    "name": "remote-cluster",
    "serial_number": "1-80-000011",
    "ip_addresses": [
      "1.2.3.4"
    ]
  },
  "authentication": {
    "in_use": "ok",
    "state": "ok"
  },
  "encryption": {
    "state": "tls_psk"
  },
  "_links": {
    "self": {
      "href": "/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"
    },
    "interfaces": {
      "href":
"/api/network/ip/interfaces?services=intercluster_core&ipspace.uuid=0bac5c
```



```
ed-a911-11eb-83cd-005056bb267e"  
  }  
}  
}
```

Examples of updating an existing cluster peer

You can update a cluster peer relationship by issuing a PATCH request to `/cluster/peers/{uuid}`. As in the CLI mode, you can toggle the proposed encryption protocol, update the passphrase, or specify a new set of stable addresses. All PATCH requests take the parameters that are to be updated in the request body. If `generate_passphrase` is "true", the passphrase is returned in the PATCH response.

Updating the proposed encryption protocol from `tls-psk` to `none`

```
# The API:  
/api/cluster/peers  
  
# The call:  
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1' -d '{"authentication": {"passphrase": "xyz12345", "in_use": "ok"}, "encryption": {"proposed": "none"}}'  
  
# The response:  
{  
  "num_records": 1,  
  "records": [  
    {  
      "authentication": {  
        "passphrase": "xyz12345",  
        "in_use": "ok"  
      },  
      "encryption": {  
        "proposed": "none"  
      }  
    }  
  ]  
}
```

Updating the passphrase

```
# The API:
/api/cluster/peers

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1' -d '{"authentication": {"passphrase": "xyz12345", "in_use": "ok"}}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "authentication": {
        "passphrase": "xyz12345",
        "in_use": "ok"
      }
    }
  ]
}
```

Setting an auto-generated passphrase

```
# The API:
/api/cluster/peers

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1' -d '{"authentication": {"generate_passphrase": true, "in_use": "ok"}}'

# The response:
{}
```

Updating remote IP addresses

```
# The API:
/api/cluster/peers

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1' -d '{"remote": {"ip_addresses": ["1.2.3.6"]}}'

# The response:
{}
```

An example of deleting an existing cluster peer

You can delete a cluster peer using the HTTP DELETE request.

Deleting a peer with peer UUID "8becc0d4-c12c-11e8-9ceb-005056bbd143"

```
# The API:
/api/cluster/peers

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/peers/b404cc52-bdae-11eb-812c-005056bb0af1"

# The response:
{}
```

Retrieve cluster peers

GET /cluster/peers

Introduced In: 9.6

Retrieves the collection of cluster peers.

Parameters

| Name | Type | In | Required | Description |
|-------------|---------------|-------|----------|---------------------------------------|
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|---------------------------------------|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[cluster_peer] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "interfaces": {
        "href": "/api/resourcelink"
      },
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "authentication": {
      "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
      "in_use": "ok",
      "state": "ok"
    },
    "encryption": {
      "proposed": "none",
      "state": "none"
    },
    "initial_allowed_svms": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "ip_address": "10.10.10.7",
    "ipspace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  },
}
```

```

    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  },
  "name": "cluster2",
  "peer_applications": [
    "snapmirror",
    "flexcache"
  ],
  "remote": {
    "ip_addresses": {
    },
    "name": "cluster2",
    "serial_number": "4048820-60-9"
  },
  "status": {
    "state": "available",
    "update_time": "2017-01-25 06:20:13 -0500"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  }
}
}

```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------------|----------------------|-------------|
| interfaces | href | |
| self | href | |

authentication

| Name | Type | Description |
|---------------------|---------|---|
| expiry_time | string | The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour. |
| generate_passphrase | boolean | Auto generate a passphrase when true. |
| in_use | string | |
| passphrase | string | A password to authenticate the cluster peer relationship. |
| state | string | |

encryption

| Name | Type | Description |
|----------|--------|-------------|
| proposed | string | |
| state | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

initial_allowed_svms

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

ipspace

The IPspace of the local intercluster LIFs.

| Name | Type | Description |
|------------------------|------------------------|--------------|
| _links | _links | |
| name | string | IPspace name |
| uuid | string | IPspace UUID |

interfaces

| Name | Type | Description |
|------------|--------|----------------------|
| ip_address | string | IPv4 or IPv6 address |

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

| Name | Type | Description |
|------------------|--------|---|
| broadcast_domain | string | Broadcast domain that is in use within the IPspace. |
| gateway | string | The IPv4 or IPv6 address of the default router. |

| Name | Type | Description |
|------------|-------------------------------------|------------------------------|
| interfaces | array[interfaces] | |
| netmask | string | IPv4 mask or netmask length. |

remote

| Name | Type | Description |
|---------------|---------------|--|
| ip_addresses | array[string] | The IPv4 addresses, IPv6 addresses, or hostnames of the peers. |
| name | string | The name of the remote cluster. |
| serial_number | string | The serial number of the remote cluster. |

status

| Name | Type | Description |
|-------------|--------|--------------------------------------|
| state | string | |
| update_time | string | The last time the state was updated. |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------------|---------|--|
| full | string | The full cluster version string. |
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

cluster_peer

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |

| Name | Type | Description |
|----------------------|---|---|
| authentication | authentication | |
| encryption | encryption | |
| initial_allowed_svms | array[initial_allowed_svms] | The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship. |
| ip_address | string | IPv4 or IPv6 address |
| ipspace | ipspace | The IPspace of the local intercluster LIFs. |
| local_network | local_network | Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node. |
| name | string | Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers. |
| peer_applications | array[string] | Peering applications against which allowed SVMs are configured. |
| remote | remote | |
| status | status | |
| uuid | string | UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Create a peering relationship

POST /cluster/peers

Introduced In: 9.6

Creates a peering relationship and, optionally, the IP interfaces it will use. There are two methods used to create a peering relationship:

- Provide a remote IP address - Used when creating a new cluster peer relationship with a specific remote cluster. This requires at least one remote intercluster IP address from the remote cluster.
- Do not provide a remote IP address - Used when the remote IP address is not provided and when the storage system is ready to accept peering requests from foreign clusters.

Required properties

- `remote_ip_addresses` - Addresses of the remote peers. The local peer must be able to reach and connect to these addresses for the request to succeed in creating a peer. Only required when creating a peering relationship by providing a remote IP address.
- Either set `generate_passphrase` to "true" or provide a passphrase in the body of the request. Only one of these options is required.

Recommended optional properties

- `name` - Name of the peering relationship or name of the remote peer.
- `passphrase` - User generated passphrase for use in authentication.

- `generate_passphrase` (true/false) - When "true", ONTAP automatically generates a passphrase to authenticate cluster peers.
- `ipspace` - IPspace of the local intercluster LIFs. Assumes Default IPspace if not provided.
- `initial_allowed_svms` - Local SVMs allowed to peer with the peer cluster's SVMs. Can be modified until the remote cluster accepts this cluster peering relationship.
- `local_network` - Fields to create a local intercluster LIF.
- `expiry_time` - Duration in ISO 8601 format for which the user-supplied or auto-generated passphrase is valid. Expiration time must not be greater than seven days into the future. ISO 8601 duration format is "PnDTnHnMnS" or "PnW" where n is a positive integer. The "nD", "nH", "nM" and "nS" fields can be dropped if zero. "P" must always be present and "T" must be present if there are any hours, minutes, or seconds fields.
- `encryption_proposed` (none/tls-psk) - Encryption mechanism of the communication channel between the two peers.
- `peer_applications` - SVM peering applications (SnapMirror, FlexCache or both) for which the SVM peering relationship is set up.

Additional information

As with creating a cluster peer through the CLI, the combinations of options must be valid in order for the create operation to succeed. The following list shows the combinations that will succeed and those that will fail:

- A passphrase only (fail)
- A peer IP address (fail)
- A passphrase with an expiration time > 7 days into the future (fail)
- A peer IP address and a passphrase (OK)
- `generate_passphrase=true` (OK)
- Any proposed encryption protocol (OK)
- An IPspace name or UUID (OK)
- A passphrase, peer IP address, and any proposed encryption protocol (OK)
- A non empty list of initial allowed SVM peer names or UUIDs. (OK)

Parameters

| Name | Type | In | Required | Description |
|-----------------------------|---------|-------|----------|---|
| <code>return_records</code> | boolean | query | False | The default is false. If set to true, the records are returned. • Default value: |

Request Body

| Name | Type | Description |
|----------------------|---|---|
| _links | _links | |
| authentication | authentication | |
| encryption | encryption | |
| initial_allowed_svms | array[initial_allowed_svms] | The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship. |
| ip_address | string | IPv4 or IPv6 address |
| ipspace | ipspace | The IPspace of the local intercluster LIFs. |
| local_network | local_network | Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node. |
| name | string | Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers. |
| peer_applications | array[string] | Peering applications against which allowed SVMs are configured. |
| remote | remote | |
| status | status | |
| uuid | string | UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

Example request

```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "ok",
    "state": "ok"
  },
  "encryption": {
    "proposed": "none",
    "state": "none"
  },
  "initial_allowed_svms": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ip_address": "10.10.10.7",
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  }
}
```

```

},
"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": {
  },
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25 06:20:13 -0500"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": 9,
  "major": 4,
  "minor": 0
}
}

```

Response

Status: 201, Created

| Name | Type | Description |
|-------------|---------------------------------------|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[cluster_peer] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "interfaces": {
        "href": "/api/resourcelink"
      },
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "authentication": {
      "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
      "in_use": "ok",
      "state": "ok"
    },
    "encryption": {
      "proposed": "none",
      "state": "none"
    },
    "initial_allowed_svms": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "ip_address": "10.10.10.7",
    "ipspace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  },
}
```

```

    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  },
  "name": "cluster2",
  "peer_applications": [
    "snapmirror",
    "flexcache"
  ],
  "remote": {
    "ip_addresses": {
    },
    "name": "cluster2",
    "serial_number": "4048820-60-9"
  },
  "status": {
    "state": "available",
    "update_time": "2017-01-25 06:20:13 -0500"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": 9,
    "major": 4,
    "minor": 0
  }
}
}

```

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 1966366 | The system SVM of the cluster IPspace hosts cluster LIFs only. |
| 4653058 | Cannot peer with self. |
| 4653075 | Cannot peer with two clusters using the same cluster peer relationship name. |
| 4653075 | Cannot peer two clusters with the same name. |
| 4653076 | Cannot peer two clusters with the same UUID. |
| 4653229 | Value for "expiry_time" is obsolete. |
| 4653236 | The specified passphrase is too short. |
| 4653365 | IPspaces are unavailable with cluster peering: {ipspace}. |
| 4653368 | Invalid peer address passed in "ip_addresses": Verify that the peer address is correct, and then try the operation again. |
| 4653419 | An unencrypted peering relationship is not supported because the cluster peering policy requires the use of encryption. |
| 4653708 | The specified addresses must be of the same address family. |
| 4656069 | Specifying a passphrase without remote IP addresses is not supported. |
| 4656070 | The encryption protocol is meaningful only with authenticated cluster peer relationships. |
| 4656071 | Cannot peer with a cluster bearing the same name as the local cluster. |
| 4656072 | The name must conform to the same rules as a cluster name. |
| 4656074 | Cannot check whether all nodes of this cluster support encryption. |
| 4656075 | Cannot specify encryption: this operation requires an ECV of 9.6.0 or later. |
| 4656077 | Specify either remote IP addresses or generate_passphrase. |
| 4656079 | No cluster nodes were found. Check your cluster configuration. |

| Error Code | Description |
|------------|--|
| 4656081 | Creating an intercluster LIF requires a list of local IP addresses. |
| 4656085 | Cannot create an intercluster LIF with an empty list of local IP addresses. |
| 4656086 | Creating an intercluster LIF requires a broadcast domain that is in use within the IPspace. |
| 4656087 | The number of local intercluster IP addresses must be less than or equal to the number of available nodes. |
| 4656088 | Found no ports matching the IPspace and the broadcast domain. |
| 4656089 | Found no matching entry for IPspace. |
| 4656090 | The given IPspace differs from the IPspace entry found. |
| 4656091 | Creating an intercluster LIF requires a subnet mask or a subnet mask length. |
| 4656094 | Found no ports to bind to intercluster LIFs. Check your network configuration. |
| 4656095 | The address family of the specified peer addresses is not valid in IPspace. Use <code>/api/network/interfaces/</code> to verify that required LIFs are present and operational on each cluster node. |
| 4656096 | Creating an intercluster LIF requires an IPv4 or IPv6 address of the default router. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------------|----------------------|-------------|
| interfaces | href | |
| self | href | |

authentication

| Name | Type | Description |
|---------------------|---------|---|
| expiry_time | string | The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour. |
| generate_passphrase | boolean | Auto generate a passphrase when true. |
| in_use | string | |
| passphrase | string | A password to authenticate the cluster peer relationship. |
| state | string | |

encryption

| Name | Type | Description |
|----------|--------|-------------|
| proposed | string | |
| state | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

initial_allowed_svms

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

ipospace

The IPspace of the local intercluster LIFs.

| Name | Type | Description |
|------------------------|------------------------|--------------|
| _links | _links | |
| name | string | IPspace name |
| uuid | string | IPspace UUID |

interfaces

| Name | Type | Description |
|------------|--------|----------------------|
| ip_address | string | IPv4 or IPv6 address |

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

| Name | Type | Description |
|------------------|-------------------------------------|---|
| broadcast_domain | string | Broadcast domain that is in use within the IPspace. |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| interfaces | array[interfaces] | |
| netmask | string | IPv4 mask or netmask length. |

remote

| Name | Type | Description |
|---------------|---------------|--|
| ip_addresses | array[string] | The IPv4 addresses, IPv6 addresses, or hostnames of the peers. |
| name | string | The name of the remote cluster. |
| serial_number | string | The serial number of the remote cluster. |

status

| Name | Type | Description |
|-------------|--------|--------------------------------------|
| state | string | |
| update_time | string | The last time the state was updated. |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------------|---------|--|
| full | string | The full cluster version string. |
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

cluster_peer

| Name | Type | Description |
|----------------------|---|--|
| _links | _links | |
| authentication | authentication | |
| encryption | encryption | |
| initial_allowed_svms | array[initial_allowed_svms] | The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship. |

| Name | Type | Description |
|-------------------|-------------------------------|---|
| ip_address | string | IPv4 or IPv6 address |
| ipspace | ipspace | The IPspace of the local intercluster LIFs. |
| local_network | local_network | Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node. |
| name | string | Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers. |
| peer_applications | array[string] | Peering applications against which allowed SVMs are configured. |
| remote | remote | |
| status | status | |
| uuid | string | UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

[_links](#)

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Delete a cluster peer

DELETE /cluster/peers/{uuid}

Introduced In: 9.6

Deletes a cluster peer.

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|--------------------------------|
| uuid | string | path | True | Cluster peer relationship UUID |

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 4653079 | Unable to delete peer relationship. |
| 4663070 | Unable to delete cluster peer relationship due to an ongoing Vserver migration. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve a cluster peer instance

GET /cluster/peers/{uuid}

Introduced In: 9.6

Retrieves a specific cluster peer instance.

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|--------------------------------|
| uuid | string | path | True | Cluster peer relationship UUID |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|----------------------|---|---|
| _links | _links | |
| authentication | authentication | |
| encryption | encryption | |
| initial_allowed_svms | array[initial_allowed_svms] | The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship. |
| ip_address | string | IPv4 or IPv6 address |
| ipspace | ipspace | The IPspace of the local intercluster LIFs. |
| local_network | local_network | Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node. |
| name | string | Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers. |
| peer_applications | array[string] | Peering applications against which allowed SVMs are configured. |
| remote | remote | |
| status | status | |
| uuid | string | UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

Example response

```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "ok",
    "state": "ok"
  },
  "encryption": {
    "proposed": "none",
    "state": "none"
  },
  "initial_allowed_svms": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ip_address": "10.10.10.7",
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  }
}
```

