



Cluster

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.

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
- certificate

Examples

Minimally configuring a 2-node setup


```
# Body
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 body
```

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

```
# Body
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 body
```

Modifying a cluster-wide configuration

```
# Body
body =
{
  "contact": "it@company.com"
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster" -d body
```

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":["AMEPOS0IKLKGEEDGNDEKSJDE"]}}
,"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?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

Retrieves the cluster configuration.

Learn more

- [DOC /cluster](#)

Parameters

Name	Type	In	Required	Description
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.
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.
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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
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".
location	string	
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.
ntp_servers	array[string]	Host name, IPv4 address, or IPv6 address for the external NTP time servers.
san_optimized	boolean	Specifies if this cluster is an All SAN Array.

Name	Type	Description
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.
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.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "dns_domains": [
    "example.com",
    "example2.example3.com"
  ],
  "location": "building 1",
  "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 11:20:13 UTC"
},
"name": "cluster1",
"name_servers": [
  "10.224.65.20",
  "2001:db08:a0b:12f0::1"
],
"ntp_servers": [
  "time.nist.gov",
  "10.98.19.20",
  "2610:20:6F15:15::27"
],
"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 11:20:13 UTC"
},
"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, Error

Name	Type	Description
error	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	
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, you must set the netmask length. The default value is 64. 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

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface.

Name	Type	Description
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.
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.

cluster_interfaces

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface.
uuid	string	The UUID that uniquely identifies the interface.

flash_cache

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

frus

Name	Type	Description
id	integer	
state	string	
type	string	

controller

Controller information

Name	Type	Description
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.

Name	Type	Description
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.

failure

Indicates the failure code and message.

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

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	

partners

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ports

Name	Type	Description
number	unsigned	HA port number

Name	Type	Description
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	

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.

Name	Type	Description
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.

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

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface.
uuid	string	The UUID that uniquely identifies the interface.

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, you must set the netmask length. The default value is 64. Output is always netmask length.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
gateway	string	The IPv6 address of the default router.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.

service_processor

Name	Type	Description
dhcp_enabled	boolean	Set to "true" to use DHCP to configure an IPv4 interface.
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.
link_status	string	
mac_address	string	
state	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.

nodes

Complete node information

Name	Type	Description
_links	_links	
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
ha	ha	
location	string	
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.
model	string	
name	string	
serial_number	string	
service_processor	service_processor	

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.
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	

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.

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_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

error_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

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`

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`

Learn more

- [DOC /cluster](#)

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned.

Name	Type	In	Required	Description
return_timeout	integer	query	False	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.

Request Body

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
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".
location	string	
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.
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.
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"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "dns_domains": [
    "example.com",
    "example2.example3.com"
  ],
  "location": "building 1",
  "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 11:20:13 UTC"
},
"name": "cluster1",
"name_servers": [
  "10.224.65.20",
  "2001:db08:a0b:12f0::1"
],
"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 11:20:13 UTC"
},
"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"
  }
}
```

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.
9240587	A name must be provided.

Error Code	Description
12451843	Certificate does not exist.

Name	Type	Description
error	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	
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, you must set the netmask length. The default value is 64. 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

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface.

Name	Type	Description
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.
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.

cluster_interfaces

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface.
uuid	string	The UUID that uniquely identifies the interface.

flash_cache

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

frus

Name	Type	Description
id	integer	
state	string	
type	string	

controller

Controller information

Name	Type	Description
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.

Name	Type	Description
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.

failure

Indicates the failure code and message.

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

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	

partners

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ports

Name	Type	Description
number	unsigned	HA port number

Name	Type	Description
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	

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.

Name	Type	Description
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.

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

Network interface

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface.
uuid	string	The UUID that uniquely identifies the interface.

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, you must set the netmask length. The default value is 64. Output is always netmask length.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
gateway	string	The IPv6 address of the default router.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.

service_processor

Name	Type	Description
dhcp_enabled	boolean	Set to "true" to use DHCP to configure an IPv4 interface.
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.
link_status	string	
mac_address	string	
state	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.

nodes

Complete node information

Name	Type	Description
_links	_links	
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
ha	ha	
location	string	
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.
model	string	
name	string	
serial_number	string	
service_processor	service_processor	

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.
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	

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.

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_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

cluster

Complete cluster information

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
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".
location	string	
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.
san_optimized	boolean	Specifies if this cluster is an All SAN Array.

Name	Type	Description
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.
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

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

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
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
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:

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	<p>Create aggregates based on an optimal layout recommended by the system.</p> <ul style="list-style-type: none"> • Default value:

Request Body

Name	Type	Description
_links	_links	
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.
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.
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.

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "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": [
      "AMEPOSIOIKLKGEEEEEDGNDEKSJDE"
    ]
  },
  "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 11:20:13 UTC"
},
"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": {
    "flash_cache": [
        {
            "capacity": 1024000000000,
            "firmware_version": "NA05",
            "hardware_revision": "A1",
            "model": "X1970A",
            "part_number": "119-00207",
            "serial_number": "A22P5061550000187",
            "slot": "6-1",
            "state": "string"
        }
    ],
    "frus": [
        {
            "id": 0,
            "state": "string",
            "type": "string"
        }
    ],
    "over_temperature": "string"
},
"date": "2019-04-17 11:49:26 -0400",
"ha": {
    "giveback": {
        "failure": {
            "code": 852126,
            "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
        },
        "state": "failed"
    },
    "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"
}
},
"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": "string",
"model": "FAS3070",
"name": "node-01",
"serial_number": "4048820-60-9",

```

```

"service_processor": {
  "dhcp_enabled": null,
  "firmware_version": "string",
  "ipv4_interface": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "link_status": "string",
  "mac_address": "string",
  "state": "string"
},
"state": "string",
"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": "string"
}
},
],
"ntp_servers": [
  "time.nist.gov",
  "10.98.19.20",
  "2610:20:6F15:15::27"
],
"password": "mypassword",
"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 11:20:13 UTC"
  },
  "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"
  }
}

```

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.
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.

Name	Type	Description
error	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	
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, you must set the netmask length. The default value is 64. 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

Name	Type	Description
_links	_links	
ip	ip	IP information
name	string	The name of the interface.

Name	Type	Description
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.
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.
uuid	string	The UUID that uniquely identifies the interface.

flash_cache

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

frus

Name	Type	Description
id	integer	
state	string	
type	string	

controller

Controller information

Name	Type	Description
flash_cache	array[flash_cache]	A list of Flash-Cache devices. Only returned when requested by name.

Name	Type	Description
frus	array[frus]	List of FRUs on the node. Only returned when requested by name.
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.

failure

Indicates the failure code and message.

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

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	

partners

Name	Type	Description
_links	_links	
name	string	
uuid	string	

ports

Name	Type	Description
number	unsigned	HA port number

Name	Type	Description
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	

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.

Name	Type	Description
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.

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.
uuid	string	The UUID that uniquely identifies the interface.

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.

Name	Type	Description
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, you must set the netmask length. The default value is 64. Output is always netmask length.

ipv6_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv6 address
gateway	string	The IPv6 address of the default router.
netmask	integer	The IPv6 netmask/prefix length. The default value is 64 with a valid range of 1 to 127.

service_processor

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.
link_status	string	
mac_address	string	
state	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.

Name	Type	Description
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	<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
ha	ha	
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.

Name	Type	Description
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.
model	string	
name	string	
serial_number	string	
service_processor	service_processor	

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.
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	

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.