```

},
"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": {
  },
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25 06:20:13 -0500"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": 9,
  "major": 4,
  "minor": 0
}
}

```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------------|----------------------|-------------|
| interfaces | href | |
| self | href | |

authentication

| Name | Type | Description |
|---------------------|---------|---|
| expiry_time | string | The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour. |
| generate_passphrase | boolean | Auto generate a passphrase when true. |
| in_use | string | |
| passphrase | string | A password to authenticate the cluster peer relationship. |
| state | string | |

encryption

| Name | Type | Description |
|----------|--------|-------------|
| proposed | string | |
| state | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

initial_allowed_svms

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|--------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

ipospace

The IPspace of the local intercluster LIFs.

| Name | Type | Description |
|--------|------------------------|--------------|
| _links | _links | |
| name | string | IPspace name |
| uuid | string | IPspace UUID |

interfaces

| Name | Type | Description |
|------------|--------|----------------------|
| ip_address | string | IPv4 or IPv6 address |

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

| Name | Type | Description |
|------------------|-------------------------------------|---|
| broadcast_domain | string | Broadcast domain that is in use within the IPspace. |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| interfaces | array[interfaces] | |
| netmask | string | IPv4 mask or netmask length. |

remote

| Name | Type | Description |
|---------------|---------------|--|
| ip_addresses | array[string] | The IPv4 addresses, IPv6 addresses, or hostnames of the peers. |
| name | string | The name of the remote cluster. |
| serial_number | string | The serial number of the remote cluster. |

status

| Name | Type | Description |
|-------------|--------|--------------------------------------|
| state | string | |
| update_time | string | The last time the state was updated. |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------------|---------|--|
| full | string | The full cluster version string. |
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update a cluster peer instance

PATCH /cluster/peers/{uuid}

Introduced In: 9.6

Updates a cluster peer instance.

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|--------------------------------|
| uuid | string | path | True | Cluster peer relationship UUID |

Request Body

| Name | Type | Description |
|----------------------|---|--|
| _links | _links | |
| authentication | authentication | |
| encryption | encryption | |
| initial_allowed_svms | array[initial_allowed_svms] | The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship. |
| ip_address | string | IPv4 or IPv6 address |
| ipspace | ipspace | The IPspace of the local intercluster LIFs. |

| Name | Type | Description |
|-------------------|-------------------------------|---|
| local_network | local_network | Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node. |
| name | string | Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers. |
| peer_applications | array[string] | Peering applications against which allowed SVMs are configured. |
| remote | remote | |
| status | status | |
| uuid | string | UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

Example request

```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "ok",
    "state": "ok"
  },
  "encryption": {
    "proposed": "none",
    "state": "none"
  },
  "initial_allowed_svms": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ip_address": "10.10.10.7",
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  }
}
```

```

},
"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": {
  },
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25 06:20:13 -0500"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": 9,
  "major": 4,
  "minor": 0
}
}

```

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|---|--|
| _links | _links | |
| authentication | authentication | |
| encryption | encryption | |
| initial_allowed_svms | array[initial_allowed_svms] | The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship. |
| ip_address | string | IPv4 or IPv6 address |

| Name | Type | Description |
|-------------------|-------------------------------|---|
| ipspace | ipspace | The IPspace of the local intercluster LIFs. |
| local_network | local_network | Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node. |
| name | string | Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers. |
| peer_applications | array[string] | Peering applications against which allowed SVMs are configured. |
| remote | remote | |
| status | status | |
| uuid | string | UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

Example response

```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "ok",
    "state": "ok"
  },
  "encryption": {
    "proposed": "none",
    "state": "none"
  },
  "initial_allowed_svms": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ip_address": "10.10.10.7",
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  }
}
```

```

},
"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": {
  },
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25 06:20:13 -0500"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": 9,
  "major": 4,
  "minor": 0
}
}

```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2621462 | SVM name does not exist. |
| 4653061 | The specified remote cluster is invalid. |
| 4653218 | An introductory RPC to the peer address failed to connect. Verify that the peer address is correct, and then try the operation again. |
| 4653229 | Specified value for "-offer-expiration" is obsolete. |
| 4653236 | The specified passphrase is too short. |
| 4653257 | The vifmgr process is not running. |
| 4653261 | Error finding IPspace. |

| Error Code | Description |
|------------|--|
| 4653671 | No operational intercluster LIFs of the IPv4 address family is available on this node for the specified IPspace. |
| 4655058 | Expiration time cannot be more than 7 days in the future. |
| 4655061 | SVM does not exist in the IPspace. |
| 4656070 | The encryption protocol is meaningful only with authenticated cluster peer relationships. |
| 4656072 | The name must conform to the same rules as a cluster name. |
| 4656073 | Changing the encryption state requires the refreshing of the authentication passphrase. |
| 4656075 | Cannot specify encryption: this operation requires an ECV of ONTAP 9.6.0 or later. |
| 4656076 | Cluster peer modify was attempted with mismatched IPv4 and IPv6 addresses. |
| 4656080 | Specify either a passphrase or set "generate-passphrase" to true. |
| 4656081 | The remote IP address list is empty. |
| 4656083 | Cannot auto-generate a passphrase when "generate-passphrase" is false. Modifying a passphrase using an auto-generated passphrase requires "generate-passphrase" be true. |
| 4656084 | Passphrase can only be modified with an authenticated cluster peer relationship. |
| 4656092 | Cluster peer modify was attempted with a host name that did not resolve to an IPv4 or IPv6 address. |
| 4656095 | The address family of the specified peer addresses is not valid in this IPspace. Use /api/network/interfaces/ to verify that required LIFs are present and operational on each cluster node. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------------|----------------------|-------------|
| interfaces | href | |
| self | href | |

authentication

| Name | Type | Description |
|---------------------|---------|---|
| expiry_time | string | The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour. |
| generate_passphrase | boolean | Auto generate a passphrase when true. |
| in_use | string | |
| passphrase | string | A password to authenticate the cluster peer relationship. |
| state | string | |

encryption

| Name | Type | Description |
|----------|--------|-------------|
| proposed | string | |
| state | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

initial_allowed_svms

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|--------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

ipospace

The IPspace of the local intercluster LIFs.

| Name | Type | Description |
|--------|------------------------|--------------|
| _links | _links | |
| name | string | IPspace name |
| uuid | string | IPspace UUID |

interfaces

| Name | Type | Description |
|------------|--------|----------------------|
| ip_address | string | IPv4 or IPv6 address |

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

| Name | Type | Description |
|------------------|-------------------------------------|---|
| broadcast_domain | string | Broadcast domain that is in use within the IPspace. |
| gateway | string | The IPv4 or IPv6 address of the default router. |
| interfaces | array[interfaces] | |
| netmask | string | IPv4 mask or netmask length. |

remote

| Name | Type | Description |
|---------------|---------------|--|
| ip_addresses | array[string] | The IPv4 addresses, IPv6 addresses, or hostnames of the peers. |
| name | string | The name of the remote cluster. |
| serial_number | string | The serial number of the remote cluster. |

status

| Name | Type | Description |
|-------------|--------|--------------------------------------|
| state | string | |
| update_time | string | The last time the state was updated. |

version

This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

| Name | Type | Description |
|------------|---------|--|
| full | string | The full cluster version string. |
| generation | integer | The generation portion of the version. |
| major | integer | The major portion of the version. |
| minor | integer | The minor portion of the version. |

cluster_peer

| Name | Type | Description |
|----------------------|---|--|
| _links | _links | |
| authentication | authentication | |
| encryption | encryption | |
| initial_allowed_svms | array[initial_allowed_svms] | The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship. |

| Name | Type | Description |
|-------------------|-------------------------------|---|
| ip_address | string | IPv4 or IPv6 address |
| ipspace | ipspace | The IPspace of the local intercluster LIFs. |
| local_network | local_network | Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node. |
| name | string | Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers. |
| peer_applications | array[string] | Peering applications against which allowed SVMs are configured. |
| remote | remote | |
| status | status | |
| uuid | string | UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship. |
| version | version | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage cluster schedules

Cluster schedules endpoint overview

Overview

You can use the `/cluster/schedules` API to view, create, and modify job schedules in a cluster.

Retrieving a job schedule

You can retrieve job schedules by issuing a GET request to `/cluster/schedules`. It is also possible to retrieve a specific schedule when qualified by its UUID to `/cluster/schedules/{uuid}`. You can apply queries on fields to retrieve all schedules that match the combined query.

Example

```
# The API:
/api/cluster/schedules/

# The call:
curl -X GET 'https://<mgmt-ip>/api/cluster/schedules?type=interval'

# The response:
{
  "records": [
    {
      "uuid": "0941e980-0158-11e9-a82c-005056bb4301",
      "name": "Balanced Placement Model Cache Update",
      "type": "interval",
      "interval": "PT7M30S",
      "_links": {
        "self": {
          "href": "/api/cluster/schedules/0941e980-0158-11e9-a82c-005056bb4301"
        }
      }
    }
  ]
}
```

```
    }
  },
  {
    "uuid": "0944b975-0158-11e9-a82c-005056bb4301",
    "name": "Auto Balance Aggregate Scheduler",
    "type": "interval",
    "interval": "PT1H",
    "_links": {
      "self": {
        "href": "/api/cluster/schedules/0944b975-0158-11e9-a82c-005056bb4301"
      }
    }
  },
  {
    "uuid": "0c65f1fb-0158-11e9-a82c-005056bb4301",
    "name": "Application Templates ASUP Dump",
    "type": "interval",
    "interval": "P1D",
    "_links": {
      "self": {
        "href": "/api/cluster/schedules/0c65f1fb-0158-11e9-a82c-005056bb4301"
      }
    }
  }
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/cluster/schedules?type=interval"
  }
}
}
```

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

# The call:
curl -X GET 'https://<mgmt-ip>/api/cluster/schedules/25312bd8-0158-11e9-
a82c-005056bb4301'

# The response:
{
  "uuid": "25312bd8-0158-11e9-a82c-005056bb4301",
  "name": "monthly",
  "cluster": {
    "name": "rodan-tsunidere",
    "uuid": "f3f9bbfa-0157-11e9-a82c-005056bb4301"
  },
  "type": "cron",
  "cron": {
    "minutes": [
      20
    ],
    "hours": [
      0
    ],
    "days": [
      1
    ]
  },
  "_links": {
    "self": {
      "href": "/api/cluster/schedules/25312bd8-0158-11e9-a82c-005056bb4301"
    }
  }
}
```

Creating a job schedule

You can create a job schedule by issuing a POST request to `/cluster/schedules` to a node in the cluster. For a successful request, the POST request returns a status code of 201. Job schedules can be of either type "cron" or type "interval". A cron schedule is run at specific minutes within the hour, or hours of the day, days of the week, days of the month, or months of the year. An interval schedule runs repeatedly at fixed intervals.

Required fields

- name - Name of the job schedule You are required to provide a "minutes" field for a cron schedule. An "interval" field is required for an interval schedule. Do not provide both a "cron" field and an "interval" field.

The schedule UUID is created by the system.

Cron schedule fields

- cron.minutes - Minutes within the hour (0 through 59)
- cron.hours - Hours of the day (0 through 23)
- cron.weekdays - Weekdays (0 through 6, where 0 is Sunday and 6 is Saturday.)
- cron.days - Days of the month (1 through 31)
- cron.months - Months of the year (1 through 12)

Interval schedule field

- interval - Length of time in ISO 8601 duration format.

Examples

Create an interval schedule with a 1-week interval

```
# The API:
/api/cluster/schedules
one_week_interval.txt:
{
  "name": "test_interval_1",
  "interval": "P1W"
}

# The call:
curl -X POST "https://<mgmt-ip>/api/cluster/schedules" -d
"@one_week_interval.txt"

# The response of a successful POST is empty.
```

Create a cron schedule that runs daily at 12:05

```
# The API:
/api/cluster/schedules
daily_noon_job.txt:
{
  "name": "test_cron_1",
  "cron":
  {
    "minutes": [ 5 ],
    "hours": [ 12 ]
  }
}

# The call:
curl -X POST "https://<mgmt-ip>/api/cluster/schedules" -d
"@daily_noon_job.txt"

# The response of a successful POST is empty.
```

Optional fields

By default, the schedule is owned by the local cluster. In a MetroCluster configuration, you can specify the partner cluster if the local cluster is in the switchover state.

- `cluster.name` - Name of the cluster owning the schedule.
- `cluster.uuid` - UUID of the cluster owning the schedule.

Records field

You can create multiple schedules in one request by providing an array of named records with schedule entries. Each entry must follow the required and optional fields listed above.

Updating a job schedule

The following fields of an existing schedule can be modified:

- `cron.minutes`
- `cron.hours`
- `cron.weekdays`
- `cron.days`
- `cron.months`
- `interval` Note that you cannot modify the name, cluster, and type of schedule. Also, you cannot modify a cron field of an interval schedule, or the interval field of a cron schedule. You can apply queries on fields to modify all schedules that match the combined query.

Examples

Modify an interval schedule with a 2-day and 5-minute interval

```
# The API:
/api/cluster/schedules/{uuid}
every_two_days_five_minutes.txt:
{
  "interval": "P2DT5M"
}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/cluster/schedules/{uuid}" -d
"@every_two_days_five_minutes.txt"

# The response of a successful PATCH is empty.
```

Modify a cron schedule to run Mondays at 2

```
# The API:
/api/cluster/schedules/{uuid}
monday_at_two.txt:
{
  "cron":
  {
    "hours": [ 2 ],
    "weekdays": [ 1 ]
  }
}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/cluster/schedules/{uuid}" -d
"@monday_at_two.txt"

# The response of a successful PATCH is empty.
```

Deleting a job schedule

You can delete job schedules based on their UUID. You can apply queries on fields to delete all schedules that match the combined query.

Example

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

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/schedules/{uuid}"

# The response of a successful DELETE of one schedule is empty.
```

```
# The API:
/api/cluster/schedules/

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/schedules/?name=test*"

# The response of a successful DELETE indicates the number of schedules
affected:
{
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/schedules?name=test*"
    }
  }
}
```

MetroCluster configurations

In a MetroCluster configuration, user-created schedules owned by the local cluster are replicated to the partner cluster. Likewise, user-created schedules owned by the partner cluster are replicated to the local cluster. The owning cluster for a particular schedule is shown in the "cluster.name" and "cluster.uuid" fields. Normally, only schedules owned by the local cluster can be created, modified, and deleted on the local cluster. However, when a MetroCluster configuration is in switchover, the cluster in switchover state can create, modify, and delete schedules owned by the partner cluster.

Retrieve schedules

GET /cluster/schedules

Introduced In: 9.6

Retrieves a schedule.

Parameters

| Name | Type | In | Required | Description |
|---------------|---------|-------|----------|---|
| scope | string | query | False | Filter by scope <ul style="list-style-type: none">• Introduced in: 9.10 |
| interval | string | query | False | Filter by interval |
| uuid | string | query | False | Filter by uuid |
| cluster.uuid | string | query | False | Filter by cluster.uuid |
| cluster.name | string | query | False | Filter by cluster.name |
| cron.weekdays | integer | query | False | Filter by cron.weekdays <ul style="list-style-type: none">• Max value: 6• Min value: 0 |
| cron.months | integer | query | False | Filter by cron.months <ul style="list-style-type: none">• Max value: 12• Min value: 1 |
| cron.minutes | integer | query | False | Filter by cron.minutes <ul style="list-style-type: none">• Max value: 59• Min value: 0 |
| cron.days | integer | query | False | Filter by cron.days <ul style="list-style-type: none">• Max value: 31• Min value: 1 |
| cron.hours | integer | query | False | Filter by cron.hours <ul style="list-style-type: none">• Max value: 23• Min value: 0 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| name | string | query | False | Filter by name <ul style="list-style-type: none"> • maxLength: 256 • minLength: 1 |
| type | string | query | False | Filter by type |
| svm.uuid | string | query | False | Filter by svm.uuid <ul style="list-style-type: none"> • Introduced in: 9.10 |
| svm.name | string | query | False | Filter by svm.name <ul style="list-style-type: none"> • Introduced in: 9.10 |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Max value: 120 • Min value: 0 • Default value: 1 |

| Name | Type | In | Required | Description |
|----------|---------------|-------|----------|---|
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|-----------------------------------|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[schedule] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "cron": {
      "days": {
      },
      "hours": {
      },
      "minutes": {
      },
      "months": {
      },
      "weekdays": {
      }
    },
    "interval": "P1DT2H3M4S",
    "scope": "cluster",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "type": "cron",
  }
}
```

```
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 459760 | The schedule specified is not a valid schedule. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cluster

The cluster that owns the schedule. Defaults to the local cluster.

| Name | Type | Description |
|------|--------|--------------|
| name | string | Cluster name |
| uuid | string | Cluster UUID |

cron

Details for schedules of type cron.

| Name | Type | Description |
|---------|----------------|--|
| days | array[integer] | The days of the month the schedule runs. Leave empty for all. |
| hours | array[integer] | The hours of the day the schedule runs. Leave empty for all. |
| minutes | array[integer] | The minutes the schedule runs. Required on POST for a cron schedule. |

| Name | Type | Description |
|----------|----------------|--|
| months | array[integer] | The months of the year the schedule runs. Leave empty for all. |
| weekdays | array[integer] | The weekdays the schedule runs. Leave empty for all. |

svm

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|--------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

schedule

Complete schedule information

| Name | Type | Description |
|----------|-------------------------|--|
| _links | _links | |
| cluster | cluster | The cluster that owns the schedule. Defaults to the local cluster. |
| cron | cron | Details for schedules of type cron. |
| interval | string | An ISO-8601 duration formatted string. |
| name | string | Schedule name. Required in the URL or POST body. |
| scope | string | If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster. |

| Name | Type | Description |
|------|---------------------|--|
| svm | svm | SVM, applies only to SVM-scoped objects. |
| type | string | Schedule type |
| uuid | string | Job schedule UUID |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Create a schedule

POST `/cluster/schedules`

Introduced In: 9.6

Creates a schedule.

Required Fields

- name - Name of the job schedule. You must provide a minutes field for a cron schedule and an interval field for an interval schedule. Do not provide both a cron field and an interval field.

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|---|
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value: |

Request Body

| Name | Type | Description |
|----------|-------------------------|--|
| _links | _links | |
| cluster | cluster | The cluster that owns the schedule. Defaults to the local cluster. |
| cron | cron | Details for schedules of type cron. |
| interval | string | An ISO-8601 duration formatted string. |
| name | string | Schedule name. Required in the URL or POST body. |
| scope | string | If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster. |
| svm | svm | SVM, applies only to SVM-scoped objects. |
| type | string | Schedule type |
| uuid | string | Job schedule UUID |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": {
    },
    "hours": {
    },
    "minutes": {
    },
    "months": {
    },
    "weekdays": {
    }
  },
  "interval": "P1DT2H3M4S",
  "scope": "cluster",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "cron",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

Status: 201, Created

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Error

```
Status: Default
```

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 458788 | The schedule specified is not a valid schedule. |
| 459760 | The schedule specified is not a valid schedule. |
| 459763 | Schedule cannot be created locally using the remote cluster name as the owner. |
| 459764 | Cannot create a schedule with the same name as an existing schedule from the MetroCluster partner cluster but of a different schedule type. |
| 460783 | As this is a MetroCluster configuration and the local cluster is waiting for switchback, changes to non-system schedules are not allowed. |
| 460784 | An error occurred creating the remote cluster version of this schedule. |
| 2621601 | Cannot create a schedule on a system SVM. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cluster

The cluster that owns the schedule. Defaults to the local cluster.

| Name | Type | Description |
|------|--------|--------------|
| name | string | Cluster name |
| uuid | string | Cluster UUID |

cron

Details for schedules of type cron.

| Name | Type | Description |
|----------|----------------|--|
| days | array[integer] | The days of the month the schedule runs. Leave empty for all. |
| hours | array[integer] | The hours of the day the schedule runs. Leave empty for all. |
| minutes | array[integer] | The minutes the schedule runs. Required on POST for a cron schedule. |
| months | array[integer] | The months of the year the schedule runs. Leave empty for all. |
| weekdays | array[integer] | The weekdays the schedule runs. Leave empty for all. |

svm

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

schedule

Complete schedule information

| Name | Type | Description |
|------------------------|-------------------------|--|
| _links | _links | |
| cluster | cluster | The cluster that owns the schedule. Defaults to the local cluster. |
| cron | cron | Details for schedules of type cron. |
| interval | string | An ISO-8601 duration formatted string. |
| name | string | Schedule name. Required in the URL or POST body. |
| scope | string | If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster. |
| svm | svm | SVM, applies only to SVM-scoped objects. |
| type | string | Schedule type |
| uuid | string | Job schedule UUID |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Delete a schedule

DELETE /cluster/schedules/{uuid}

Introduced In: 9.6

Deletes a schedule.

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|---------------|
| uuid | string | path | True | Schedule UUID |

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 459758 | Cannot delete a job schedule that is in use. Remove all references to the schedule, and then try to delete again. |
| 459761 | Schedule cannot be deleted on this cluster because it is replicated from the remote cluster. |
| 459762 | The schedule cannot be deleted because it is a system-level schedule. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|----------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve a schedule

GET /cluster/schedules/{uuid}

Introduced In: 9.6

Retrieves a schedule.

Parameters

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

Response

Status: 200, Ok

| Name | Type | Description |
|----------|-------------------------|--|
| _links | _links | |
| cluster | cluster | The cluster that owns the schedule. Defaults to the local cluster. |
| cron | cron | Details for schedules of type cron. |
| interval | string | An ISO-8601 duration formatted string. |
| name | string | Schedule name. Required in the URL or POST body. |
| scope | string | If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster. |
| svm | svm | SVM, applies only to SVM-scoped objects. |
| type | string | Schedule type |
| uuid | string | Job schedule UUID |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": {
    },
    "hours": {
    },
    "minutes": {
    },
    "months": {
    },
    "weekdays": {
    }
  },
  "interval": "P1DT2H3M4S",
  "scope": "cluster",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "cron",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cluster

The cluster that owns the schedule. Defaults to the local cluster.

| Name | Type | Description |
|------|--------|--------------|
| name | string | Cluster name |
| uuid | string | Cluster UUID |

cron

Details for schedules of type cron.

| Name | Type | Description |
|----------|----------------|--|
| days | array[integer] | The days of the month the schedule runs. Leave empty for all. |
| hours | array[integer] | The hours of the day the schedule runs. Leave empty for all. |
| minutes | array[integer] | The minutes the schedule runs. Required on POST for a cron schedule. |
| months | array[integer] | The months of the year the schedule runs. Leave empty for all. |
| weekdays | array[integer] | The weekdays the schedule runs. Leave empty for all. |

svm

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update a schedule

PATCH `/cluster/schedules/{uuid}`

Introduced In: 9.6

Updates a schedule. Note that you cannot modify a cron field of an interval schedule, or the interval field of a cron schedule.

Parameters

| Name | Type | In | Required | Description |
|------|--------|------|----------|---------------|
| uuid | string | path | True | Schedule UUID |

Request Body

| Name | Type | Description |
|----------|-------------------------|--|
| _links | _links | |
| cluster | cluster | The cluster that owns the schedule. Defaults to the local cluster. |
| cron | cron | Details for schedules of type cron. |
| interval | string | An ISO-8601 duration formatted string. |
| name | string | Schedule name. Required in the URL or POST body. |
| scope | string | If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster. |
| svm | svm | SVM, applies only to SVM-scoped objects. |
| type | string | Schedule type |
| uuid | string | Job schedule UUID |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": {
    },
    "hours": {
    },
    "minutes": {
    },
    "months": {
    },
    "weekdays": {
    }
  },
  "interval": "P1DT2H3M4S",
  "scope": "cluster",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "type": "cron",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
```

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 458788 | The schedule specified is not a valid schedule. |
| 459760 | The schedule specified is not a valid schedule. |
| 459761 | Schedule cannot be modified on this cluster because it is replicated from the remote cluster. |
| 460783 | As this is a MetroCluster configuration and the local cluster is waiting for switchback, changes to non-system schedules are not allowed. |
| 461785 | A cron schedule cannot have an interval field. |
| 461786 | An interval schedule cannot have a cron field. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

cluster

The cluster that owns the schedule. Defaults to the local cluster.

| Name | Type | Description |
|------|--------|--------------|
| name | string | Cluster name |
| uuid | string | Cluster UUID |

cron

Details for schedules of type cron.

| Name | Type | Description |
|----------|----------------|--|
| days | array[integer] | The days of the month the schedule runs. Leave empty for all. |
| hours | array[integer] | The hours of the day the schedule runs. Leave empty for all. |
| minutes | array[integer] | The minutes the schedule runs. Required on POST for a cron schedule. |
| months | array[integer] | The months of the year the schedule runs. Leave empty for all. |
| weekdays | array[integer] | The weekdays the schedule runs. Leave empty for all. |

svm

SVM, applies only to SVM-scoped objects.

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

schedule

Complete schedule information

| Name | Type | Description |
|------------------------|-------------------------|--|
| _links | _links | |
| cluster | cluster | The cluster that owns the schedule. Defaults to the local cluster. |
| cron | cron | Details for schedules of type cron. |
| interval | string | An ISO-8601 duration formatted string. |
| name | string | Schedule name. Required in the URL or POST body. |
| scope | string | If the schedule is owned by a data SVM, then the scope is set to svm. Otherwise it will be set to cluster. |
| svm | svm | SVM, applies only to SVM-scoped objects. |
| type | string | Schedule type |
| uuid | string | Job schedule UUID |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve environment sensors

GET `/cluster/sensors`

Introduced In: 9.11

Retrieves Environment Sensors

Related ONTAP commands

- `system node environment sensors show`

Parameters

| Name | Type | In | Required | Description |
|-----------------|---------|-------|----------|---------------------------|
| index | integer | query | False | Filter by index |
| threshold_state | string | query | False | Filter by threshold_state |
| type | string | query | False | Filter by type |
| value | integer | query | False | Filter by value |

| Name | Type | In | Required | Description |
|-----------------------------|---------------|-------|----------|---|
| warning_low_thresh old | integer | query | False | Filter by warning_low_thresh old |
| discrete_state | string | query | False | Filter by discrete_state |
| critical_low_threshol d | integer | query | False | Filter by critical_low_threshol d |
| name | string | query | False | Filter by name |
| discrete_value | string | query | False | Filter by discrete_value |
| node.name | string | query | False | Filter by node.name |
| node.uuid | string | query | False | Filter by node.uuid |
| warning_high_thresh old | integer | query | False | Filter by warning_high_thres hold |
| value_units | string | query | False | Filter by value_units |
| critical_high_thresho ld | integer | query | False | Filter by critical_high_thresho ld |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|----------------------------------|-------------------|
| _links | collection_links | |
| num_records | integer | Number of Records |
| records | array[sensors] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "critical_high_threshold": 0,
    "critical_low_threshold": 0,
    "discrete_state": "normal",
    "discrete_value": "ok",
    "index": 0,
    "name": "PVCCSA CPU FD",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "threshold_state": "normal",
    "type": "agent",
    "value": 831,
    "value_units": "mV",
    "warning_high_threshold": 0,
    "warning_low_threshold": 0
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

collection_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

sensors

Environment Sensors

| Name | Type | Description |
|-------------------------|---------------------------|---|
| _links | self_link | |
| critical_high_threshold | integer | Value above which the sensor goes into a critically high state. |
| critical_low_threshold | integer | Value below which the sensor goes into a critically low state. |

| Name | Type | Description |
|------------------------|----------------------|---|
| discrete_state | string | Used to determine whether the sensor is in a normal state or any other failed state based on the value of "discrete_value" field. This field is only applicable for discrete sensors. |
| discrete_value | string | Applies to discrete sensors which do not have an integer value. It can have values like on, off, good, bad, ok. |
| index | integer | Provides the sensor ID. |
| name | string | Name of the sensor. |
| node | node | |
| threshold_state | string | Used to determine whether the sensor is in a normal state or any other failed state. |
| type | string | Used to determine the type of the sensor. |
| value | integer | Provides the sensor reading. |
| value_units | string | Units in which the "value" is measured. Some examples of units are mV, mW*hr, C, RPM. |
| warning_high_threshold | integer | Value above which the sensor goes into a warning high state. |
| warning_low_threshold | integer | Value below which the sensor goes into a warning low state. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage environment sensors

Cluster sensors node.uuid index endpoint overview

Overview

You can use this API to retrieve the details of all platform environment sensors

Examples

Retrieving values of a single sensor

```

# The API:
GET /api/cluster/sensors/{node.uuid}/{index}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/sensors/{node.uuid}/{index}" -H
"accept: application/hal+json"

# The response:
200 OK

# JSON Body
{
  "node": {
    "uuid": "19ec0b4a-4a4d-11ec-9036-d039ea4a991a",
    "name": "node1",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/19ec0b4a-4a4d-11ec-9036-d039ea4a991a"
      }
    }
  },
  "index": 1,
  "name": "PVCCSA CPU FD",
  "type": "voltage",
  "value": 831,
  "value_units": "mV",
  "threshold_state": "normal",
  "critical_low_threshold": 297,
  "warning_low_threshold": 396,
  "warning_high_threshold": 1485,
  "critical_high_threshold": 1683,
  "_links": {
    "self": {
      "href": "/api/cluster/sensors/19ec0b4a-4a4d-11ec-9036-d039ea4a991a/1"
    }
  }
}

```

Retrieve the environment sensors for a node

GET /cluster/sensors/{node.uuid}/{index}

Introduced In: 9.11

Retrieve Environment Sensors

Parameters

| Name | Type | In | Required | Description |
|-----------|---------------|-------|----------|-------------------------------|
| index | string | path | True | Filter by index |
| node.uuid | string | path | True | Filter by node.uuid |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------------------|---------------------------|---|
| _links | self_link | |
| critical_high_threshold | integer | Value above which the sensor goes into a critically high state. |
| critical_low_threshold | integer | Value below which the sensor goes into a critically low state. |
| discrete_state | string | Used to determine whether the sensor is in a normal state or any other failed state based on the value of "discrete_value" field. This field is only applicable for discrete sensors. |
| discrete_value | string | Applies to discrete sensors which do not have an integer value. It can have values like on, off, good, bad, ok. |
| index | integer | Provides the sensor ID. |
| name | string | Name of the sensor. |
| node | node | |
| threshold_state | string | Used to determine whether the sensor is in a normal state or any other failed state. |

| Name | Type | Description |
|------------------------|---------|---|
| type | string | Used to determine the type of the sensor. |
| value | integer | Provides the sensor reading. |
| value_units | string | Units in which the "value" is measured. Some examples of units are mV, mW*hr, C, RPM. |
| warning_high_threshold | integer | Value above which the sensor goes into a warning high state. |
| warning_low_threshold | integer | Value below which the sensor goes into a warning low state. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "critical_high_threshold": 0,
  "critical_low_threshold": 0,
  "discrete_state": "normal",
  "discrete_value": "ok",
  "index": 0,
  "name": "PVCCSA CPU FD",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "threshold_state": "normal",
  "type": "agent",
  "value": 831,
  "value_units": "mV",
  "warning_high_threshold": 0,
  "warning_low_threshold": 0
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

self_link

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage cluster software

Cluster software endpoint overview

Overview

You can use the ONTAP cluster software API to retrieve and display relevant information about a software profile, software packages collection, software history collection, and firmware packages collection. This API retrieves the information about all software packages present in the cluster, or a specific software package, or firmware upgrade status.

You can use the POST request to download a software package/firmware from an HTTP or FTP server. The PATCH request provides the option to upgrade the cluster software version. Select the `validate_only` field to validate the package before triggering the update. Set the `version` field to trigger the installation of the package in the cluster. You can pause, resume, or cancel any ongoing software upgrade by selecting `action`. You can use the DELETE request to remove a specific software package present in the cluster.