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_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

cluster

Complete cluster information

Name	Type	Description
_links	_links	
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	
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	Type	Description
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.
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.
uuid	string	

Name	Type	Description
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

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",
      "_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`

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
id	string	query	False	Filter by id
shelves.uid	string	query	False	Filter by shelves.uid
frus.state	string	query	False	Filter by frus.state
frus.id	string	query	False	Filter by frus.id
frus.type	string	query	False	Filter by frus.type
state	string	query	False	Filter by state
nodes.uuid	string	query	False	Filter by nodes.uuid
nodes.name	string	query	False	Filter by nodes.name
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.
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.
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"
    }
  },
  "records": [
    {
      "frus": [
        {
          "id": "string",
          "state": "string",
          "type": "string"
        }
      ],
      "id": "021352005981",
      "nodes": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        }
      ],
      "shelves": [
        {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "uid": 7777841915827391056
        }
      ],
      "state": "string"
    }
  ]
}

```

Error

Status: Default, Error

Name	Type	Description
error	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	

nodes

Name	Type	Description
_links	_links	
name	string	
uuid	string	

shelf_reference

Shelf

Name	Type	Description
_links	_links	
uid	string	

chassis

Name	Type	Description
frus	array[frus]	List of FRUs in chassis.
id	string	
nodes	array[nodes]	List of nodes in 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

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}`

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 chassis.
id	string	
nodes	array[nodes]	List of nodes in chassis.
shelves	array[shelf_reference]	List of shelves in chassis.
state	string	

Example response

```
{
  "frus": [
    {
      "id": "string",
      "state": "string",
      "type": "string"
    }
  ],
  "id": "021352005981",
  "nodes": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ],
  "shelves": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "uid": 7777841915827391056
    }
  ],
  "state": "string"
}
```

Error

Status: Default, Error

Name	Type	Description
error	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	

nodes

Name	Type	Description
_links	_links	
name	string	
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

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 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

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.

Learn more

- [DOC /cluster/jobs](#)

Parameters

Name	Type	In	Required	Description
start_time	string	query	False	Filter by start_time
state	string	query	False	Filter by state
description	string	query	False	Filter by description
message	string	query	False	Filter by message
end_time	string	query	False	Filter by end_time
uuid	string	query	False	Filter by uuid
code	integer	query	False	Filter by code
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.
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.
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	
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",
      "message": "Complete: Successful",
      "start_time": "string",
      "state": "string",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  ]
}
```

Error

Status: Default, Error

Name	Type	Description
error	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

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.
message	string	A message corresponding to the state of the job providing additional details about the current state.
start_time	string	The time the job started.
state	string	The state of the job.
uuid	string	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

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}`

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.

Learn more

- [DOC /cluster/jobs](#)

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.
message	string	A message corresponding to the state of the job providing additional details about the current state.
start_time	string	The time the job started.
state	string	The state of the job.
uuid	string	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "code": 0,
  "description": "App Snapshot Job",
  "end_time": "string",
  "message": "Complete: Successful",
  "start_time": "string",
  "state": "string",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

Status: Default, Error

Name	Type	Description
error	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

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}`

Updates the state of a specific asynchronous job.

Learn more

- [DOC /cluster/jobs](#)

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Job UUID
action	string	query	False	<p>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.</p> <ul style="list-style-type: none"> enum: ["pause", "resume", "cancel"]

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
459753	Command execution failed with custom error from the program.
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	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

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 that is a member of the cluster.
- Cluster - Permits the feature to be used by any node that is a member of the 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 two formats:

- 26-character key
- NetApp License File (NLF)

The following is an example of a 26-character key:

```
AMEPOSOIKLKGEEEEEDGNDEKSJDE
```

The following is an example of an NLF 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"
}
```

You can use this API to submit either 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
GET /cluster/licensing/licenses/?fields=*&name=fabricpool"

# Response
200 OK

# JSON Body
{
  "records": [
    {
      "name": "fabricpool",
      "scope": "cluster",
      "state": "compliant",
      "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 installed licenses

This example retrieves a collection containing all packages (except base) that have installed licenses.

```
# API
GET /cluster/licensing/licenses/?fields=*&name=!base
```

Response

200 OK

JSON Body

```
{
  "records": [
    {
      "name": "nfs",
      "scope": "node",
      "state": "compliant",
      "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",
      "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"
    }
  }
}
```



```
}  
}  
}
```

Installing an NLF license

This example installs a single license in the NLF format.



You must escape all the double quotes and backslash characters of the JSON license before it can be placed in the POST request.

```
# API  
POST /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 26-character key

This example installs a single 26-character key formatted license.

```
# API  
POST /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
POST /cluster/licensing/licenses/

# JSON Body
{
  "keys" : [ "AAAAAAAAAAAAAAAAAAAAAAAAAAAA",
             "BBBBBBBBBBBBBBBBBBBBBBBBBBBB" ]
}

# Response
201 Created
```

Retrieve license packages

GET /cluster/licensing/licenses

Retrieves a collection of license packages.

Related ONTAP commands

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

Learn more

- [DOC /cluster/licensing/licenses](#)

Parameters

Name	Type	In	Required	Description
state	string	query	False	Filter by state
scope	string	query	False	Filter by scope
licenses.expiry_time	string	query	False	Filter by licenses.expiry_time
licenses.evaluation	boolean	query	False	Filter by licenses.evaluation
licenses.start_time	string	query	False	Filter by licenses.start_time
licenses.active	boolean	query	False	Filter by licenses.active

Name	Type	In	Required	Description
licenses.compliance.state	string	query	False	Filter by licenses.compliance.state
licenses.serial_number	string	query	False	Filter by licenses.serial_number
licenses.owner	string	query	False	Filter by licenses.owner
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	string	query	False	Filter by 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.
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.

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"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "licenses": [
        {
          "capacity": {
            "maximum_size": 0,
            "used_size": 0
          },
          "compliance": {
            "state": "compliant"
          },
          "expiry_time": "2019-03-02 19:00:00 UTC",
          "owner": "cluster1",
          "serial_number": "123456789",
          "start_time": "2019-02-02 19:00:00 UTC"
        }
      ],
      "name": "NFS",
      "scope": "string",
      "state": "compliant"
    }
  ]
}
```

Error

Status: Default, Error

Name	Type	Description
error	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	

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.

Name	Type	Description
expiry_time	string	Date and time when the license expires.
owner	string	Cluster, node or license manager that owns the license.
serial_number	string	Serial number of the license.
start_time	string	Date and time when the license starts.

records

Name	Type	Description
_links	_links	
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

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.

Install one or more feature licenses

POST `/cluster/licensing/licenses`

Installs one or more feature licenses.

Required properties

- `keys` - Array containing a list of NLF or 26-character license keys.

Related ONTAP commands

- `system license add`

Learn more

- [DOC /cluster/licensing/licenses](#)

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned.

Request Body

Name	Type	Description
<code>_links</code>	_links	
<code>keys</code>	array[string]	
<code>licenses</code>	array[licenses]	Installed licenses of the package.
<code>name</code>	string	Name of the license.
<code>scope</code>	string	Scope of the license.
<code>state</code>	string	Summary state of package based on all installed licenses.

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "keys": [
    "AMEPOSIOIKLKGEEEEEDGNDEKSJDE"
  ],
  "licenses": [
    {
      "capacity": {
        "maximum_size": 0,
        "used_size": 0
      },
      "compliance": {
        "state": "compliant"
      },
      "expiry_time": "2019-03-02 19:00:00 UTC",
      "owner": "cluster1",
      "serial_number": "123456789",
      "start_time": "2019-02-02 19:00:00 UTC"
    }
  ],
  "name": "NFS",
  "scope": "string",
  "state": "compliant"
}
```

Response

Status: 201, Created

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"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "keys": [
        "AMEPOSOIKLKGEEEEEDGNDEKSJDE"
      ],
      "licenses": [
        {
          "capacity": {
            "maximum_size": 0,
            "used_size": 0
          },
          "compliance": {
            "state": "compliant"
          },
          "expiry_time": "2019-03-02 19:00:00 UTC",
          "owner": "cluster1",
          "serial_number": "123456789",
          "start_time": "2019-02-02 19:00:00 UTC"
        }
      ],
      "name": "NFS",
      "scope": "string",
      "state": "compliant"
    }
  ]
}
```

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
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
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

Error Code	Description
655294469	License does not apply to the platform
655294470	License does not apply to the product

Name	Type	Description
errors	array[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	

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.
owner	string	Cluster, node or license manager that owns the license.

Name	Type	Description
serial_number	string	Serial number of the license.
start_time	string	Date and time when the license starts.

license_package

Name	Type	Description
_links	_links	
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.

[_links](#)

Name	Type	Description
next	href	
self	href	

records

Name	Type	Description
_links	_links	
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

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 a cluster license package

Cluster licensing licenses name endpoint overview

Overview

Manages a specific instance of a license package.

Examples

Retrieving information for a specific license package

This example shows how to retrieve information about the specific feature package `fabricpool`.