Examples

Retrieving software profile information

The following example shows how to retrieve software and firmware profile information. You can check the validation results after selecting the `validate_only` field. Upgrade progress information is available after an upgrade has started.

```
# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software?return_timeout=15" -H
"accept: application/hal+json"

# The response:
{
  "validation_results": [
    {
      "update_check": "NFS mounts",
      "status": "warning",
      "issue": {
        "message": "Use NFS hard mounts, if possible.",
      }
    },
    {
      "action": {
        "message": "Use NFS hard mounts, if possible.",
      }
    }
  ]
},
```

```

"version": "9.5.0",
"pending_version": "9.6.0",
"nodes": [
  {
    "node": "Node 1",
    "version": "9.5.0",
    "firmware": {
      "cluster_fw_progress": [
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "abc.zip",
          "update_type": "automatic_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "worker_node": {
                "name": "Node 2",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
              },
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        },
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",

```

```

    "_links": {
      "self": {
        "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
      }
    },
    "zip_file_name": "xyz.zip",
    "update_type": "manual_update",
    "update_state": [
      {
        "worker_node": {
          "name": "Node 1",
          "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
        },
        "status": "failed",
        "attempts": 3,
        "message": "Cannot open the local staging zip file.",
        "code": 2228325
      },
      {
        "worker_node": {
          "name": "Node 2",
          "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
        },
        "status": "complete",
        "attempts": 3,
        "message": "Success",
        "code": 0
      }
    ]
  },
  "disk": {
    "num_waiting_download": 0,
    "total_completion_estimate": 0,
    "average_duration_per_disk": 120,
    "update_status": "idle"
  },
  "shelf": {
    "update_status": "idle",
    "in_progress_count": 2
  },
  "dqp": {
    "revision": "20200117",
    "version": "3.17",

```

```

    "file_name": "qual_devices_v2",
    "record_count": {
      "drive": 680,
      "alias": 200,
      "device": 29,
      "system": 3
    }
  },
  "sp_bmc": {
    "fw_type": "SP",
    "image": " primary",
    "status": "installed",
    "is_current": true,
    "running_version": "1.2.3.4",
    "autoupdate": false,
    "last_update_status": "passed",
    "start_time": "2018-05-21T09:53:04+05:30",
    "percent_done": 100,
    "end_time": "2018-05-21T09:53:04+05:30",
    "in_progress": false
  }
}
],
"metrocluster": {
  "progress_summary": {
    "message": "Update paused by user"
  },
  "progress_details": {
    "message": "Installing software image on cluster \"sti70-vsimsim-ucsl65n_siteA\"."
  },
  "clusters": [
    {
      "name": "sti70-vsimsim-ucsl65n_siteA",
      "uuid": "720f046c-4b13-11e9-9c34-005056ac5626",
      "estimated_duration": 3480,
      "elapsed_duration": 0,
      "state": "waiting"
    }
  ],
  "state": "in_progress",
  "start_time": "2018-05-21T09:53:04+05:30",
  "end_time": "2018-05-21T11:53:04+05:30",
  "estimated_time": 5220,

```

```

"elapsed_time": 2140,
"update_details": [
  {
    "phase": "Data ONTAP updates",
    "state": "in_progress",
    "estimated_duration": 4620,
    "elapsed_duration": 29,
    "node": {
      "name": "sti70-vsims-ucs165n"
    }
  }
],
"status_details": [
  {
    "name": "do-download-job",
    "state": "completed",
    "issue": {
      "message": "Image update complete",
      "code": 0
    },
    "start_time": "2018-05-21T09:53:04+05:30",
    "end_time": "2018-05-21T11:53:04+05:30",
    "node": {
      "name": "sti70-vsims-ucs165n"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software/"
  }
}
}

```

Upgrading the software version

The following example shows how to upgrade cluster software. Set the `version` field to trigger the installation of the package. You can select the `validate_only` field to validate the package before the installation starts. Setting `skip_warning` as `true` ignores the validation warning before the installation starts. Setting the `action` field performs a pause, resume, or cancel operation on an ongoing upgrade. An upgrade can only be resumed if it is in the paused state. Setting `stabilize_minutes` allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes. If `show_validation_details` is set to `"true"`, all validation details will be shown in the output.

You can start the upgrade process at the cluster level. There are no options available to start the upgrade for a

specific node or HA pair.

1. Validating the package and verifying the validation results

The following example shows how to validate a cluster software package. You must validate the package before the software upgrade. Set the `validate_only` field to `true` to start the validation. You can check for validation results in the GET `/cluster/software` endpoint.

```
# The API:
/api/cluster/software

# The call:
curl -X PATCH "https://<mgmt_ip>/api/cluster/software?validate_only=true"
-H "accept: application/json" -H "Content-Type: application/hal+json" -d
'{"version": "9.5.0"}'

# The response:
{
  "job": {
    "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
      }
    }
  }
}
```

The call to validate the software cluster version returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the `state` field of the job is set to `success`.

```

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

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc" -H "accept: application/hal+json"

# The response:
{
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "description": "PATCH /api/cluster/software",
  "state": "success",
  "message": "success",
  "code": 0,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}

```

You can check for validation results in the GET /cluster/software endpoint. The following example shows how to check the validation warnings and errors after setting the `validate_only` field to `true`.

```

# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software" -H "accept: application/hal+json"

# The response:
{
  "version": "9.7.0",
  "validation_results": [
    {
      "update_check": "High Availability status",
      "status": "error",
      "issue": {
        "message": "Cluster HA is not configured in the cluster. Storage failover is not enabled on node \"node1\", \"node2\".",
      },
      "action": {

```

```

    "message": "Check cluster HA configuration. Check storage failover
status."
  }
},
{
  "update_check": "Manual checks",
  "status": "warning",
  "issue" : {
    "message": "Manual validation checks need to be performed. Refer to
the Upgrade Advisor Plan or the \"What should I verify before I upgrade
with or without Upgrade Advisor\" section in the \"Upgrade ONTAP\"
documentation for the remaining validation checks that need to be
performed before update. Failing to do so can result in an update failure
or an I/O disruption."
  },
  "action": {
    "message": "Refer to the Upgrade Advisor Plan or the \"What should I
verify before I upgrade with or without Upgrade Advisor\" section in the
\"Upgrade ONTAP\" documentation for the remaining validation checks that
need to be performed before update."
  }
}
],
"nodes": [
  {
    "node": "sti70-vsims-ucsl65n",
    "version": "9.5.0",
    "firmware": {
      "cluster_fw_progress": [
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "abc.zip",
          "update_type": "automatic_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
              }
            }
          ]
        }
      ]
    }
  }
]

```



```

    },
    "status": "failed",
    "attempts": 3,
    "message": "Cannot open the local staging zip file.",
    "code": 2228325
  },
  {
    "worker_node": {
      "name": "Node 2",
      "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
    },
    "status": "complete",
    "attempts": 3,
    "message": "Success",
    "code": 0
  }
]
},
{
  "job": {
    "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
      }
    }
  },
  "zip_file_name": "xyz.zip",
  "update_type": "automatic_update",
  "update_state": [
    {
      "worker_node": {
        "name": "Node 1",
        "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
      },
      "status": "failed",
      "attempts": 3,
      "message": "Cannot open the local staging zip file.",
      "code": 2228325
    },
    {
      "worker_node": {
        "name": "Node 2",
        "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
      },

```

```

        "status": "complete",
        "attempts": 3,
        "message": "Success",
        "code": 0
    }
]
}
],
"disk": {
    "num_waiting_download": 0,
    "total_completion_estimate": 0,
    "average_duration_per_disk": 120,
    "update_status": "idle"
},
"shelf": {
    "update_status": "idle",
    "in_progress_count": 2
},
"dqp": {
    "revision": "20200117",
    "version": "3.17",
    "file_name": "qual_devices_v2",
    "record_count": {
        "drive": 680,
        "alias": 200,
        "device": 29,
        "system": 3
    }
},
"sp_bmc": {
    "fw_type": "SP",
    "image": " primary",
    "status": "installed",
    "is_current": true,
    "running_version": "1.2.3.4",
    "autoupdate": false,
    "last_update_status": "passed",
    "start_time": "2018-05-21T09:53:04+05:30",
    "percent_done": 100,
    "end_time": "2018-05-21T09:53:04+05:30",
    "in_progress": false
}
}
},
"state": "failed",

```

```
"elapsed_duration": 56,
"estimated_duration": 600,
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}
```

2. Updating the cluster

The following example shows how to initiate a cluster software upgrade. You must validate the package before the software upgrade starts. Set the `skip_warnings` field to `true` to skip validation warnings and start the software package upgrade. You can specify the `stabilize_minutes` value between 1 to 60 minutes. Setting `stabilize_minutes` allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes. If the value of `show_validation_details` is set to `"true"`, then all validation details will be shown in the output.

```
# The API:
/api/cluster/software

# The call:
curl -X PATCH "https://<mgmt_ip>/api/cluster/software?skip_warnings=true"
-H "accept: application/json" -H "Content-Type: application/hal+json" -d
'{"version": "9.5.0"}'

# The response:
{
  "job": {
    "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
      }
    }
  }
}
```

The call to update the software cluster version returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the `state` field of the job is set to `success`.

```

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

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc" -H "accept: application/hal+json"

# The response:
{
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "description": "PATCH /api/cluster/software",
  "state": "success",
  "message": "success",
  "code": 0,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}

```

You can check the update progress information in the GET /cluster/software endpoint. The following example shows how to check the progress of an update after setting the `skip_warnings` field to `true`. Each node's object also includes information about the firmware update status on the node.

```

# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software" -H "accept: application/hal+json"

# The response:
{
  "version": "9.7.0",
  "validation_results": [
    {
      "update_check": "Manual checks",
      "status": "warning",
      "issue": {
        "message": "Manual validation checks need to be performed. Refer to the Upgrade Advisor Plan or the \"What should I verify before I upgrade with or without Upgrade Advisor\" section in the \"Upgrade ONTAP\"

```

documentation for the remaining validation checks that need to be performed before update. Failing to do so can result in an update failure or an I/O disruption."

```
    },
    "action": {
      "message": "Refer to the Upgrade Advisor Plan or the \"What should I
verify before I upgrade with or without Upgrade Advisor\" section in the
\"Upgrade ONTAP\" documentation for the remaining validation checks that
need to be performed before update."
    }
  },
  ],
  "nodes": [
    {
      "node": "sti70-vsims-ucsl65n",
      "version": "9.5.0",
      "firmware": {
        "cluster_fw_progress": [
          {
            "job": {
              "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
              "_links": {
                "self": {
                  "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
                }
              }
            },
            "zip_file_name": "abc.zip",
            "update_type": "automated_update",
            "update_state": [
              {
                "worker_node": {
                  "name": "Node 3",
                  "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
                },
                "status": "failed",
                "attempts": 3,
                "message": "Cannot open the local staging zip file.",
                "code": 2228325
              },
              {
                "worker_node": {
                  "name": "Node 4",
                  "uuid": "fcd40f70-f531-11eb-b235-005056bb3498"
                }
              }
            ]
          }
        ]
      }
    }
  ]
}
```

```

        "status": "complete",
        "attempts": 3,
        "message": "Success",
        "code": 0
    }
]
},
{
    "job": {
        "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
        "_links": {
            "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
            }
        }
    },
    "zip_file_name": "xyz.zip",
    "update_type": "automated_update",
    "update_state": [
        {
            "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
            },
            "status": "failed",
            "attempts": 3,
            "message": "Cannot open the local staging zip file.",
            "code": 2228325
        },
        {
            "worker_node": {
                "name": "Node 2",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
            },
            "status": "complete",
            "attempts": 3,
            "message": "Success",
            "code": 0
        }
    ]
}
],
"disk": {
    "num_waiting_download": 0,
    "total_completion_estimate": 0,

```

```

    "average_duration_per_disk": 120,
    "update_status": "idle"
  },
  "shelf": {
    "update_status": "idle",
    "in_progress_count": 2
  },
  "dqp": {
    "revision": "20200117",
    "version": "3.17",
    "file_name": "qual_devices_v2",
    "record_count": {
      "drive": 680,
      "alias": 200,
      "device": 29,
      "system": 3
    }
  },
  "sp_bmc": {
    "fw_type": "SP",
    "image": " primary",
    "status": "installed",
    "is_current": true,
    "running_version": "1.2.3.4",
    "autoupdate": false,
    "last_update_status": "passed",
    "start_time": "2018-05-21T09:53:04+05:30",
    "percent_done": 100,
    "end_time": "2018-05-21T09:53:04+05:30",
    "in_progress": false
  }
}
],
"pending_version": "9.7.0",
"state": "in_progress",
"elapsed_duration": 63,
"estimated_duration": 5220,
"status_details": [
  {
    "name": "do-download-job",
    "status": "running",
    "issue": {
      "message": "Installing software image.",
      "code": 10551400
    }
  },

```

```

    "start_time": "2019-01-14T23:12:14+05:30",
    "end_time": "2019-01-14T23:12:14+05:30",
    "node": {
      "name": "node1"
    }
  },
  {
    "name": "do-download-job",
    "status": "running",
    "issue": {
      "message": "Installing software image.",
      "code": 10551400
    },
    "start_time": "2019-01-14T23:12:14+05:30",
    "end_time": "2019-01-14T23:12:14+05:30",
    "node": {
      "name": "node2"
    }
  }
],
"update_details": [
  {
    "phase": "Data ONTAP updates",
    "status": "in-progress",
    "estimated_duration": 4620,
    "elapsed_duration": 10,
    "node": {
      "name": "node1"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "in-progress",
    "estimated_duration": 4620,
    "elapsed_duration": 10,
    "node": {
      "name": "node2"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}

```


In the case of a post update check failure, the details are available under the heading "post_update_checks" in the GET /cluster/software endpoint. The following example shows how to check the progress of an update after a post update check has failed. Each node's object also includes information about the firmware update status on the node.

```
# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software" -H "accept:
application/hal+json"

# The response:
{
  "version": "9.7.0",
  "validation_results": [
    {
      "update_check": "Manual checks",
      "status": "warning",
      "issue": {
        "message": "Manual validation checks need to be performed. Refer to
the Upgrade Advisor Plan or the \"What should I verify before I upgrade
with or without Upgrade Advisor\" section in the \"Upgrade ONTAP\"
documentation for the remaining validation checks that need to be
performed before update. Failing to do so can result in an update failure
or an I/O disruption."
      },
      "action": {
        "message": "Refer to the Upgrade Advisor Plan or the \"What should I
verify before I upgrade with or without Upgrade Advisor\" section in the
\"Upgrade ONTAP\" documentation for the remaining validation checks that
need to be performed before update."
      }
    }
  ],
  "nodes": [
    {
      "node": "sti70-vsims-ucs165n",
      "version": "9.5.0",
      "firmware": {
        "cluster_fw_progress": [
          {
            "job": {
              "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
              "_links": {
                "self": {
```

```

        "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
    }
}
},
"zip_file_name": "abc.zip",
"update_type": "automated_update",
"update_state": [
    {
        "worker_node": {
            "name": "Node 1",
            "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
        },
        "status": "working",
        "attempts": 3,
        "message": "<message catalog text>",
        "code": 3
    },
    {
        "worker_node": {
            "name": "Node 2",
            "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
        },
        "status": "completed",
        "attempts": 3,
        "message": "Error message",
        "code": 0
    }
]
},
{
    "job": {
        "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
        "_links": {
            "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
            }
        }
    },
    "zip_file_name": "xyz.zip",
    "update_type": "automated_update",
    "update_state": [
        {
            "worker_node": {
                "name": "Node 1",

```

```

        "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
    },
    "status": "completed",
    "attempts": 1,
    "message": "Error message",
    "code": 0
},
{
    "worker_node": {
        "name": "Node 2",
        "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
    },
    "status": "completed",
    "attempts": "3",
    "message": "Error message",
    "code": 0
}
]
}
],
"disk": {
    "num_waiting_download": 0,
    "total_completion_estimate": 0,
    "average_duration_per_disk": 120,
    "update_status": "idle"
},
"shelf": {
    "update_status": "idle",
    "in_progress_count": 2
},
"dqp": {
    "revision": "20200117",
    "version": "3.17",
    "file_name": "qual_devices_v2",
    "record_count": {
        "drive": 680,
        "alias": 200,
        "device": 29,
        "system": 3
    }
},
"sp_bmc": {
    "fw_type": "SP",
    "image": " primary",
    "status": "installed",
    "is_current": "true",

```

```

        "running_version": "1.2.3.4",
        "autoupdate": "false",
        "last_update_status": "passed",
        "start_time": "2018-05-21T09:53:04+05:30",
        "percent_done": 100,
        "end_time": "2018-05-21T09:53:04+05:30",
        "in_progress": "yes"
    }
}
],
"pending_version": "9.7.0",
"state": "in_progress",
"elapsed_duration": 63,
"estimated_duration": 5220,
"status_details": [
    {
        "name": "do-download-job",
        "status": "completed",
        "issue": {
            "message": "Image update complete.",
            "code": 0
        },
        "start_time": "2019-01-14T23:12:14+05:30",
        "end_time": "2019-01-14T23:12:14+05:30",
        "node": {
            "name": "node1"
        }
    },
    {
        "name": "do-download-job",
        "status": "completed",
        "issue": {
            "message": "Image update complete.",
            "code": 0
        },
        "start_time": "2019-01-14T23:12:14+05:30",
        "end_time": "2019-01-14T23:12:14+05:30",
        "node": {
            "name": "node2"
        }
    }
],
"update_details": [
    {
        "phase": "Data ONTAP updates",

```

```

    "status": "completed",
    "estimated_duration": 4620,
    "elapsed_duration": 3120,
    "node": {
      "name": "node1"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "completed",
    "estimated_duration": 4620,
    "elapsed_duration": 3210,
    "node": {
      "name": "node2"
    }
  },
  {
    "phase": "Post-update checks",
    "status": "paused_on_error",
    "estimated_duration": 600,
    "elapsed_duration": 10,
    "node": {
      "name": "node2"
    }
  }
],
"post_update_checks": [
  {
    "update_check": "Aggregate Health Status",
    "status": "error",
    "issue": {
      "message": "Not all aggregates are online"
    },
    "action": {
      "message": "Ensure all aggregates are online."
    }
  },
  {
    "update_check": "HA Health Status",
    "status": "error",
    "issue": {
      "message": "Storage failover is not enabled on nodes of the
cluster."
    },
    "action": {
      "message": "Ensure storage failover is enabled on all nodes of the

```

```

cluster."
  }
}
],
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}
}

```

3. Pausing, resuming or canceling an upgrade

The following example shows how to pause an ongoing cluster software package upgrade. Set the `action` field to `pause`, `resume`, or `cancel` to pause, resume or cancel the upgrade respectively. Not all update operations support these actions. An update can only be resumed if it is in the paused state.

```

# The API:
/api/cluster/software

# The call:
curl -X PATCH "https://<mgmt_ip>/api/cluster/software?action=pause" -H
"accept: application/json" -H "Content-Type: application/hal+json" -d '{
"version": "9.5.0"}'

# The response:
{
  "job": {
    "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
      }
    }
  }
}
}

```

The call to update the software cluster version and/or firmware version returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the `state` field of the job is set to `success`.

```

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

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc" -H "accept: application/hal+json"

# The response:
{
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "description": "PATCH /api/cluster/software",
  "state": "success",
  "message": "success",
  "code": 0,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}

```

You can check the progress of the upgrade in the GET /cluster/software endpoint. The following example shows how to check the progress of the pause upgrade state after setting the action field to pause.

```

# The API:
/api/cluster/software

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software" -H "accept: application/hal+json"

# The response:
{
  "version": "9.7.0",
  "validation_results": [
    {
      "update_check": "Manual checks",
      "status": "warning",
      "issue": {
        "message": "Manual validation checks need to be performed. Refer to the Upgrade Advisor Plan or the \"What should I verify before I upgrade with or without Upgrade Advisor\" section in the \"Upgrade ONTAP\" documentation for the remaining validation checks that need to be

```

performed before update. Failing to do so can result in an update failure or an I/O disruption."

```
    },
    "action": {
      "message": "Refer to the Upgrade Advisor Plan or the \"What should I
verify before I upgrade with or without Upgrade Advisor\" section in the
\"Upgrade ONTAP\" documentation for the remaining validation checks that
need to be performed before update."
    }
  }
],
"nodes": [
  {
    "node": "sti70-vsimg-ucs165n",
    "version": "9.5.0",
    "firmware": {
      "cluster_fw_progress": [
        {
          "job": {
            "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
            "_links": {
              "self": {
                "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
              }
            }
          },
          "zip_file_name": "abc.zip",
          "update_type": "automated_update",
          "update_state": [
            {
              "worker_node": {
                "name": "Node 1",
                "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
              },
              "status": "failed",
              "attempts": 3,
              "message": "Cannot open the local staging zip file.",
              "code": 2228325
            },
            {
              "status": "complete",
              "attempts": 3,
              "message": "Success",
              "code": 0
            }
          ]
        }
      ]
    }
  }
]
```



```

    ]
  },
  {
    "job": {
      "uuid": "5a21663c-a9a0-11ea-af9a-005056bb44d7",
      "_links": {
        "self": {
          "href": "/api/cluster/jobs/5a21663c-a9a0-11ea-af9a-
005056bb44d7"
        }
      }
    },
    "zip_file_name": "xyz.zip",
    "update_type": "automated_update",
    "update_state": [
      {
        "worker_node": {
          "name": "Node 1",
          "uuid": "fcd40f70-f531-11eb-b235-005056bb3497"
        },
        "status": "failed",
        "attempts": 3,
        "message": "Cannot open the local staging zip file.",
        "code": 2228325
      },
      {
        "status": "complete",
        "attempts": 3,
        "message": "Success",
        "code": 0
      }
    ]
  }
],
"disk": {
  "num_waiting_download": 0,
  "total_completion_estimate": 0,
  "average_duration_per_disk": 120,
  "update_status": "idle"
},
"shelf": {
  "update_status": "idle",
  "in_progress_count": 2
},
"dqp": {
  "revision": "20200117",

```

```

    "version": "3.17",
    "file_name": "qual_devices_v2",
    "record_count": {
      "drive": 680,
      "alias": 200,
      "device": 29,
      "system": 3
    }
  },
  "sp_bmc": {
    "fw_type": "SP",
    "image": " primary",
    "status": "installed",
    "is_current": true,
    "running_version": "1.2.3.4",
    "autoupdate": false,
    "last_update_status": "passed",
    "start_time": "2018-05-21T09:53:04+05:30",
    "percent_done": 100,
    "end_time": "2018-05-21T09:53:04+05:30",
    "in_progress": false
  }
}
],
"pending_version": "9.7.0",
"state": "pause_pending",
"elapsed_duration": 103,
"estimated_duration": 5220,
"status_details": [
  {
    "status": "in-progress",
    "issue": {
      "message": "Installing software image.",
      "code": 10551400
    },
    "start_time": "2019-01-08T02:54:36+05:30",
    "node": {
      "name": "node1"
    }
  },
  {
    "status": "in-progress",
    "issue": {
      "message": "Installing software image.",
      "code": 10551400
    }
  }
]

```

```

    },
    "start_time": "2019-01-08T02:54:36+05:30",
    "node": {
      "name": "node2"
    }
  }
],
"update_details": [
  {
    "phase": "Pre-update checks",
    "status": "completed",
    "estimated_duration": 600,
    "elapsed_duration": 54,
    "node": {
      "name": "node1"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "pause-pending",
    "estimated_duration": 4620,
    "elapsed_duration": 49,
    "node": {
      "name": "node2"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "pause-pending",
    "estimated_duration": 4620,
    "elapsed_duration": 49
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}
}

```

Downloading the software package

The following example shows how to download the software/firmware package from an HTTP or FTP server. Provide the `url`, `username`, and `password`, if required, to start the download of the package to the cluster.

```
# The API:
/api/cluster/software/download

# The call:
curl -X POST "https://<mgmt-
ip>/api/cluster/software/download?return_timeout=0" -H "accept:
application/json" -H "Content-Type: application/hal+json" -d '{ "url":
"http://server/package", "username": "admin", "password": "*****"}'

# The response:
{
  "job": {
    "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
      }
    }
  }
}
```

The call to download the software/firmware package returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the job `state` field is set to `success`.

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

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc" -H "accept: application/hal+json"

# The response:
{
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "description": "POST /api/cluster/software/download",
  "state": "success",
  "message": "success",
  "code": 0,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}
```

Checking the progress of the software package being downloaded from an HTTP or FTP server

The following example shows how to retrieve the progress status of the software package being downloaded from a HTTP or FTP server.

```

# The API:
/api/cluster/software/download

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software/download" -H "accept:
application/hal+json"

# The response:
{
  "state": "running",
  "message": "Package download in progress",
  "code": 10551382,
  "_links": {
    "self": {
      "href": "/api/cluster/software/download"
    }
  }
}

```

HTTPS error codes

The following is a list of possible error codes that can be returned during a package download operation.

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2228324 | Failed to access the remote zip file on node. |
| 2228325 | Cannot open local staging ZIP file |
| 2228326 | File copy to local staging failed. |
| 2228327 | Firmware file already exists. |
| 2228328 | Firmware update of node failed. |
| 2228329 | Attempt to start worker on node failed |
| 2228330 | Uploaded firmware file is not present. |
| 2228331 | Copy of file from webserver failed. |
| 2228428 | Firmware update completed with errors |
| 2228429 | Firmware update completed. |
| 10551327 | Package image with the same name already exists. |
| 10551357 | Cannot perform an update when a previous update is still in progress. |
| 10551381 | Package download failed. |

| Error Code | Description |
|------------|--|
| 10551382 | Package download is still running. |
| 10551384 | Package download has not started. |
| 10551496 | Failed to download package. |
| 10551797 | Internal error. Failed to check if file upload is enabled. Contact technical support for assistance. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

Uploading a software/firmware package

The following example shows how to upload a software package.

```
# The API:
/api/cluster/software/upload

# The call:
curl -ku username:password -F "file=@image.tgz" -X POST "https://<mgmt-
ip>/api/cluster/software/upload?return_timeout=0"

# The response:
{
  "job": {
    "uuid": "12db53fd-8326-11ea-91eb-005056bb16e5",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/12db53fd-8326-11ea-91eb-005056bb16e5"
      }
    }
  }
}
```

HTTPS error codes

The following is a list of possible error codes that can be returned during a package upload operation.

ONTAP Error Response Codes

| Error Code | Description |
|------------|---|
| 2228324 | Failed to access the remote zip file on node. |
| 2228325 | Cannot open local staging ZIP file |

| Error Code | Description |
|------------|--|
| 2228326 | File copy to local staging failed. |
| 2228327 | Firmware file already exists. |
| 2228328 | Firmware update of node failed. |
| 2228329 | Attempt to start worker on node failed |
| 2228330 | Uploaded firmware file is not present. |
| 2228331 | Copy of file from webserver failed. |
| 2228428 | Firmware update completed with errors |
| 2228429 | Firmware update completed. |
| 10551395 | Validation checks failed with warnings. |
| 10551797 | Internal error. Failed to check if file upload is enabled. |
| 10551798 | File upload is disabled. Enable file upload by setting "ApacheUploadEnabled 1" in the web services configuration file or contact technical support for assistance. |
| 10551800 | Internal error. Access permissions restrict file upload. This is likely due to a bad web jail setup. Contact technical support for assistance. |
| 10551801 | Internal error. A read/write error occurred when uploading this file. Contact technical support for assistance |
| 10551802 | An invalid argument was supplied to create a file handle. Try uploading the file again or contact technical support for assistance. |
| 10551803 | An unknown error occurred. Retry file upload operation again or contact technical support for assistance. |
| 10551804 | Internal error. There is not sufficient space in the file upload directory to upload this file. Contact technical support for assistance. |
| 10551805 | Internal error in JAIL setup. Contact technical support for assistance. |
| 10551806 | Internal error. Failed to write to file in the webjail directory. Contact technical support for assistance. |
| 10551807 | The request must only contain a single file. More than one file per request is not supported. |
| 10551808 | The request must be of type multipart/form-data. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

Retrieving cluster software packages information

The following example shows how to retrieve the ONTAP software packages in a cluster.

```
# The API:
/api/cluster/software/packages

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/software/packages?return_records=true&return_timeout=15"
-H "accept: application/hal+json"

# The response:
{
  "records": [
    {
      "version": "9.7.0",
      "_links": {
        "self": {
          "href": "/api/cluster/software/packages/9.7.0"
        }
      }
    },
    {
      "version": "9.5.0",
      "_links": {
        "self": {
          "href": "/api/cluster/software/packages/9.5.0"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/software/packages"
    }
  }
}
```

The following example shows how to retrieve the details of a given cluster software package.

```
# The API:
/api/cluster/software/packages/{version}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software/packages/9.7.0" -H
"accept: application/hal+json"

# The response:
{
  "version": "9.7.0",
  "create_time": "2018-05-21T10:06:59+05:30",
  "_links": {
    "self": {
      "href": "/api/cluster/software/packages/9.7.0"
    }
  }
}
```

Deleting a cluster software package

The following example shows how to delete a package from the cluster. You need to provide the package version that you want to delete. The software package delete creates a job to perform the delete operation.

```
# The API:
/api/cluster/software/packages/{version}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/software/packages/9.6.0" -H
"accept: application/hal+json"

# The response:
{
  "job": {
    "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
      }
    }
  }
}
```

The call to delete the package returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the job `state` field is set to `success`.

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

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc" -H "accept: application/hal+json"

# The response:
{
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "description": "DELETE /api/cluster/software/packages/9.6.0",
  "state": "success",
  "message": "success",
  "code": 0,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}
```

HTTPS error codes

The following is a list of possible error codes that can be returned during a package delete operation.

ONTAP Error Response codes

| Error codes | Description |
|-------------|---|
| 10551315 | Package store is empty |
| 10551322 | Error in retrieving package cleanup status |
| 10551323 | Error in cleaning up package information on a node |
| 10551324 | Error in cleaning up package information on both nodes |
| 10551325 | Package does not exist on the system |
| 10551326 | Error in deleting older package cleanup tasks |
| 10551346 | Package delete failed since a validation is in progress |
| 10551347 | Package delete failed since an update is in progress |

| Error codes | Description |
|-------------|---|
| 10551367 | A package synchronization is in progress |
| 10551388 | Package delete operation timed out |
| 10551566 | Validation is not completed on the MetroCluster partner cluster |
| 10551567 | Package version is not available in the package repository on the MetroCluster partner cluster |

| |
|--|
| |
|--|

Retrieving software installation history information

The following example shows how to:

- retrieve the software package installation history information.
- display specific node level software installation history information.
- provide all the attributes by default in response when the self referential link is not present.

```
# The API:
/api/cluster/software/history

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software/history" -H "accept:
application/hal+json"

# The response:
{
  "node": {
    "uuid": "58cd3a2b-af63-11e8-8b0d-0050568e7279",
    "name": "sti70-vsims-ucs165n",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/58cd3a2b-af63-11e8-8b0d-0050568e7279"
      }
    }
  },
  "start_time": "2018-09-03T16:18:46+05:30",
  "state": "successful",
  "from_version": "9.4.0",
  "to_version": "9.5.0",
  "end_time": "2018-05-21T10:14:51+05:30"
}
```

Retrieve the cluster software profile

GET /cluster/software

Introduced In: 9.6

Retrieves the software profile of a cluster.