```
# API
GET /cluster/licensing/licenses/fabricpool/

# Response
200 OK

# JSON Body
{
  "name": "fabricpool",
  "scope": "cluster",
  "state": "compliant",
  "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
DELETE /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
DELETE /cluster/licensing/licenses/nfs/?serial_number=*

# JSON Body
{}

# Response
200 OK
```

Delete a license

DELETE /cluster/licensing/licenses/{name}

Deletes a license.

Related ONTAP commands

- `system license delete`

Learn more

- [DOC /cluster/licensing/licenses/{name}](#)

Parameters

Name	Type	In	Required	Description
name	string	path	True	
serial_number	string	query	True	

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
66846823	A FlexCache license that is still in use cannot be deleted

Name	Type	Description
error	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

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}

Retrieves a specific license package.

Related ONTAP commands

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

Learn more

- [DOC /cluster/licensing/licenses/{name}](#)

Parameters

Name	Type	In	Required	Description
name	string	path	True	Name of the license package.
state	string	query	False	Filter by state

Name	Type	In	Required	Description
scope	string	query	False	Filter by scope
licenses.expiry_time	string	query	False	Filter by licenses.expiry_time
licenses.evaluation	boolean	query	False	Filter by licenses.evaluation
licenses.start_time	string	query	False	Filter by licenses.start_time
licenses.active	boolean	query	False	Filter by licenses.active
licenses.compliance.state	string	query	False	Filter by licenses.compliance.state
licenses.serial_number	string	query	False	Filter by licenses.serial_number
licenses.owner	string	query	False	Filter by licenses.owner
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	string	query	False	Filter by name
fields	array[string]	query	False	Specify the fields to return.

Response

Status: 200, Ok

Name	Type	Description
_links	_links	

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.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "licenses": [
    {
      "capacity": {
        "maximum_size": 0,
        "used_size": 0
      },
      "compliance": {
        "state": "compliant"
      },
      "expiry_time": "2019-03-02 19:00:00 UTC",
      "owner": "cluster1",
      "serial_number": "123456789",
      "start_time": "2019-02-02 19:00:00 UTC"
    }
  ],
  "name": "NFS",
  "scope": "string",
  "state": "compliant"
}
```

Error

Status: Default, Error

Name	Type	Description
error	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	

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.
owner	string	Cluster, node or license manager that owns the license.

Name	Type	Description
serial_number	string	Serial number of the license.
start_time	string	Date and time when the license starts.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

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 historical performance metrics for the cluster

GET `/cluster/metrics`

Retrieves historical performance metrics for the cluster.

Parameters

Name	Type	In	Required	Description
status	string	query	False	Filter by status
timestamp	string	query	False	Filter by timestamp
iops.other	integer	query	False	Filter by iops.other
iops.write	integer	query	False	Filter by iops.write

Name	Type	In	Required	Description
iops.read	integer	query	False	Filter by iops.read
iops.total	integer	query	False	Filter by iops.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
throughput.total	integer	query	False	Filter by throughput.total
duration	string	query	False	Filter by duration
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
latency.total	integer	query	False	Filter by latency.total
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
fields	array[string]	query	False	Specify the fields to return.

Name	Type	In	Required	Description
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
The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1	interval	string	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"
    }
  },
  "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 11:20:13 UTC"
    }
  ]
}
```

Error

Status: Default, Error

Name	Type	Description
error	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

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.

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
body =
{
  "cluster_interface": {
    "ip": {
      "address": "1.1.1.1"
    }
  }
}

# Request
curl -X POST "https://<mgmt-ip>/api/cluster/nodes" -d body
```

Adding multiple nodes in the same request and creating recommended aggregates

```
# Body
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 body
```

Modifying a cluster-wide configuration

```
# Body
body =
{
  "name": "renamedNode",
  "location": "newLocation"
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster/nodes" -d body
```

Shutting down a node

```
curl -X PATCH "https://<mgmt-ip>/api/cluster/nodes/{uuid}?action=shutdown"
```

Deleting a node from a cluster

```
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}"  
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 takeover and giveback failure codes and messages

```
#Request
curl -siku admin -X GET "https://+++<mgmt-
ip>+++/api/cluster/nodes?fields=ha"+++</mgmt-ip>+++

#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"
    }
}
}
}

```

[[ID18cdb7a25c7fbdca73eedd1c53556cbd]]

= Retrieve nodes in a cluster

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-

```
block]#`/cluster/nodes`#
```

Retrieves the nodes in the cluster.

== Related ONTAP commands

* `system node show`

== Learn more

* xref:{relative_path}cluster_nodes_endpoint_overview.html[DOC
/cluster/nodes]

== Parameters

```
[cols=5*,options=header]  
|===
```

```
|Name  
|Type  
|In  
|Required  
|Description
```

```
|model  
|string  
|query  
|False  
a|Filter by model
```

```
|service_processor.link_status  
|string  
|query  
|False  
a|Filter by service_processor.link_status
```

```
|service_processor.dhcp_enabled  
|boolean  
|query  
|False  
a|Filter by service_processor.dhcp_enabled
```

```
|service_processor.firmware_version
|string
|query
|False
a|Filter by service_processor.firmware_version
```

```
|service_processor.ipv6_interface.address
|string
|query
|False
a|Filter by service_processor.ipv6_interface.address
```

```
|service_processor.ipv6_interface.netmask
|integer
|query
|False
a|Filter by service_processor.ipv6_interface.netmask
```

```
|service_processor.ipv6_interface.gateway
|string
|query
|False
a|Filter by service_processor.ipv6_interface.gateway
```

```
|service_processor.ipv4_interface.gateway
|string
|query
|False
a|Filter by service_processor.ipv4_interface.gateway
```

```
|service_processor.ipv4_interface.address
|string
|query
|False
a|Filter by service_processor.ipv4_interface.address
```

```
|service_processor.ipv4_interface.netmask
|string
|query
|False
```

```
a|Filter by service_processor.ipv4_interface.netmask
```

```
|service_processor.state
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by service_processor.state
```

```
|service_processor.mac_address
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by service_processor.mac_address
```

```
|uuid
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by uuid
```

```
|cluster_interfaces.name
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by cluster_interfaces.name
```

```
|cluster_interfaces.ip.address
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by cluster_interfaces.ip.address
```

```
|cluster_interfaces.uuid
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by cluster_interfaces.uuid
```

```
|date
```

```
|string
```

```
|query
|False
a|Filter by date
```

```
|name
|string
|query
|False
a|Filter by name
```

```
|membership
|string
|query
|False
a|Filter by membership
```

```
|state
|string
|query
|False
a|Filter by state
```

```
|serial_number
|string
|query
|False
a|Filter by serial_number
```

```
|system_machine_type
|string
|query
|False
a|Filter by system_machine_type
```

```
|vm.provider_type
|string
|query
|False
a|Filter by vm.provider_type
```

```
|location
|string
|query
|False
a|Filter by location

|ha.giveback.failure.message
|string
|query
|False
a|Filter by ha.giveback.failure.message

|ha.giveback.failure.code
|integer
|query
|False
a|Filter by ha.giveback.failure.code

|ha.giveback.state
|string
|query
|False
a|Filter by ha.giveback.state

|ha.takeover.failure.code
|integer
|query
|False
a|Filter by ha.takeover.failure.code

|ha.takeover.failure.message
|string
|query
|False
a|Filter by ha.takeover.failure.message

|ha.takeover.state
|string
|query
|False
a|Filter by ha.takeover.state
```

```
|ha.auto_giveback
|boolean
|query
|False
a|Filter by ha.auto_giveback
```

```
|ha.partners.uuid
|string
|query
|False
a|Filter by ha.partners.uuid
```

```
|ha.partners.name
|string
|query
|False
a|Filter by ha.partners.name
```

```
|ha.ports.number
|unsigned
|query
|False
a|Filter by ha.ports.number
```

```
|ha.ports.state
|string
|query
|False
a|Filter by ha.ports.state
```

```
|ha.enabled
|boolean
|query
|False
a|Filter by ha.enabled
```

```
|version.generation
|integer
|query
```

```

|False
a|Filter by version.generation

|version.major
|integer
|query
|False
a|Filter by version.major

|version.minor
|integer
|query
|False
a|Filter by version.minor

|version.full
|string
|query
|False
a|Filter by version.full

|system_id
|string
|query
|False
a|Filter by system_id

|controller.frus.type
|string
|query
|False
a|Filter by controller.frus.type

|controller.frus.id
|integer
|query
|False
a|Filter by controller.frus.id

|controller.frus.state

```



```
|string
|query
|False
a|Filter by controller.frus.state

|controller.flash_cache.firmware_version
|string
|query
|False
a|Filter by controller.flash_cache.firmware_version

|controller.flash_cache.slot
|string
|query
|False
a|Filter by controller.flash_cache.slot

|controller.flash_cache.part_number
|string
|query
|False
a|Filter by controller.flash_cache.part_number

|controller.flash_cache.state
|string
|query
|False
a|Filter by controller.flash_cache.state

|controller.flash_cache.hardware_revision
|string
|query
|False
a|Filter by controller.flash_cache.hardware_revision

|controller.flash_cache.serial_number
|string
|query
|False
a|Filter by controller.flash_cache.serial_number
```

```
|controller.flash_cache.model
|string
|query
|False
a|Filter by controller.flash_cache.model
```

```
|controller.flash_cache.capacity
|integer
|query
|False
a|Filter by controller.flash_cache.capacity
```

```
|controller.over_temperature
|string
|query
|False
a|Filter by controller.over_temperature
```

```
|uptime
|integer
|query
|False
a|Filter by uptime
```

```
|management_interfaces.name
|string
|query
|False
a|Filter by management_interfaces.name
```

```
|management_interfaces.ip.address
|string
|query
|False
a|Filter by management_interfaces.ip.address
```

```
|management_interfaces.uuid
|string
|query
|False
```

a|Filter by management_interfaces.uuid

|vendor_serial_number

|string

|query

|False

a|Filter by vendor_serial_number

|fields

|array[string]

|query

|False

a|Specify the fields to return.

|max_records

|integer

|query

|False

a|Limit the number of records returned.

|return_records

|boolean

|query

|False

a|The default is true for GET calls. When set to false, only the number of records is returned.

|return_timeout

|integer

|query

|False

a|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.

|order_by

|array[string]

|query

|False

a|Order results by specified fields and optional [asc|desc] direction.

Default direction is 'asc' for ascending.

|===

== Response

Status: 200, Ok

[cols=3*,options=header]

|===

|Name

|Type

|Description

|_links

|link:#_links[_links]

a|

|num_records

|integer

a|

|records

|array[link:#records[records]]

a|

|===

.Example response

[%collapsible%closed]

====

[source,json,subs=+macros]

{

 "_links": {

 "next": {

 "href": "/api/resourcelink"

 },

 "self": {

 "href": "/api/resourcelink"

 }

 },

 "records": [

 {

 "_links": {

 "self": {

```

        "href": "/api/resourcelink"
    }
},
"cluster_interfaces": [
    {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "ip": {
            "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
],
"controller": {
    "flash_cache": [
        {
            "capacity": 1024000000000,
            "firmware_version": "NA05",
            "hardware_revision": "A1",
            "model": "X1970A",
            "part_number": "119-00207",
            "serial_number": "A22P5061550000187",
            "slot": "6-1",
            "state": "string"
        }
    ],
    "frus": [
        {
            "id": 0,
            "state": "string",
            "type": "string"
        }
    ],
    "over_temperature": "string"
},
"date": "2019-04-17 11:49:26 -0400",
"ha": {
    "giveback": {
        "failure": {
            "code": 852126,
            "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
        }
    }
}

```

```

    },
    "state": "failed"
  },
  "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"
  }
},
"location": "rack 2 row 5",
"management_interfaces": [
  {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"membership": "string",
"model": "FAS3070",

```

```

"name": "node-01",
"serial_number": "4048820-60-9",
"service_processor": {
  "firmware_version": "string",
  "ipv4_interface": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "ipv6_interface": {
    "address": "fd20:8b1e:b255:5011:10:141:4:97",
    "gateway": "fd20:8b1e:b255:5011:10::1",
    "netmask": 64
  },
  "link_status": "string",
  "mac_address": "string",
  "state": "string"
},
"state": "string",
"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": "string"
}
}
]
}
====

== Error

```

Status: Default, Error

```

[cols=3*,options=header]
|===
|Name

```

```

|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

```



```

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:href[href]
a|

|self
|link:href[href]
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:href[href]
a|

|===

[#node_setup_ip]
[.api-collapsible-fifth-title]

```

```
node_setup_ip
```

The IP configuration for cluster setup.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|address
```

```
|string
```

```
a|IPv4 or IPv6 address
```

```
|===
```

```
[#cluster_interface]
```

```
[.api-collapsible-fifth-title]
```

```
cluster_interface
```

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

```
[#ip]
```

```
[.api-collapsible-fifth-title]
```

```
ip
```

IP information

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|address
```

```
|string
```

```
a|IPv4 or IPv6 address
```

```
|===
```

```
[#cluster_interfaces]
```

```
[.api-collapsible-fifth-title]
```

```
cluster_interfaces
```

Network interface

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|ip
```

```
|link:#ip[ip]
```

```
a|IP information
```

```
|name
```

```
|string
```

```
a|The name of the interface.
```

```
|uuid
```

```
|string
```

```
a|The UUID that uniquely identifies the interface.
```

```
|===
```

```
[#flash_cache]
```

```
[.api-collapsible-fifth-title]
```

```
flash_cache
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|capacity
```

```
|integer
```

```
a|Size in bytes
```

```
|firmware_version
|string
a|
```

```
|hardware_revision
|string
a|
```

```
|model
|string
a|
```

```
|part_number
|string
a|
```

```
|serial_number
|string
a|
```

```
|slot
|string
a|
```

```
|state
|string
a|
```

```
|===
```

```
[#frus]
[.api-collapsible-fifth-title]
frus
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|id
|integer
a|
```

```

|state
|string
a|

|type
|string
a|

|===

[#controller]
[.api-collapsible-fifth-title]
controller

Controller information

[cols=3*,options=header]
|===
|Name
|Type
|Description

|flash_cache
|array[link:#flash_cache[flash_cache]]
a|A list of Flash-Cache devices. Only returned when requested by name.

|frus
|array[link:#frus[frus]]
a|List of FRUs on the node. Only returned when requested by name.

|over_temperature
|string
a|Specifies whether the hardware is currently operating outside of its
recommended temperature range. The hardware shuts down if the temperature
exceeds critical thresholds.

|===

[#failure]
[.api-collapsible-fifth-title]
failure

```

Indicates the failure code and message.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|code
```

```
|integer
```

```
a|Message code
```

```
|message
```

```
|string
```

```
a|Detailed message based on the state.
```

```
|===
```

```
[#giveback]
```

```
[.api-collapsible-fifth-title]
```

```
giveback
```

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

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|failure
```

```
|link:#failure[failure]
```

```
a|Indicates the failure code and message.
```

```
|state
```

```
|string
```

```
a|
```

```
|===
```

```

[#partners]
[.api-collapsible-fifth-title]
partners

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|

|uuid
|string
a|

|===

[#ports]
[.api-collapsible-fifth-title]
ports

[cols=3*,options=header]
|===
|Name
|Type
|Description

|number
|unsigned
a|HA port number

|state
|string
a|HA port state:

* _down_ - Logical HA link is down.