Related ONTAP commands

- cluster image show
- cluster image show-update-progress
- system node image package show

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|--|
| fields | array[string] | query | False | Specify the fields to return. |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |

Response

Status: 200, Ok

| Name | Type | Description |
|--------------------|--|---|
| _links | _links | |
| action | string | User triggered action to apply to the install operation |
| elapsed_duration | integer | Elapsed time during the upgrade or validation operation |
| estimated_duration | integer | Overall estimated time for completion of the upgrade or validation operation. |
| metrocluster | metrocluster | |
| nodes | array[software_node_reference] | List of nodes, active versions, and firmware update progressions. |

| Name | Type | Description |
|--------------------|--|---|
| pending_version | string | Version being installed on the system. <ul style="list-style-type: none"> • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |
| post_update_checks | array[software_validation_reference] | List of failed post-update checks' warnings, errors, and advice. |
| state | string | Operational state of the upgrade |
| status_details | array[software_status_details_reference] | Display status details. |
| update_details | array[software_update_details_reference] | Display update progress details. |
| validation_results | array[software_validation_reference] | List of validation warnings, errors, and advice. |
| version | string | Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation. <ul style="list-style-type: none"> • example: ONTAP_X • Introduced in: 9.6 • x-nullable: true |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "action": "pause",
  "elapsed_duration": 2140,
  "estimated_duration": 5220,
  "metrocluster": {
    "clusters": {
      "elapsed_duration": 2140,
      "estimated_duration": 3480,
      "name": "cluster_A",
      "state": "in_progress"
    },
    "progress_details": {
      "message": "Switchover in progress"
    },
    "progress_summary": {
      "message": "MetroCluster updated successfully."
    }
  },
  "nodes": {
    "firmware": {
      "cluster_fw_progress": {
        "job": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "uuid": "string"
        },
        "update_state": {
          "attempts": 3,
          "code": 2228325,
          "message": "Cannot open local staging ZIP file
disk_firmware.zip",
          "status": "idle",
          "worker_node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            }
          }
        }
      }
    }
  }
}
```



```

    }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
},
"update_type": "manual_update",
"zip_file_name": "disk_firmware.zip"
},
"disk": {
  "average_duration_per_disk": 120,
  "num_waiting_download": 0,
  "total_completion_estimate": 0,
  "update_status": "running"
},
"dqp": {
  "file_name": "qual_devices_v3",
  "record_count": {
    "alias": 200,
    "device": 29,
    "drive": 680,
    "system": 3
  },
  "revision": "20200117",
  "version": "3.18"
},
"shelf": {
  "in_progress_count": 2,
  "update_status": "running"
},
"sp_bmc": {
  "autoupdte": "",
  "end_time": "2020-05-17 16:00:00 -0400",
  "fw_type": "SP",
  "image": "primary",
  "is_current": 1,
  "last_update_state": "passed",
  "percent_done": 100,
  "running_version": "1.2.3.4",
  "start_time": "2020-05-17 16:00:00 -0400",
  "state": "installed"
}
},
"name": "node1",
"software_images": {
  "package": "image.tgz"
}

```

```

    },
    "version": "ONTAP_X"
  },
  "pending_version": "ONTAP_X_1",
  "post_update_checks": {
    "action": {
      "message": "Use NFS hard mounts, if possible."
    },
    "issue": {
      "message": "Cluster HA is not configured in the cluster."
    },
    "status": "warning",
    "update_check": "nfs_mounts"
  },
  "state": "completed",
  "status_details": {
    "end_time": "2019-02-02 14:00:00 -0500",
    "issue": {
      "code": 10551399,
      "message": "Image update complete"
    },
    "name": "initialize",
    "node": {
      "name": "node1"
    },
    "start_time": "2019-02-02 14:00:00 -0500",
    "state": "failed"
  },
  "update_details": {
    "elapsed_duration": 2100,
    "estimated_duration": 4620,
    "node": {
      "name": "node1"
    },
    "phase": "Post-update checks",
    "state": "failed"
  },
  "validation_results": {
    "action": {
      "message": "Use NFS hard mounts, if possible."
    },
    "issue": {
      "message": "Cluster HA is not configured in the cluster."
    },
    "status": "warning",
    "update_check": "nfs_mounts"
  }
}

```

```
},  
  "version": "ONTAP_X"  
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

software_mcc_reference

| Name | Type | Description |
|--------------------|---------|---|
| elapsed_duration | integer | Elapsed duration of update time (in seconds) of MetroCluster. |
| estimated_duration | integer | Estimated duration of update time (in seconds) of MetroCluster. |
| name | string | Name of the site in MetroCluster. |
| state | | Upgrade state of MetroCluster. |

progress_details

| Name | Type | Description |
|---------|--------|---------------------------------------|
| message | string | MetroCluster update progress details. |

progress_summary

| Name | Type | Description |
|---------|--------|---------------------------------------|
| message | string | MetroCluster update progress summary. |

metrocluster

| Name | Type | Description |
|------------------|---|--|
| clusters | array[software_mcc_reference] | List of MetroCluster sites, statuses, and active ONTAP versions. <ul style="list-style-type: none"> • readOnly: 1 • Introduced in: 9.6 |
| progress_details | progress_details | |
| progress_summary | progress_summary | |

job_link

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

worker_node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

firmware_update_progress_state

| Name | Type | Description |
|-------------|-----------------------------|--|
| attempts | integer | |
| code | integer | Code corresponding to the status message. |
| message | string | Error message returned when a cluster firmware update job fails. |
| status | string | |
| worker_node | worker_node | |

firmware_update_progress

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

| Name | Type | Description |
|---------------|---|-------------------------------|
| update_state | array[firmware_update_progress_state] | |
| update_type | string | Specifies the type of update. |
| zip_file_name | string | |

firmware_disk

| Name | Type | Description |
|---------------------------|---------|--|
| average_duration_per_disk | integer | Average firmware update duration per disk (in seconds). |
| num_waiting_download | integer | The number of disks waiting to download the firmware update. |
| total_completion_estimate | integer | Estimated firmware update duration to completion (in minutes). |
| update_status | | Status of the background disk firmware update. |

firmware_dqp_record_count

| Name | Type | Description |
|--------|---------|---------------------|
| alias | integer | Alias record count |
| device | integer | Device record count |
| drive | integer | Drive record count |
| system | integer | System record count |

firmware_dqp

| Name | Type | Description |
|--------------|---|--------------------|
| file_name | string | Firmware file name |
| record_count | firmware_dqp_record_count | |
| revision | string | Firmware revision |
| version | string | Firmware version |

firmware_shelf

| Name | Type | Description |
|-------------------|---------|--------------------------------------|
| in_progress_count | integer | |
| update_status | | Status of the shelf firmware update. |

firmware_sp_bmc

| Name | Type | Description |
|-------------------|---------|-------------|
| autoupdte | boolean | |
| end_time | string | |
| fw_type | string | |
| image | string | |
| in_progress | boolean | |
| is_current | boolean | |
| last_update_state | string | |
| percent_done | integer | |
| running_version | string | |
| start_time | string | |
| state | string | |

firmware

| Name | Type | Description |
|---------------------|---|-------------|
| cluster_fw_progress | array[firmware_update_progress] | |
| disk | firmware_disk | |
| dqp | firmware_dqp | |
| shelf | firmware_shelf | |
| sp_bmc | firmware_sp_bmc | |

software_images

| Name | Type | Description |
|---------|--------|--------------------|
| package | string | Package file name. |

software_node_reference

| Name | Type | Description |
|-----------------|--|--|
| firmware | firmware | |
| name | string | Name of the node. |
| software_images | array[software_images] | List of software image information. |
| version | string | ONTAP version of the node. <ul style="list-style-type: none"> • example: ONTAP_X • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |

action

| Name | Type | Description |
|---------|--------|--|
| message | string | Specifies the corrective action to take to resolve an error. |

issue

| Name | Type | Description |
|---------|--------|---|
| message | string | Details of the error or warning encountered by the update checks. |

software_validation_reference

| Name | Type | Description |
|--------------|------------------------|-----------------------------|
| action | action | |
| issue | issue | |
| status | string | Status of the update check. |
| update_check | string | Name of the update check. |

action

| Name | Type | Description |
|------|---------|---|
| code | integer | Error code corresponding the status error |

| Name | Type | Description |
|---------|--------|--|
| message | string | Corrective action to be taken to resolve the status error. |

issue

| Name | Type | Description |
|---------|---------|---|
| code | integer | Error code corresponding to update status |
| message | string | Update status details |

node

| Name | Type | Description |
|------|--------|--|
| name | string | Name of the node to be retrieved for status details. |

software_status_details_reference

| Name | Type | Description |
|------------|------------------------|---|
| action | action | |
| end_time | string | End time for each status phase. |
| issue | issue | |
| name | string | Name of the phase to be retrieved for status details. |
| node | node | |
| start_time | string | Start time for each status phase. |
| state | string | Status of the phase |

node

| Name | Type | Description |
|------|--------|--|
| name | string | Name of the node to be retrieved for update details. |

software_update_details_reference

| Name | Type | Description |
|--------------------|----------------------|--|
| elapsed_duration | integer | Elapsed duration for each update phase |
| estimated_duration | integer | Estimated duration for each update phase |
| node | node | |
| phase | string | Phase details |
| state | string | State of the update phase |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update the cluster software version

PATCH `/cluster/software`

Introduced In: 9.6

Updates the cluster software version. Important note:

- Setting 'version' triggers the package installation.
- To validate the package for installation but not perform the installation, use the `validate_only` field on the request.

Required properties

- `version` - Software version to be installed on the cluster.

Recommended optional parameters

- `validate_only` - Required to validate a software package before an upgrade.
- `skip_warnings` - Used to skip validation warnings when starting a software upgrade.
- `action` - Used to pause, resume, or cancel an ongoing software upgrade.
- `stabilize_minutes` - Specifies a custom value between 1 to 60 minutes that allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes.
- `estimate_only` - Estimates the time duration; does not perform any update.
- `nodes_to_update` - Specifies a subset of the cluster's nodes for update.
- `show_validation_details` - If the value is set to true, then all validation details will be shown in the output.

Related ONTAP commands

- `cluster image validate`
- `cluster image update`
- `cluster image pause-update`
- `cluster image resume-update`
- `cluster image cancel-update`

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|----------------------------|---------|-------|----------|---|
| <code>skip_warnings</code> | boolean | query | False | Ignore warnings and proceed with the install. |

| Name | Type | In | Required | Description |
|-------------------|---------|-------|----------|---|
| action | string | query | False | <p>Requests an upgrade to pause, resume, or cancel. Note that not all upgrades support these actions. An upgrade can only be resumed if it is in the paused state. When a request to cancel an upgrade is successful, the upgrade state changes to either <code>success</code> or <code>failure</code>.</p> <ul style="list-style-type: none"> enum: ["pause", "resume", "cancel"] |
| stabilize_minutes | integer | query | False | <p>Sets a custom value between 1 to 60 minutes for the upgrade, allowing each node a specified amount of time to stabilize after a reboot.</p> <ul style="list-style-type: none"> Introduced in: 9.8 |
| estimate_only | boolean | query | False | <p>Generates an estimate of the time required for the overall update operation for the specified package. No update is performed when this option is used. The default is false.</p> <ul style="list-style-type: none"> Introduced in: 9.9 |

| Name | Type | In | Required | Description |
|-------------------------|---------|-------|----------|--|
| force_rolling | boolean | query | False | <p>Forces a rolling upgrade on the cluster. This option is not applicable for a single-node cluster and for a two-node MetroCluster. The default is false.</p> <ul style="list-style-type: none"> • Introduced in: 9.9 |
| nodes_to_update | string | query | False | <p>A comma separated list of node names to be updated. The nodes must be a part of a HA Pair. The default is all nodes. If the nodes_to_update parameter is empty then upgrade will error out and will not proceed.</p> <ul style="list-style-type: none"> • Introduced in: 9.9 |
| show_validation_details | boolean | query | False | <p>If the value is set to true, then all validation details will be shown in the output.</p> <ul style="list-style-type: none"> • Introduced in: 9.11 |

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| pause_after | string | query | False | <p>The pause after specified tasks option. When ANDU is paused user interaction is required to resume the update. The default is none.</p> <ul style="list-style-type: none"> • Introduced in: 9.9 • enum: ["none", "takeover_giveback", "all"] |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

| Name | Type | In | Required | Description |
|---------------|---------|-------|----------|---|
| validate_only | boolean | query | False | Validate the operation and its parameters, without actually performing the operation. |

Request Body

| Name | Type | Description |
|--------------------|--|--|
| _links | _links | |
| action | string | User triggered action to apply to the install operation |
| elapsed_duration | integer | Elapsed time during the upgrade or validation operation |
| estimated_duration | integer | Overall estimated time for completion of the upgrade or validation operation. |
| metrocluster | metrocluster | |
| nodes | array[software_node_reference] | List of nodes, active versions, and firmware update progressions. |
| pending_version | string | Version being installed on the system. <ul style="list-style-type: none"> • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |
| post_update_checks | array[software_validation_reference] | List of failed post-update checks' warnings, errors, and advice. |
| state | string | Operational state of the upgrade |
| status_details | array[software_status_details_reference] | Display status details. |
| update_details | array[software_update_details_reference] | Display update progress details. |
| validation_results | array[software_validation_reference] | List of validation warnings, errors, and advice. |

| Name | Type | Description |
|---------|--------|--|
| version | string | <p>Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation.</p> <ul style="list-style-type: none">• example: ONTAP_X• Introduced in: 9.6• x-nullable: true |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "action": "pause",
  "elapsed_duration": 2140,
  "estimated_duration": 5220,
  "metrocluster": {
    "clusters": {
      "elapsed_duration": 2140,
      "estimated_duration": 3480,
      "name": "cluster_A",
      "state": "in_progress"
    },
    "progress_details": {
      "message": "Switchover in progress"
    },
    "progress_summary": {
      "message": "MetroCluster updated successfully."
    }
  },
  "nodes": {
    "firmware": {
      "cluster_fw_progress": {
        "job": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "uuid": "string"
        },
        "update_state": {
          "attempts": 3,
          "code": 2228325,
          "message": "Cannot open local staging ZIP file
disk_firmware.zip",
          "status": "idle",
          "worker_node": {
            "_links": {
              "self": {
                "href": "/api/resourcelink"
              }
            }
          }
        }
      }
    }
  }
}
```

```

    }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
},
"update_type": "manual_update",
"zip_file_name": "disk_firmware.zip"
},
"disk": {
  "average_duration_per_disk": 120,
  "num_waiting_download": 0,
  "total_completion_estimate": 0,
  "update_status": "running"
},
"dqp": {
  "file_name": "qual_devices_v3",
  "record_count": {
    "alias": 200,
    "device": 29,
    "drive": 680,
    "system": 3
  },
  "revision": "20200117",
  "version": "3.18"
},
"shelf": {
  "in_progress_count": 2,
  "update_status": "running"
},
"sp_bmc": {
  "autoupdte": "",
  "end_time": "2020-05-17 16:00:00 -0400",
  "fw_type": "SP",
  "image": "primary",
  "is_current": 1,
  "last_update_state": "passed",
  "percent_done": 100,
  "running_version": "1.2.3.4",
  "start_time": "2020-05-17 16:00:00 -0400",
  "state": "installed"
}
},
"name": "node1",
"software_images": {
  "package": "image.tgz"
}

```

```

    },
    "version": "ONTAP_X"
  },
  "pending_version": "ONTAP_X_1",
  "post_update_checks": {
    "action": {
      "message": "Use NFS hard mounts, if possible."
    },
    "issue": {
      "message": "Cluster HA is not configured in the cluster."
    },
    "status": "warning",
    "update_check": "nfs_mounts"
  },
  "state": "completed",
  "status_details": {
    "end_time": "2019-02-02 14:00:00 -0500",
    "issue": {
      "code": 10551399,
      "message": "Image update complete"
    },
    "name": "initialize",
    "node": {
      "name": "node1"
    },
    "start_time": "2019-02-02 14:00:00 -0500",
    "state": "failed"
  },
  "update_details": {
    "elapsed_duration": 2100,
    "estimated_duration": 4620,
    "node": {
      "name": "node1"
    },
    "phase": "Post-update checks",
    "state": "failed"
  },
  "validation_results": {
    "action": {
      "message": "Use NFS hard mounts, if possible."
    },
    "issue": {
      "message": "Cluster HA is not configured in the cluster."
    },
    "status": "warning",
    "update_check": "nfs_mounts"
  }
}

```