```

- * `_initialized_` - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port.
- * `_armed_` - Logical HA link is armed. The physical link is up and the subnet manager started but did not yet complete configuring the port.
- * `_active_` - Logical HA link is active.
- * `_reserved_` - Logical HA link is active, but the physical link is down.

|===

```
[#takeover]
[.api-collapsible-fifth-title]
takeover
```

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

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|failure
|link:#failure[failure]
a|Indicates the failure code and message.
```

```
|state
|string
a|
```

|===

```
[#ha]
[.api-collapsible-fifth-title]
ha
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```



```

|auto_giveback
|boolean
a|Specifies whether giveback is automatically initiated when the node that
owns the storage is ready.

|enabled
|boolean
a|Specifies whether or not storage failover is enabled.

|giveback
|link:#giveback[giveback]
a|Represents the state of the node that is giving storage back to its HA
partner.

|partners
|array[link:#partners[partners]]
a|Nodes in this node's High Availability (HA) group.

|ports
|array[link:#ports[ports]]
a|

|takeover
|link:#takeover[takeover]
a|This represents the state of the node that is taking over storage from
its HA partner.

|===

[#management_interface]
[.api-collapsible-fifth-title]
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 managment
interfaces of other nodes.

[#management_interfaces]
[.api-collapsible-fifth-title]
management_interfaces

```

Network interface

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|ip
```

```
|link:#ip[ip]
```

```
a|IP information
```

```
|name
```

```
|string
```

```
a|The name of the interface.
```

```
|uuid
```

```
|string
```

```
a|The UUID that uniquely identifies the interface.
```

```
|===
```

```
[#ipv4_interface]
```

```
[.api-collapsible-fifth-title]
```

```
ipv4_interface
```

Object to setup an interface along with its default router.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|address
```

```
|string
```

```
a|IPv4 or IPv6 address
```

```

|gateway
|string
a|The IPv4 or IPv6 address of the default router.

|netmask
|string
a|Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, you
must set the netmask length. The default value is 64. Output is always
netmask length.

```

```

|===

```

```

[#ipv6_interface]
[.api-collapsible-fifth-title]
ipv6_interface

```

Object to setup an interface along with its default router.

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|address
|string
a|IPv6 address

```

```

|gateway
|string
a|The IPv6 address of the default router.

```

```

|netmask
|integer
a|The IPv6 netmask/prefix length. The default value is 64 with a valid
range of 1 to 127.

```

```

|===

```

```

[#service_processor]
[.api-collapsible-fifth-title]
service_processor

[cols=3*,options=header]
|===
|Name
|Type
|Description

|dhcp_enabled
|boolean
a|Set to "true" to use DHCP to configure an IPv4 interface.

|firmware_version
|string
a|The version of firmware installed.

|ipv4_interface
|link:#ipv4_interface[ipv4_interface]
a|Object to setup an interface along with its default router.

|ipv6_interface
|link:#ipv6_interface[ipv6_interface]
a|Object to setup an interface along with its default router.

|link_status
|string
a|

|mac_address
|string
a|

|state
|string
a|

|===

```

```
[#version]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|full
|string
a|The full cluster version string.

|generation
|integer
a|The generation portion of the version.

|major
|integer
a|The major portion of the version.

|minor
|integer
a|The minor portion of the version.

|===

[#vm]
[.api-collapsible-fifth-title]
vm

[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|provider_type
|string
a|Cloud provider where the VM is hosted.
```

```
|===
```

```
[#records]
[.api-collapsible-fifth-title]
records
```

Complete node information

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|cluster_interfaces
|array[link:#cluster_interfaces[cluster_interfaces]]
a|
```

```
|controller
|link:#controller[controller]
a|Controller information
```

```
|date
|string
a|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.
```

```
* example: 2019-04-17 11:49:26 -0400
* format: date-time
* readOnly: 1
```

```

|ha
|link:#ha[ha]
a|

|location
|string
a|

|management_interfaces
|array[link:#management_interfaces[management_interfaces]]
a|

|membership
|string
a|Possible values:

* _available_ - 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 _available_ to scan for nodes on
the cluster network. Nodes that have a membership of "available" are
returned automatically before a cluster is created.
* _joining_ - 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.
* _member_ - Nodes that are members have successfully joined the cluster.

|model
|string
a|

|name
|string
a|

|serial_number
|string
a|

|service_processor
|link:#service_processor[service_processor]
a|

|state
|string

```

a|State of the node:

- * `_up_` - Node is up and operational.
- * `_booting_` - Node is booting up.
- * `_down_` - Node has stopped or is dumping core.
- * `_taken_over_` - Node has been taken over by its HA partner and is not yet waiting for giveback.
- * `_waiting_for_giveback_` - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.
- * `_degraded_` - Node has one or more critical services offline.
- * `_unknown_` - Node or its HA partner cannot be contacted and there is no information on the node's state.

|system_id
|string
a|

|system_machine_type
|string
a|OEM system machine type.

|uptime
|integer
a|The total time, in seconds, that the node has been up.

|uuid
|string
a|

|vendor_serial_number
|string
a|OEM vendor serial number.

|version
|link:#version[version]
a|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
|link:#vm[vm]
a|

|===

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments
```

```
[cols=3*,options=header]
```

|===

```
|Name
|Type
|Description
```

```
|code
|string
a|Argument code
```

```
|message
|string
a|Message argument
```

|===

```
[#error]
[.api-collapsible-fifth-title]
error
```

```
[cols=3*,options=header]
```

|===

```
|Name
|Type
|Description
```

```
|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments
```

```
|code
|string
a|Error code
```

```

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[IDed5ec1e8fac47a8010adfe12f9f82b0b]]
= Add a node or nodes to a cluster

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/cluster/nodes`#

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`

== Learn more

* xref:{relative_path}cluster_nodes_endpoint_overview.html[DOC
/c/cluster/nodes]

== Parameters

```

```
[cols=5*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|return_timeout
```

```
|integer
```

```
|query
```

```
|False
```

a|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.

* Default value: 1

```
|return_records
```

```
|boolean
```

```
|query
```

```
|False
```

a|The default is false. If set to true, the records are returned.

* Default value: 1

```
|create_recommended_aggregates
```

```
|boolean
```

```
|query
```

```
|False
```

a|Creates aggregates based on an optimal layout recommended by the system.

* Default value:

```
|===
```

```
== Request Body
```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|cluster_interface
|link:#cluster_interface[cluster_interface]
a|The cluster network IP address of the node to be added.

|cluster_interfaces
|array[link:#cluster_interfaces[cluster_interfaces]]
a|

|controller
|link:#controller[controller]
a|Controller information

|date
|string
a|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.

* example: 2019-04-17 11:49:26 -0400
* format: date-time
* readOnly: 1

|ha
|link:#ha[ha]
a|

|location
|string
a|

|management_interface
|link:#management_interface[management_interface]

```

```

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

|management_interfaces
|array[link:#management_interfaces[management_interfaces]]
a|

|membership
|string
a|Possible values:

* _available_ - 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 _available_ to scan for nodes on
the cluster network. Nodes that have a membership of "available" are
returned automatically before a cluster is created.
* _joining_ - 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.
* _member_ - Nodes that are members have successfully joined the cluster.

|model
|string
a|

|name
|string
a|

|serial_number
|string
a|

|service_processor
|link:#service_processor[service_processor]
a|

|state
|string
a|State of the node:

* _up_ - Node is up and operational.

```

- * `_booting_` - Node is booting up.
- * `_down_` - Node has stopped or is dumping core.
- * `_taken_over_` - Node has been taken over by its HA partner and is not yet waiting for giveback.
- * `_waiting_for_giveback_` - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.
- * `_degraded_` - Node has one or more critical services offline.
- * `_unknown_` - Node or its HA partner cannot be contacted and there is no information on the node's state.

|system_id

|string

a|

|system_machine_type

|string

a|OEM system machine type.

|uptime

|integer

a|The total time, in seconds, that the node has been up.

|uuid

|string

a|

|vendor_serial_number

|string

a|OEM vendor serial number.

|version

|link:#version[version]

a|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

|link:#vm[vm]

a|

|===

```
.Example request
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "_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": {
    "flash_cache": [
      {
        "capacity": 1024000000000,
        "firmware_version": "NA05",
        "hardware_revision": "A1",
        "model": "X1970A",
        "part_number": "119-00207",
        "serial_number": "A22P5061550000187",
        "slot": "6-1",
        "state": "string"
      }
    ],
    "frus": [
      {
        "id": 0,
```

```

        "state": "string",
        "type": "string"
    }
],
    "over_temperature": "string"
},
    "date": "2019-04-17 11:49:26 -0400",
    "ha": {
        "giveback": {
            "failure": {
                "code": 852126,
                "message": "Failed to initiate giveback. Run the \"storage
failover show-giveback\" command for more information."
            },
            "state": "failed"
        },
        "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"
        }
    },
    "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": "string",
  "model": "FAS3070",
  "name": "node-01",
  "serial_number": "4048820-60-9",
  "service_processor": {
    "dhcp_enabled": null,
    "firmware_version": "string",
    "ipv4_interface": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    },
    "link_status": "string",
    "mac_address": "string",
    "state": "string"
  },
  "state": "string",
  "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": "string"
  }
}