```
},
"version": "ONTAP_X"
}
```

Response

Status: 200, Ok

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Response

Status: 202, Accepted

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

software_mcc_reference

| Name | Type | Description |
|--------------------|---------|---|
| elapsed_duration | integer | Elapsed duration of update time (in seconds) of MetroCluster. |
| estimated_duration | integer | Estimated duration of update time (in seconds) of MetroCluster. |
| name | string | Name of the site in MetroCluster. |
| state | | Upgrade state of MetroCluster. |

progress_details

| Name | Type | Description |
|---------|--------|---------------------------------------|
| message | string | MetroCluster update progress details. |

progress_summary

| Name | Type | Description |
|---------|--------|---------------------------------------|
| message | string | MetroCluster update progress summary. |

metrocluster

| Name | Type | Description |
|------------------|---|--|
| clusters | array[software_mcc_reference] | List of MetroCluster sites, statuses, and active ONTAP versions. <ul style="list-style-type: none"> • readOnly: 1 • Introduced in: 9.6 |
| progress_details | progress_details | |
| progress_summary | progress_summary | |

job_link

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

worker_node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

firmware_update_progress_state

| Name | Type | Description |
|-------------|-----------------------------|--|
| attempts | integer | |
| code | integer | Code corresponding to the status message. |
| message | string | Error message returned when a cluster firmware update job fails. |
| status | string | |
| worker_node | worker_node | |

firmware_update_progress

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

| Name | Type | Description |
|---------------|---|-------------------------------|
| update_state | array[firmware_update_progress_state] | |
| update_type | string | Specifies the type of update. |
| zip_file_name | string | |

firmware_disk

| Name | Type | Description |
|---------------------------|---------|--|
| average_duration_per_disk | integer | Average firmware update duration per disk (in seconds). |
| num_waiting_download | integer | The number of disks waiting to download the firmware update. |
| total_completion_estimate | integer | Estimated firmware update duration to completion (in minutes). |
| update_status | | Status of the background disk firmware update. |

firmware_dqp_record_count

| Name | Type | Description |
|--------|---------|---------------------|
| alias | integer | Alias record count |
| device | integer | Device record count |
| drive | integer | Drive record count |
| system | integer | System record count |

firmware_dqp

| Name | Type | Description |
|--------------|---|--------------------|
| file_name | string | Firmware file name |
| record_count | firmware_dqp_record_count | |
| revision | string | Firmware revision |
| version | string | Firmware version |

firmware_shelf

| Name | Type | Description |
|-------------------|---------|--------------------------------------|
| in_progress_count | integer | |
| update_status | | Status of the shelf firmware update. |

firmware_sp_bmc

| Name | Type | Description |
|-------------------|---------|-------------|
| autoupdte | boolean | |
| end_time | string | |
| fw_type | string | |
| image | string | |
| in_progress | boolean | |
| is_current | boolean | |
| last_update_state | string | |
| percent_done | integer | |
| running_version | string | |
| start_time | string | |
| state | string | |

firmware

| Name | Type | Description |
|---------------------|---|-------------|
| cluster_fw_progress | array[firmware_update_progress] | |
| disk | firmware_disk | |
| dqp | firmware_dqp | |
| shelf | firmware_shelf | |
| sp_bmc | firmware_sp_bmc | |

software_images

| Name | Type | Description |
|---------|--------|--------------------|
| package | string | Package file name. |

software_node_reference

| Name | Type | Description |
|-----------------|--|--|
| firmware | firmware | |
| name | string | Name of the node. |
| software_images | array[software_images] | List of software image information. |
| version | string | ONTAP version of the node. <ul style="list-style-type: none"> • example: ONTAP_X • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |

action

| Name | Type | Description |
|---------|--------|--|
| message | string | Specifies the corrective action to take to resolve an error. |

issue

| Name | Type | Description |
|---------|--------|---|
| message | string | Details of the error or warning encountered by the update checks. |

software_validation_reference

| Name | Type | Description |
|--------------|------------------------|-----------------------------|
| action | action | |
| issue | issue | |
| status | string | Status of the update check. |
| update_check | string | Name of the update check. |

action

| Name | Type | Description |
|------|---------|---|
| code | integer | Error code corresponding the status error |

| Name | Type | Description |
|---------|--------|--|
| message | string | Corrective action to be taken to resolve the status error. |

issue

| Name | Type | Description |
|---------|---------|---|
| code | integer | Error code corresponding to update status |
| message | string | Update status details |

node

| Name | Type | Description |
|------|--------|--|
| name | string | Name of the node to be retrieved for status details. |

software_status_details_reference

| Name | Type | Description |
|------------|------------------------|---|
| action | action | |
| end_time | string | End time for each status phase. |
| issue | issue | |
| name | string | Name of the phase to be retrieved for status details. |
| node | node | |
| start_time | string | Start time for each status phase. |
| state | string | Status of the phase |

node

| Name | Type | Description |
|------|--------|--|
| name | string | Name of the node to be retrieved for update details. |

software_update_details_reference

| Name | Type | Description |
|--------------------|----------------------|--|
| elapsed_duration | integer | Elapsed duration for each update phase |
| estimated_duration | integer | Estimated duration for each update phase |
| node | node | |
| phase | string | Phase details |
| state | string | State of the update phase |

software_reference

| Name | Type | Description |
|--------------------|--|--|
| _links | _links | |
| action | string | User triggered action to apply to the install operation |
| elapsed_duration | integer | Elapsed time during the upgrade or validation operation |
| estimated_duration | integer | Overall estimated time for completion of the upgrade or validation operation. |
| metrocluster | metrocluster | |
| nodes | array[software_node_reference] | List of nodes, active versions, and firmware update progressions. |
| pending_version | string | Version being installed on the system. <ul style="list-style-type: none"> • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6 • x-nullable: true |
| post_update_checks | array[software_validation_reference] | List of failed post-update checks' warnings, errors, and advice. |
| state | string | Operational state of the upgrade |

| Name | Type | Description |
|--------------------|--|---|
| status_details | array[software_status_details_reference] | Display status details. |
| update_details | array[software_update_details_reference] | Display update progress details. |
| validation_results | array[software_validation_reference] | List of validation warnings, errors, and advice. |
| version | string | Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation. <ul style="list-style-type: none"> • example: ONTAP_X • Introduced in: 9.6 • x-nullable: true |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve software or firmware download status

GET /cluster/software/download

Introduced In: 9.7

Retrieves the software or firmware download status.

Related ONTAP commands

- `cluster image package check-download-progress`

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| fields | array[string] | query | False | Specify the fields to return. |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |

Response

Status: 200, Ok

| Name | Type | Description |
|---------|---------|---|
| code | integer | Code returned corresponds to a download message |
| message | string | Download progress details |
| state | string | Download status of the package |

Example response

```
{
  "code": 10551382,
  "message": "Package download in progress",
  "state": "success"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Download a software or firmware package

POST /cluster/software/download

Introduced In: 9.6

Downloads a software or firmware package from the server.

Required properties

- `url` - URL location of the software package

Recommended optional parameters

- `username` - Username of HTTPS/FTP server
- `password` - Password of HTTPS/FTP server

Related ONTAP commands

- `cluster image package get`

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |

Request Body

| Name | Type | Description |
|----------|--------|---|
| password | string | Password for download |
| url | string | HTTP or FTP URL of the package through a server |
| username | string | Username for download |

Example request

```
{
  "password": "admin_password",
  "url": "http://server/package",
  "username": "admin"
}
```

Response

Status: 202, Accepted

| Name | Type | Description |
|------|----------|-------------|
| job | job_link | |

Example response

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

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Response

Status: 201, Created

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

software_package_download

| Name | Type | Description |
|----------|--------|---|
| password | string | Password for download |
| url | string | HTTP or FTP URL of the package through a server |
| username | string | Username for download |

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

| Name | Type | Description |
|-----------|--|-------------------|
| arguments | array[error_arguments] | Message arguments |

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

Retrieve software installation requests history details

GET `/cluster/software/history`

Introduced In: 9.6

Retrieves the history details for software installation requests.

Related ONTAP commands

- `cluster image show-update-history`

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|------------|--------|-------|----------|--|
| node.name | string | query | False | Filter by node.name • Introduced in: 9.7 |
| node.uuid | string | query | False | Filter by node.uuid • Introduced in: 9.7 |
| start_time | string | query | False | Filter by start_time • Introduced in: 9.7 |
| end_time | string | query | False | Filter by end_time • Introduced in: 9.7 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| state | string | query | False | Filter by state <ul style="list-style-type: none"> Introduced in: 9.7 |
| from_version | string | query | False | Filter by from_version <ul style="list-style-type: none"> Introduced in: 9.7 |
| to_version | string | query | False | Filter by to_version <ul style="list-style-type: none"> Introduced in: 9.7 |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> Default value: 1 Max value: 120 Min value: 0 |

| Name | Type | In | Required | Description |
|----------|---------------|-------|----------|---|
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|---|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[software_history] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "end_time": "2019-02-02 15:00:00 -0500",
    "from_version": "ONTAP_X1",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "start_time": "2019-02-02 14:00:00 -0500",
    "state": "successful",
    "to_version": "ONTAP_X2"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

node

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |
| name | string | |
| uuid | string | |

software_history

| Name | Type | Description |
|--------------|----------------------|--|
| end_time | string | Completion time of this installation request. |
| from_version | string | Previous version of node <ul style="list-style-type: none">• example: ONTAP_X1• readOnly: 1• Introduced in: 9.7• x-nullable: true |
| node | node | |
| start_time | string | Start time of this installation request. |
| state | string | Status of this installation request. |

| Name | Type | Description |
|------------|--------|--|
| to_version | string | Updated version of node <ul style="list-style-type: none"> • example: ONTAP_X2 • readOnly: 1 • Introduced in: 9.7 • x-nullable: true |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve cluster software packages

GET `/cluster/software/packages`

Introduced In: 9.6

Retrieves the software packages for a cluster.

Related ONTAP commands

- `cluster image package show-repository`

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| create_time | string | query | False | Filter by create_time <ul style="list-style-type: none">• Introduced in: 9.7 |
| version | string | query | False | Filter by version <ul style="list-style-type: none">• Introduced in: 9.7 |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none">• Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|---|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[software_package] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "create_time": "2019-02-04 14:00:00 -0500",
    "version": "ONTAP_X"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

software_package

| Name | Type | Description |
|-------------|------------------------|--|
| _links | _links | |
| create_time | string | Indicates when this package was loaded |
| version | string | Version of this package <ul style="list-style-type: none">• example: ONTAP_X• readOnly: 1• Introduced in: 9.6• x-nullable: true |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Delete a software package from the cluster

```
DELETE /cluster/software/packages/{version}
```

Introduced In: 9.6

Deletes a software package from the cluster. The delete operation fails if the package is currently installed.

Related ONTAP commands

- `cluster image package delete`

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|---------|--------|------|----------|-------------|
| version | string | path | True | |

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Response

Status: 200, Ok

Response

Status: 202, Accepted

Error

Status: Default

ONTAP error response codes

| Error codes | Description |
|-------------|---|
| 10551315 | Package store is empty |
| 10551322 | Error in retrieving package cleanup status |
| 10551323 | Error in cleaning up package information on a node |
| 10551324 | Error in cleaning up package information on multiple nodes |
| 10551325 | Package does not exist on the system |
| 10551326 | Error in deleting older package cleanup tasks. Clean up images from the store and retry |
| 10551346 | Package delete failed since a validation is in progress |
| 10551347 | Package delete failed since an update is in progress |
| 10551367 | A package synchronization is in progress |
| 10551388 | Package delete operation timed out |

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve the software package information

GET /cluster/software/packages/{version}

Introduced In: 9.6

Retrieves the software package information.

Related ONTAP commands

- `cluster image package show-repository`

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|---------|---------------|-------|----------|-------------------------------|
| version | string | path | True | |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|------------------------|--|
| _links | _links | |
| create_time | string | Indicates when this package was loaded |
| version | string | Version of this package <ul style="list-style-type: none">• example: ONTAP_X• readOnly: 1• Introduced in: 9.6• x-nullable: true |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "create_time": "2019-02-04 14:00:00 -0500",
  "version": "ONTAP_X"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Upload a software or firmware package located on the local file system

POST /cluster/software/upload

Introduced In: 9.8

Uploads a software or firmware package located on the local filesystem.

Related ONTAP commands

- `cluster image package get`

Learn more

- [DOC /cluster/software](#)

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|----------|----------|--|
| file | file | formData | False | Info specification |
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none">• Default value: |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |

Response

Status: 202, Accepted

| Name | Type | Description |
|------|--------------------------|-------------|
| job | job_link | |

Example response

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

Response

Status: 201, Created

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

job_link

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

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

View and update cluster web configurations

Cluster web endpoint overview

Overview

You can use this API to update web services configurations and to retrieve current configurations.

Retrieving the current web services configuration

The cluster web GET API retrieves the current cluster-wide configuration.

Updating the current web services configuration

The cluster web PATCH API updates the current cluster-wide configuration.

Once updated, ONTAP restarts the web services to apply the changes.

When updating the certificate, the certificate UUID of an existing certificate known to ONTAP must be provided. The certificate must be of type "server".

A "client-ca" certificate must be installed on ONTAP to enable "client_enabled".

The following fields can be used to update the cluster-wide configuration:

- enabled
- http_port
- https_port
- http_enabled
- csrf.protection_enabled
- csrf.token.concurrent_limit
- csrf.token.idle_timeout
- csrf.token.max_timeout
- certificate.uuid
- client_enabled
- ocsp_enabled

Examples

Retrieving the cluster-wide web services configuration

```

# API:
GET /api/cluster/web

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/web" -H "accept:
application/hal+json"

# The response:
{
  "enabled": true,
  "http_port": 80,
  "https_port": 443,
  "state": "online",
  "http_enabled": false,
  "csrf": {
    "protection_enabled": true,
    "token": {
      "concurrent_limit": 500,
      "idle_timeout": 900,
      "max_timeout": 0
    }
  },
  "certificate": {
    "uuid": "a3bb219d-4382-1fe0-9c06-1070568ea23d",
    "name": "cert1",
    "_links": {
      "self": {
        "href": "/api/security/certificates/a3bb219d-4382-1fe0-9c06-
1070568ea23d"
      }
    }
  },
  "client_enabled": false,
  "ocsp_enabled": false,
  "_links": {
    "self": {
      "href": "/api/cluster/web"
    }
  }
}

```

Updating the cluster-wide web services configuration

```

# The API:
PATCH /api/cluster/web

# The call:
curl -X PATCH "https://<mgmt-ip>/api/cluster/web" -d '{ "https_port": 446,
"csrf": { "token": { "concurrent_limit": 600 } } }' -H "accept:
application/hal+json"

# The response:
HTTP/1.1 202 Accepted
Date: Fri, 28 May 2021 09:36:43 GMT
Server: libzapid-httpd
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 189
Content-Type: application/hal+json

```

Retrieve the web services configuration

GET /cluster/web

Introduced In: 9.10

Retrieves the web services configuration.

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|------------------------|-----------------------------|---|
| _links | _links | |
| certificate | certificate | Certificate used by cluster and node management interfaces for TLS connection requests. |
| client_enabled | boolean | Indicates whether client authentication is enabled. |

| Name | Type | Description |
|---------------------|----------------------|--|
| csrf | csrf | |
| enabled | boolean | Indicates whether remote clients can connect to the web services. |
| http_enabled | boolean | Indicates whether HTTP is enabled. |
| http_port | integer | HTTP port for cluster-level web services. |
| https_port | integer | HTTPS port for cluster-level web services. |
| ocsp_enabled | boolean | Indicates whether online certificate status protocol verification is enabled. |
| per_address_limit | integer | The number of connections that can be processed concurrently from the same remote address. |
| state | string | State of the cluster-level web services. |
| wait_queue_capacity | integer | The maximum size of the wait queue for connections exceeding the per-address-limit. |

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "csrf": {
    "token": {
      "concurrent_limit": 120
    }
  },
  "per_address_limit": 42,
  "state": "offline"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|----------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

certificate

Certificate used by cluster and node management interfaces for TLS connection requests.

| Name | Type | Description |
|--------|------------------------|------------------|
| _links | _links | |
| name | string | Certificate name |
| uuid | string | Certificate UUID |

token

| Name | Type | Description |
|------------------|---------|---|
| concurrent_limit | integer | Maximum number of concurrent CSRF tokens. |
| idle_timeout | integer | Time for which an unused CSRF token is retained, in seconds. |
| max_timeout | integer | Time for which an unused CSRF token, regardless of usage is retained, in seconds. |

csrf

| Name | Type | Description |
|--------------------|-----------------------|---|
| protection_enabled | boolean | Indicates whether CSRF protection is enabled. |
| token | token | |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Update the web services configuration

PATCH `/cluster/web`

Introduced In: 9.10

Updates the web services configuration.

Related ONTAP commands

- `system services web modify`

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|--|
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0 |

Request Body

| Name | Type | Description |
|----------------|-----------------------------|---|
| _links | _links | |
| certificate | certificate | Certificate used by cluster and node management interfaces for TLS connection requests. |
| client_enabled | boolean | Indicates whether client authentication is enabled. |
| csrf | csrf | |
| enabled | boolean | Indicates whether remote clients can connect to the web services. |

| Name | Type | Description |
|---------------------|---------|--|
| http_enabled | boolean | Indicates whether HTTP is enabled. |
| http_port | integer | HTTP port for cluster-level web services. |
| https_port | integer | HTTPS port for cluster-level web services. |
| ocsp_enabled | boolean | Indicates whether online certificate status protocol verification is enabled. |
| per_address_limit | integer | The number of connections that can be processed concurrently from the same remote address. |
| state | string | State of the cluster-level web services. |
| wait_queue_capacity | integer | The maximum size of the wait queue for connections exceeding the per-address-limit. |

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "csrf": {
    "token": {
      "concurrent_limit": 120
    }
  },
  "per_address_limit": 42,
  "state": "offline"
}
```

Response

Status: 200, Ok

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 9830406 | Reconfiguration of the web services failed. |
| 9830407 | The web services failed to restart. |
| 9830408 | Reconfiguration and/or restart of the web services failed. |
| 9830442 | Client authentication cannot be enabled without a client ca certificate. |
| 9830463 | The cluster must be fully upgraded before modifying this resource. |
| 9830464 | HTTP cannot be enabled when FIPS is also enabled. |
| 9830483 | The CSRF token timeout is invalid. |
| 9830484 | The maximum concurrent CSRF token count cannot be lower than 100. |
| 9830485 | The CSRF idle timeout cannot be greater than the CSRF absolute timeout. |
| 9830486 | CSRF requires an effective cluster version of 9.7 or later. |
| 9830487 | The HTTP and HTTPS ports must not have the same value. |
| 9830488 | The certificate is not a "server" certificate. |
| 9830489 | The certificate does not exist for the given SVM. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

certificate

Certificate used by cluster and node management interfaces for TLS connection requests.

| Name | Type | Description |
|--------|------------------------|------------------|
| _links | _links | |
| name | string | Certificate name |
| uuid | string | Certificate UUID |

token

| Name | Type | Description |
|------------------|---------|---|
| concurrent_limit | integer | Maximum number of concurrent CSRF tokens. |
| idle_timeout | integer | Time for which an unused CSRF token is retained, in seconds. |
| max_timeout | integer | Time for which an unused CSRF token, regardless of usage is retained, in seconds. |

csrf

| Name | Type | Description |
|--------------------|-----------------------|---|
| protection_enabled | boolean | Indicates whether CSRF protection is enabled. |
| token | token | |

web

| Name | Type | Description |
|---------------------|-----------------------------|--|
| _links | _links | |
| certificate | certificate | Certificate used by cluster and node management interfaces for TLS connection requests. |
| client_enabled | boolean | Indicates whether client authentication is enabled. |
| csrf | csrf | |
| enabled | boolean | Indicates whether remote clients can connect to the web services. |
| http_enabled | boolean | Indicates whether HTTP is enabled. |
| http_port | integer | HTTP port for cluster-level web services. |
| https_port | integer | HTTPS port for cluster-level web services. |
| ocsp_enabled | boolean | Indicates whether online certificate status protocol verification is enabled. |
| per_address_limit | integer | The number of connections that can be processed concurrently from the same remote address. |
| state | string | State of the cluster-level web services. |
| wait_queue_capacity | integer | The maximum size of the wait queue for connections exceeding the per-address-limit. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

View tags used for resources

Resource-tags endpoint overview

Overview

You can use this endpoint to list all of the tags that have been used on resources in the API. See the section labelled [Tagging Resources for Tracking Purposes](#) to find out more information about how to tag a resource.

Examples

The following examples show some ways that this endpoint can be used.

List all of the used tags

```
# The API:
/api/resource-tags

# The call:
curl -X GET "https://<mgmt-ip>/api/resource-tags"

# The response:
{
  "records": [
    {
      "value": "team:accounting",
      "num_resources": 2,
      "_links": {
        "self": {
          "href": "/api/resource-tags/team%3Aaccounting"
        }
      }
    },
    {
      "value": "environment:test",
      "num_resources": 5,
      "_links": {
        "self": {
          "href": "/api/resource-tags/environment%3Atest"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/resource-tags"
    }
  }
}
```

Find tags that are being used by at least 3 resources

```

# The API:
/api/resource-tags

# The call:
curl -X GET "https://<mgmt-ip>/api/resource-tags?num_resources=>=3"

# The response:
{
  "records": [
    {
      "value": "environment:test",
      "num_resources": 5,
      "_links": {
        "self": {
          "href": "/api/resource-tags/environment%3Atest"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/resource-tags?num_resources=>=3"
    }
  }
}

```

Retrieve the tags currently used for resources

GET /resource-tags

Introduced In: 9.13

Retrieves the tags currently being used for resources in the API.

Parameters

| Name | Type | In | Required | Description |
|---------------|---------|-------|----------|--|
| num_resources | integer | query | False | Filter by num_resources <ul style="list-style-type: none"> • Min value: 1 |
| value | string | query | False | Filter by value <ul style="list-style-type: none"> • maxLength: 200 |

| Name | Type | In | Required | Description |
|----------------|---------------|-------|----------|---|
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| return_records | boolean | query | False | The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1 |
| return_timeout | integer | query | False | The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Min value: 0 • Default value: 1 • Max value: 120 |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |

Response

Status: 200, Ok

| Name | Type | Description |
|-------------|---------------------------------------|-------------------|
| _links | _links | |
| num_records | integer | Number of records |
| records | array[resource_tag] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "value": "team:accounting"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

resource_tag

A resource tag is a way to group resources in the API together for identification or tracking purposes.

| Name | Type | Description |
|---------------|---------|--|
| num_resources | integer | The number of resources that are currently using this tag. |
| value | string | A key:value formatted string representing the tag's name. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Manage resource tags

Resource-tags resource_tag.value resources endpoint overview

Overview

You can use this endpoint to list all of the resources in the API that have been tagged with a particular tag value. See the section labelled [Tagging Resources for Tracking Purposes](#) to find out more information about how to tag a resource.

Examples

The following examples show some ways that this endpoint can be used.

List all resources that are tagged for the test environment.

```
# The API:
/api/resource-tags/environment:test/resources

# The call:
curl -X GET "https://<mgmt-ip>/api/resource-
tags/environment:test/resources"

# The response:
{
  "records": [
    {
      "href": "/api/storage/volumes/558949d1-d4cf-445e-ada5-e340dee6a581",
      "_links": {
        "self": {
          "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fstorage%2Fvolumes%2F558949d1-
d4cf-445e-ada5-e340dee6a581"
        }
      }
    },
    {
      "href": "/api/svm/svms/7f97a0b1-fe4f-11e8-b9c5-005056a76061",
      "_links": {
        "self": {
          "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fsvm%2Fsvms%2F7f97a0b1-fe4f-11e8-
b9c5-005056a76061"
        }
      }
    },
    {
```



```

    "href": "/api/cluster",
    "_links": {
      "self": {
        "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fcluster"
      }
    }
  },
  "num_records": 3,
  "_links": {
    "self": {
      "href": "/api/resource-tags/environment:test/resources"
    }
  }
}

```

List all volumes that have been tagged for the accounting team

```

# The API:
/api/resource-tags/team:accounting/resources

# The call:
curl -X GET "https://<mgmt-ip>/api/resource-
tags/team:accounting/resources?label=storage_volumes"

# The response:
{
  "records": [
    {
      "href": "/api/storage/volumes/558949d1-d4cf-445e-ada5-e340dee6a581",
      "label": "storage_volumes",
      "_links": {
        "self": {
          "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fstorage%2Fvolumes%2F558949d1-
d4cf-445e-ada5-e340dee6a581"
        }
      }
    },
    {
      "href": "/api/storage/volumes/64750961-fda7-4327-9f16-00034c3f5ad2",
      "label": "storage_volumes",
      "_links": {

```

```

    "self": {
      "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fstorage%2Fvolumes%2F64750961-
fda7-4327-9f16-00034c3f5ad2"
    }
  },
  {
    "href": "/api/storage/volumes/bee17b91-f90a-4854-b146-8b102a0a9882",
    "label": "storage_volumes",
    "_links": {
      "self": {
        "href": "/api/resource-
tags/environment:test/resources/%2Fapi%2Fstorage%2Fvolumes%2Fbee17b91-
f90a-4854-b146-8b102a0a9882"
      }
    }
  }
],
"num_records": 3,
"_links": {
  "self": {
    "href": "/api/resource-
tags/environment:test/resources?label=storage_volumes"
  }
}
}

```

Create a new tag on a volume

```
# The API:
/api/resource-tags/team:accounting/resources

# The call:
curl -X POST "https://<mgmt-ip>/api/resource-
tags/team:accounting/resources" -d '{"href":
"/api/storage/volumes/f288168e-bd3e-11ed-9516-005056acd4e8"}'

# The response
{
  "num_records": 1,
  "records": [
    {
      "href": "/api/storage/volumes/f288168e-bd3e-11ed-9516-005056acd4e8",
      "_links": {
        "self": {
          "href": "/api/resource-
tags/team:accounting/resources/%2Fapi%2Fstorage%2Fvolumes%2Ff288168e-bd3e-
11ed-9516-005056acd4e8"
        }
      }
    }
  ]
}
```

Delete a new tag on a volume

```
# The API:
/resource-tags/{resource_tag.value}/resources/{href}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/resource-
tags/team:accounting/resources/%2Fapi%2Fstorage%2Fvolumes%2Ff288168e-bd3e-
11ed-9516-005056acd4e8"
```

Retrieve the resources for a tag

GET /resource-tags/{resource_tag.value}/resources

Introduced In: 9.13

Retrieves the resources for a specific tag

Parameters

| Name | Type | In | Required | Description |
|--|----------------|---------|----------|--|
| label | string | query | False | Filter by label |
| svm.uuid | string | query | False | Filter by svm.uuid |
| svm.name | string | query | False | Filter by svm.name |
| return_timeout | integer | query | False | <p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0 |
| fields | array[string] | query | False | Specify the fields to return. |
| max_records | integer | query | False | Limit the number of records returned. |
| order_by | array[string] | query | False | Order results by specified fields and optional [asc |
| desc] direction. Default direction is 'asc' for ascending. | return_records | boolean | query | False |

Response

Status: 200, Ok

| Name | Type | Description |
|--------|------------------------|-------------|
| _links | _links | |

| Name | Type | Description |
|-------------|------------------------------|-------------------|
| num_records | integer | Number of records |
| records | array[resource_tag_resource] | |

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "label": "volume",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|----------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| next | href | |
| self | href | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

svm

If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned.

| Name | Type | Description |
|--------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

resource_tag_resource

This object provides a pointer to the tagged resource in the API. Details about the tagged object are available by querying the address of the href property.

| Name | Type | Description |
|------|--------|--|
| href | string | This property provides the address in the API at which the tagged resource is available. Additional queries can be made on this endpoint to fetch the resource's properties. |

| Name | Type | Description |
|-------|---------------------|--|
| label | string | This is a human-readable classifier representing the type of thing that is pointed to by the href. |
| svm | svm | If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Create a new tag for a resource

POST /resource-tags/{resource_tag.value}/resources

Introduced In: 9.13

Creates a new tag on a specific resource.

Parameters

| Name | Type | In | Required | Description |
|----------------|---------|-------|----------|---|
| return_records | boolean | query | False | <p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value: |

Request Body

| Name | Type | Description |
|-------|--------|--|
| href | string | This property provides the address in the API at which the tagged resource is available. Additional queries can be made on this endpoint to fetch the resource's properties. |
| label | string | This is a human-readable classifier representing the type of thing that is pointed to by the href. |
| svm | svm | If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned. |

Example request

```

{
  "label": "volume",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}

```

Response

Status: 201, Created

Headers

| Name | Description | Type |
|----------|---|--------|
| Location | Useful for tracking the resource location | string |

Error

Status: Default

ONTAP Error Response Codes

| Error Code | Description |
|------------|--|
| 262257 | The API specified in the href cannot be found. |
| 262258 | The resource specified in the href does not support tagging. |
| 262259 | The specified href cannot be parsed. |
| 262260 | The provided href is missing a key to a specific resource. |
| 262261 | The specified href points to a resource that does not exist. |
| 262262 | The specified href cannot be an empty string. |
| 262263 | Tag key-value pairs cannot be longer than 200 characters. |

Also see the table of common errors in the [Response body](#) overview section of this documentation.

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

svm

If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned.

| Name | Type | Description |
|--------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

resource_tag_resource

This object provides a pointer to the tagged resource in the API. Details about the tagged object are available by querying the address of the href property.

| Name | Type | Description |
|-------|--------|--|
| href | string | This property provides the address in the API at which the tagged resource is available. Additional queries can be made on this endpoint to fetch the resource's properties. |
| label | string | This is a human-readable classifier representing the type of thing that is pointed to by the href. |

| Name | Type | Description |
|------|---------------------|--|
| svm | svm | If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Delete a tag for a resource

DELETE /resource-tags/{resource_tag.value}/resources/{href}

Introduced In: 9.13

Deletes a specific tag on a specific resource.

Response

Status: 200, Ok

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

Retrieve a resource for a tag

GET /resource-tags/{resource_tag.value}/resources/{href}

Introduced In: 9.13

Retrieves a specific resource for a specific tag.

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|-------------------------------|
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|-------|--------|--|
| href | string | This property provides the address in the API at which the tagged resource is available. Additional queries can be made on this endpoint to fetch the resource's properties. |
| label | string | This is a human-readable classifier representing the type of thing that is pointed to by the href. |
| svm | svm | If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned. |

Example response

```
{
  "label": "volume",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|----------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

href

| Name | Type | Description |
|------|--------|-------------|
| href | string | |

_links

| Name | Type | Description |
|------|----------------------|-------------|
| self | href | |

svm

If the tagged resource belongs to an SVM, this property will be set. If the resource does not belong to an SVM (i.e. it belongs to the cluster as a whole), then this property will be empty and unreturned.

| Name | Type | Description |
|------------------------|------------------------|---|
| _links | _links | |
| name | string | The name of the SVM. This field cannot be specified in a PATCH method. |
| uuid | string | The unique identifier of the SVM. This field cannot be specified in a PATCH method. |

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

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

Retrieve a resource tag

GET /resource-tags/{value}

Introduced In: 9.13

Retrieves a specific resource tag.

Parameters

| Name | Type | In | Required | Description |
|--------|---------------|-------|----------|---|
| value | string | path | True | <ul style="list-style-type: none"> format: key:value |
| fields | array[string] | query | False | Specify the fields to return. |

Response

Status: 200, Ok

| Name | Type | Description |
|---------------|---------|--|
| num_resources | integer | The number of resources that are currently using this tag. |
| value | string | A key:value formatted string representing the tag's name. |

Example response

```
{
  "value": "team:accounting"
}
```

Error

Status: Default, Error

| Name | Type | Description |
|-------|--------------------------------|-------------|
| error | returned_error | |

Example error

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

Definitions

See Definitions

error_arguments

| Name | Type | Description |
|---------|--------|------------------|
| code | string | Argument code |
| message | string | Message argument |

returned_error

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

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