```

```

    }
}
=====

```

== Response

Status: 202, Accepted

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===

.Example response
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
=====

== 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.

| 131727360
| A node cannot be added to the cluster. This is a generic code, see
response message for details.
|===
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|error
```

```
|link:#error[error]
```

```
a|
```

```
|===
```

```
.Example error
```

```
[%collapsible%closed]
```

```
=====
```

```
[source,json,subs=+macros]
```

```
{
```

```
  "error": {
```

```
    "arguments": [
```

```

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

```

====

== Definitions

```

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block

```

====

```

[#href]
[.api-collapsible-fifth-title]
href

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|href
|string
a|

```

|===

```

[#_links]
[.api-collapsible-fifth-title]
_links

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|self
|link:#href[href]
a|

|===

[#node_setup_ip]
[.api-collapsible-fifth-title]
node_setup_ip

The IP configuration for cluster setup.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|address
|string
a|IPv4 or IPv6 address

|===

[#cluster_interface]
[.api-collapsible-fifth-title]
cluster_interface

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


[cols=3*,options=header]
|===
|Name
|Type
|Description

|ip
|link:#node_setup_ip[node_setup_ip]
a|The IP configuration for cluster setup.

|===

```

```
[#ip]
[.api-collapsible-fifth-title]
ip
```

IP information

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|address
|string
a|IPv4 or IPv6 address
```

```
|===
```

```
[#cluster_interfaces]
[.api-collapsible-fifth-title]
cluster_interfaces
```

Network interface

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
 |_links
|link:#_links[_links]
a|
```

```
|ip
|link:#ip[ip]
a|IP information
```

```
|name
|string
```

```

a|The name of the interface.

|uuid
|string
a|The UUID that uniquely identifies the interface.

|===

[#flash_cache]
[.api-collapsible-fifth-title]
flash_cache

[cols=3*,options=header]
|===
|Name
|Type
|Description

|capacity
|integer
a|Size in bytes

|firmware_version
|string
a|

|hardware_revision
|string
a|

|model
|string
a|

|part_number
|string
a|

|serial_number
|string
a|

|slot

```

```

|string
a|

|state
|string
a|

|===

[#frus]
[.api-collapsible-fifth-title]
frus

[cols=3*,options=header]
|===
|Name
|Type
|Description

|id
|integer
a|

|state
|string
a|

|type
|string
a|

|===

[#controller]
[.api-collapsible-fifth-title]
controller

Controller information

[cols=3*,options=header]
|===
|Name
|Type
|Description

```



```
|flash_cache
|array[link:#flash_cache[flash_cache]]
a|A list of Flash-Cache devices. Only returned when requested by name.
```

```
|frus
|array[link:#frus[frus]]
a|List of FRUs on the node. Only returned when requested by name.
```

```
|over_temperature
|string
a|Specifies whether the hardware is currently operating outside of its
recommended temperature range. The hardware shuts down if the temperature
exceeds critical thresholds.
```

```
|===
```

```
[#failure]
[.api-collapsible-fifth-title]
failure
```

Indicates the failure code and message.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|integer
a|Message code
```

```
|message
|string
a|Detailed message based on the state.
```

```
|===
```

```
[#giveback]
[.api-collapsible-fifth-title]
giveback
```

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

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|failure
|link:#failure[failure]
a|Indicates the failure code and message.
```

```
|state
|string
a|
```

```
|===
```

```
[#partners]
[.api-collapsible-fifth-title]
partners
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|
```

```
|uuid
|string
a|
```

```
|===
```

```
[#ports]
```

```
[.api-collapsible-fifth-title]
```

```
ports
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|number
```

```
|unsigned
```

```
a|HA port number
```

```
|state
```

```
|string
```

```
a|HA port state:
```

```
* _down_ - Logical HA link is down.
```

```
* _initialized_ - Logical HA link is initialized. The physical link is up,  
but the subnet manager hasn't started to configure the port.
```

```
* _armed_ - Logical HA link is armed. The physical link is up and the  
subnet manager started but did not yet complete configuring the port.
```

```
* _active_ - Logical HA link is active.
```

```
* _reserved_ - Logical HA link is active, but the physical link is down.
```

```
|===
```

```
[#takeover]
```

```
[.api-collapsible-fifth-title]
```

```
takeover
```

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

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```

|Description

|failure
|link:#failure[failure]
a|Indicates the failure code and message.

|state
|string
a|

|===

[#ha]
[.api-collapsible-fifth-title]
ha

[cols=3*,options=header]
|===
|Name
|Type
|Description

|auto_giveback
|boolean
a|Specifies whether giveback is automatically initiated when the node that
owns the storage is ready.

|enabled
|boolean
a|Specifies whether or not storage failover is enabled.

|giveback
|link:#giveback[giveback]
a|Represents the state of the node that is giving storage back to its HA
partner.

|partners
|array[link:#partners[partners]]
a|Nodes in this node's High Availability (HA) group.

|ports

```

```
|array[link:#ports[ports]]
```

```
a|
```

```
|takeover
```

```
|link:#takeover[takeover]
```

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

```
|===
```

```
[#management_interface]
```

```
[.api-collapsible-fifth-title]
```

```
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.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|ip
```

```
|link:#node_setup_ip[node_setup_ip]
```

```
a|The IP configuration for cluster setup.
```

```
|===
```

```
[#management_interfaces]
```

```
[.api-collapsible-fifth-title]
```

```
management_interfaces
```

Network interface

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|ip
|link:#ip[ip]
a|IP information
```

```
|name
|string
a|The name of the interface.
```

```
|uuid
|string
a|The UUID that uniquely identifies the interface.
```

```
|===
```

```
[#ipv4_interface]
[.api-collapsible-fifth-title]
ipv4_interface
```

Object to setup an interface along with its default router.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|address
|string
a|IPv4 or IPv6 address
```

```
|gateway
|string
a|The IPv4 or IPv6 address of the default router.
```

```
|netmask
```

```
|string
a|Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, you
must set the netmask length. The default value is 64. Output is always
netmask length.
```

```
|===
```

```
[#ipv6_interface]
[.api-collapsible-fifth-title]
ipv6_interface
```

Object to setup an interface along with its default router.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|address
|string
a|IPv6 address
```

```
|gateway
|string
a|The IPv6 address of the default router.
```

```
|netmask
|integer
a|The IPv6 netmask/prefix length. The default value is 64 with a valid
range of 1 to 127.
```

```
|===
```

```
[#service_processor]
[.api-collapsible-fifth-title]
service_processor
```

```
[cols=3*,options=header]
```

```
|===
```

```

|Name
|Type
|Description

|firmware_version
|string
a|The version of firmware installed.

|ipv4_interface
|link:#ipv4_interface[ipv4_interface]
a|Object to setup an interface along with its default router.

|link_status
|string
a|

|mac_address
|string
a|

|state
|string
a|

|===

```

```

[#version]
[.api-collapsible-fifth-title]
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.

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|full
|string
a|The full cluster version string.

```



```
|generation
|integer
a|The generation portion of the version.
```

```
|major
|integer
a|The major portion of the version.
```

```
|minor
|integer
a|The minor portion of the version.
```

```
|===
```

```
[#vm]
[.api-collapsible-fifth-title]
vm
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|provider_type
|string
a|Cloud provider where the VM is hosted.
```

```
|===
```

```
[#node]
[.api-collapsible-fifth-title]
node
```

Complete node information

```
[cols=3*,options=header]
|===
```

```

|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|cluster_interface
|link:#cluster_interface[cluster_interface]
a|The cluster network IP address of the node to be added.

|cluster_interfaces
|array[link:#cluster_interfaces[cluster_interfaces]]
a|

|controller
|link:#controller[controller]
a|Controller information

|date
|string
a|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.

* example: 2019-04-17 11:49:26 -0400
* format: date-time
* readOnly: 1

|ha
|link:#ha[ha]
a|

|location
|string
a|

|management_interface
|link:#management_interface[management_interface]
a|The management interface of the node to be added. The subnet mask is set
based on the management interface of the cluster or the managment
interfaces of other nodes.

```

```

|management_interfaces
|array[link:#management_interfaces[management_interfaces]]
a|

|membership
|string
a|Possible values:

* _available_ - 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 _available_ to scan for nodes on
the cluster network. Nodes that have a membership of "available" are
returned automatically before a cluster is created.
* _joining_ - 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.
* _member_ - Nodes that are members have successfully joined the cluster.


|model
|string
a|

|name
|string
a|

|serial_number
|string
a|

|service_processor
|link:#service_processor[service_processor]
a|

|state
|string
a|State of the node:

* _up_ - Node is up and operational.
* _booting_ - Node is booting up.
* _down_ - Node has stopped or is dumping core.
* _taken_over_ - Node has been taken over by its HA partner and is not yet

```

waiting for giveback.

* `_waiting_for_giveback_` - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.

* `_degraded_` - Node has one or more critical services offline.

* `_unknown_` - Node or its HA partner cannot be contacted and there is no information on the node's state.

|`system_id`

|string

a|

|`system_machine_type`

|string

a|OEM system machine type.

|`uptime`

|integer

a|The total time, in seconds, that the node has been up.

|`uuid`

|string

a|

|`vendor_serial_number`

|string

a|OEM vendor serial number.

|`version`

|link:#version[version]

a|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`

|link:#vm[vm]

a|

|===

[#job_link]

[.api-collapsible-fifth-title]

```

job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

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

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID494194e9a0c949f627c63d53ffdca7d3]]
= Delete a node from a cluster

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/cluster/nodes/{uuid}`#

```

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

* `xref:{relative_path}cluster_nodes_endpoint_overview.html[DOC /cluster/nodes]`

== Parameters

```
[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description
```

```
|return_timeout
|integer
|query
|False
```

a|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.

* Default value: 1

```
|uuid
|string
|path
|True
```

a|

|force

|boolean

|query

|False

a|Set the force flag to "true" to forcibly remove a node that is down and cannot be brought online to remove its shared resources.

* Default value:

|===

== Response

Status: 202, Accepted


```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
====

== 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.

| 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.
|===

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
=====

== Definitions

[.api-def-first-level]
.See Definitions

```

```
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```

|_links
|link:#_links[_links]
a|

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

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments

```

```
|array[link:#error_arguments[error_arguments]]
```

```
a|Message arguments
```

```
|code
```

```
|string
```

```
a|Error code
```

```
|message
```

```
|string
```

```
a|Error message
```

```
|target
```

```
|string
```

```
a|The target parameter that caused the error.
```

```
|===
```

```
//end collapsible .Definitions block
```

```
====
```

```
[[ID09f3fa1da9c279f774169d8030b8a6b3]]
```

```
= Retrieve node information
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-  
block]#`/cluster/nodes/{uuid}`#
```

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`
* `version`

== Learn more

* xref:{relative_path}cluster_nodes_endpoint_overview.html[DOC
/cluster/nodes]

== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|* format: uuid

|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response

```

Status: 200, Ok

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|_links
|link:#_links[_links]
a|

|cluster_interfaces
|array[link:#cluster_interfaces[cluster_interfaces]]
a|

|controller
|link:#controller[controller]
a|Controller information

|date
|string
a|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.

* example: 2019-04-17 11:49:26 -0400
* format: date-time
* readOnly: 1

|ha
|link:#ha[ha]
a|

|location
|string
a|

|management_interfaces
|array[link:#management_interfaces[management_interfaces]]
a|

|membership
|string
a|Possible values:

* _available_ - 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 _available_ to scan for nodes on
the cluster network. Nodes that have a membership of "available" are

```


returned automatically before a cluster is created.

* `_joining_` - 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.

* `_member_` - Nodes that are members have successfully joined the cluster.

```
|model
|string
a|
```

```
|name
|string
a|
```

```
|serial_number
|string
a|
```

```
|service_processor
|link:#service_processor[service_processor]
a|
```

```
|state
|string
a|State of the node:
```

* `_up_` - Node is up and operational.

* `_booting_` - Node is booting up.

* `_down_` - Node has stopped or is dumping core.

* `_taken_over_` - Node has been taken over by its HA partner and is not yet waiting for giveback.

* `_waiting_for_giveback_` - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.

* `_degraded_` - Node has one or more critical services offline.

* `_unknown_` - Node or its HA partner cannot be contacted and there is no information on the node's state.

```
|system_id
|string
a|
```

```
|system_machine_type
|string
a|OEM system machine type.
```

```

|uptime
|integer
a|The total time, in seconds, that the node has been up.

|uuid
|string
a|

|vendor_serial_number
|string
a|OEM vendor serial number.

|version
|link:#version[version]
a|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
|link:#vm[vm]
a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interfaces": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  ],

```

```

    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"controller": {
  "flash_cache": [
    {
      "capacity": 1024000000000,
      "firmware_version": "NA05",
      "hardware_revision": "A1",
      "model": "X1970A",
      "part_number": "119-00207",
      "serial_number": "A22P5061550000187",
      "slot": "6-1",
      "state": "string"
    }
  ],
  "frus": [
    {
      "id": 0,
      "state": "string",
      "type": "string"
    }
  ],
  "over_temperature": "string"
},
"date": "2019-04-17 11:49:26 -0400",
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed"
  },
  "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"
}
},
"location": "rack 2 row 5",
"management_interfaces": [
    {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "ip": {
            "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
],
"membership": "string",
"model": "FAS3070",
"name": "node-01",
"serial_number": "4048820-60-9",
"service_processor": {
    "firmware_version": "string",
    "ipv4_interface": {
        "address": "10.10.10.7",
        "gateway": "10.1.1.1",
        "netmask": "24"
    },
    "ipv6_interface": {

```

```

        "address": "fd20:8b1e:b255:5011:10:141:4:97",
        "gateway": "fd20:8b1e:b255:5011:10::1",
        "netmask": 64
    },
    "link_status": "string",
    "mac_address": "string",
    "state": "string"
},
"state": "string",
"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": "string"
}
}
====

== Error

```

Status: Default, Error

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]

```

```

=====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
=====

```

== Definitions

```

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
=====

```

```

[#href]
[.api-collapsible-fifth-title]
href

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|href
|string
a|

```

```

|===

```

```

[#_links]
[.api-collapsible-fifth-title]
_links

```

```

[cols=3*,options=header]

```

```

|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#node_setup_ip]
[.api-collapsible-fifth-title]
node_setup_ip

The IP configuration for cluster setup.

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|address
|string
a|IPv4 or IPv6 address

|===

```

```

[#cluster_interface]
[.api-collapsible-fifth-title]
cluster_interface

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

[#ip]
[.api-collapsible-fifth-title]
ip

IP information

```

```

[cols=3*,options=header]

```

```

|===
|Name
|Type
|Description

|address
|string
a|IPv4 or IPv6 address

|===

[#cluster_interfaces]
[.api-collapsible-fifth-title]
cluster_interfaces

Network interface

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|ip
|link:#ip[ip]
a|IP information

|name
|string
a|The name of the interface.

|uuid
|string
a|The UUID that uniquely identifies the interface.

|===

```



```
[#flash_cache]
[.api-collapsible-fifth-title]
flash_cache
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|capacity
|integer
a|Size in bytes
```

```
|firmware_version
|string
a|
```

```
|hardware_revision
|string
a|
```

```
|model
|string
a|
```

```
|part_number
|string
a|
```

```
|serial_number
|string
a|
```

```
|slot
|string
a|
```

```
|state
|string
a|
```

```
|===
```

```

[#frus]
[.api-collapsible-fifth-title]
frus

[cols=3*,options=header]
|===
|Name
|Type
|Description

|id
|integer
a|

|state
|string
a|

|type
|string
a|

|===

[#controller]
[.api-collapsible-fifth-title]
controller

Controller information

[cols=3*,options=header]
|===
|Name
|Type
|Description

|flash_cache
|array[link:#flash_cache[flash_cache]]
a|A list of Flash-Cache devices. Only returned when requested by name.

|frus
|array[link:#frus[frus]]
a|List of FRUs on the node. Only returned when requested by name.

```

```
|over_temperature
|string
a|Specifies whether the hardware is currently operating outside of its
recommended temperature range. The hardware shuts down if the temperature
exceeds critical thresholds.
```

```
|===
```

```
[#failure]
[.api-collapsible-fifth-title]
failure
```

Indicates the failure code and message.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|code
|integer
a|Message code
```

```
|message
|string
a|Detailed message based on the state.
```

```
|===
```

```
[#giveback]
[.api-collapsible-fifth-title]
giveback
```

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

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description

|failure
|link:#failure[failure]
a|Indicates the failure code and message.
```

```
|state
|string
a|
```

```
|===
```

```
[#partners]
[.api-collapsible-fifth-title]
partners
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|
```

```
|uuid
|string
a|
```

```
|===
```

```
[#ports]
[.api-collapsible-fifth-title]
ports
```

```
[cols=3*,options=header]
```

```
|===
```

```

|Name
|Type
|Description

|number
|unsigned
a|HA port number


|state
|string
a|HA port state:

* _down_ - Logical HA link is down.
* _initialized_ - Logical HA link is initialized. The physical link is up,
but the subnet manager hasn't started to configure the port.
* _armed_ - Logical HA link is armed. The physical link is up and the
subnet manager started but did not yet complete configuring the port.
* _active_ - Logical HA link is active.
* _reserved_ - Logical HA link is active, but the physical link is down.


|===

[#takeover]
[.api-collapsible-fifth-title]
takeover

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


[cols=3*,options=header]
|===
|Name
|Type
|Description

|failure
|link:#failure[failure]
a|Indicates the failure code and message.


|state
|string
a|

```

```

|===

[#ha]
[.api-collapsible-fifth-title]
ha

[cols=3*,options=header]
|===
|Name
|Type
|Description

|auto_giveback
|boolean
a|Specifies whether giveback is automatically initiated when the node that
owns the storage is ready.

|enabled
|boolean
a|Specifies whether or not storage failover is enabled.

|giveback
|link:#giveback[giveback]
a|Represents the state of the node that is giving storage back to its HA
partner.

|partners
|array[link:#partners[partners]]
a|Nodes in this node's High Availability (HA) group.

|ports
|array[link:#ports[ports]]
a|

|takeover
|link:#takeover[takeover]
a|This represents the state of the node that is taking over storage from
its HA partner.

|===

```

```
[#management_interface]
[.api-collapsible-fifth-title]
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]
[.api-collapsible-fifth-title]
management_interfaces
```

Network interface

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|ip
|link:#ip[ip]
a|IP information
```

```
|name
|string
a|The name of the interface.
```

```
|uuid
|string
a|The UUID that uniquely identifies the interface.
```

```
|===
```

```
[#ipv4_interface]
[.api-collapsible-fifth-title]
```

```
ipv4_interface
```

Object to setup an interface along with its default router.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|address
```

```
|string
```

```
a|IPv4 or IPv6 address
```

```
|gateway
```

```
|string
```

```
a|The IPv4 or IPv6 address of the default router.
```

```
|netmask
```

```
|string
```

```
a|Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, you  
must set the netmask length. The default value is 64. Output is always  
netmask length.
```

```
|===
```

```
[#ipv6_interface]
```

```
[.api-collapsible-fifth-title]
```

```
ipv6_interface
```

Object to setup an interface along with its default router.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|address
```

```
|string
```

```
a|IPv6 address
```



```

|gateway
|string
a|The IPv6 address of the default router.

|netmask
|integer
a|The IPv6 netmask/prefix length. The default value is 64 with a valid
range of 1 to 127.

|===

[#service_processor]
[.api-collapsible-fifth-title]
service_processor

[cols=3*,options=header]
|===
|Name
|Type
|Description

|dhcp_enabled
|boolean
a|Set to "true" to use DHCP to configure an IPv4 interface.

|firmware_version
|string
a|The version of firmware installed.

|ipv4_interface
|link:#ipv4_interface[ipv4_interface]
a|Object to setup an interface along with its default router.

|ipv6_interface
|link:#ipv6_interface[ipv6_interface]
a|Object to setup an interface along with its default router.

|link_status

```

```
|string
a|

|mac_address
|string
a|

|state
|string
a|

|===
```

```
[#version]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|full
|string
a|The full cluster version string.
```

```
|generation
|integer
a|The generation portion of the version.
```

```
|major
|integer
a|The major portion of the version.
```

```
|minor
|integer
a|The minor portion of the version.
```

```

|===

[#vm]
[.api-collapsible-fifth-title]
vm

[cols=3*,options=header]
|===
|Name
|Type
|Description

|provider_type
|string
a|Cloud provider where the VM is hosted.

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

[#error]

```

```

[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[IDe5f56456f7c22054b7990c65a0a561ea]]
= Update node information

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/cluster/nodes/{uuid}`#

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 service-processor network modify``

== Learn more

* `xref:{relative_path}cluster_nodes_endpoint_overview.html[DOC
/cluster/nodes]`

== Parameters

[cols=5*,options=header]

|==

|Name

|Type

|In

|Required

|Description

|return_timeout

|integer

|query

|False

a|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.

* Default value: 1

|uuid

|string

|path

|True

a|* format: uuid

```

|action
|string
|query
|False
a|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.

* enum: ["shutdown", "reboot", "giveback"]

|shutdown_reboot_reason
|string
|query
|False
a|Indicates the reason for the reboot or shutdown. This only applies when
an action of reboot or shutdown is provided.

|allow_data_outage
|boolean
|query
|False
a|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.

* Default value:

|===

== Request Body

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]

```

```

a|

|cluster_interfaces
|array[link:#cluster_interfaces[cluster_interfaces]]
a|

|controller
|link:#controller[controller]
a|Controller information

|date
|string
a|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.

* example: 2019-04-17 11:49:26 -0400
* format: date-time
* readOnly: 1

|ha
|link:#ha[ha]
a|

|location
|string
a|

|management_interfaces
|array[link:#management_interfaces[management_interfaces]]
a|

|membership
|string
a|Possible values:

* _available_ - 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 _available_ to scan for nodes on
the cluster network. Nodes that have a membership of "available" are
returned automatically before a cluster is created.
* _joining_ - 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.

* `_member_` - Nodes that are members have successfully joined the cluster.

```
|model
|string
a|
```

```
|name
|string
a|
```

```
|serial_number
|string
a|
```

```
|service_processor
|link:#service_processor[service_processor]
a|
```

```
|state
|string
a|State of the node:
```

* `_up_` - Node is up and operational.

* `_booting_` - Node is booting up.

* `_down_` - Node has stopped or is dumping core.

* `_taken_over_` - Node has been taken over by its HA partner and is not yet waiting for giveback.

* `_waiting_for_giveback_` - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.

* `_degraded_` - Node has one or more critical services offline.

* `_unknown_` - Node or its HA partner cannot be contacted and there is no information on the node's state.

```
|system_id
|string
a|
```

```
|system_machine_type
|string
a|OEM system machine type.
```

```
|uptime
```



```

|integer
a|The total time, in seconds, that the node has been up.

|uuid
|string
a|

|vendor_serial_number
|string
a|OEM vendor serial number.

|version
|link:#version[version]
a|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
|link:#vm[vm]
a|

|===

.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interfaces": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      }
    }
  ]
}

```

```

    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"controller": {
  "flash_cache": [
    {
      "capacity": 1024000000000,
      "firmware_version": "NA05",
      "hardware_revision": "A1",
      "model": "X1970A",
      "part_number": "119-00207",
      "serial_number": "A22P5061550000187",
      "slot": "6-1",
      "state": "string"
    }
  ],
  "frus": [
    {
      "id": 0,
      "state": "string",
      "type": "string"
    }
  ],
  "over_temperature": "string"
},
"date": "2019-04-17 11:49:26 -0400",
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed"
  },
  "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"
}
},
"location": "rack 2 row 5",
"management_interfaces": [
  {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"membership": "string",
"model": "FAS3070",
"name": "node-01",
"serial_number": "4048820-60-9",
"service_processor": {
  "firmware_version": "string",
  "ipv4_interface": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "ipv6_interface": {
    "address": "fd20:8b1e:b255:5011:10:141:4:97",
    "gateway": "fd20:8b1e:b255:5011:10::1",
    "netmask": 64
  }
}

```

```
    },
    "link_status": "string",
    "mac_address": "string",
    "state": "string"
  },
  "state": "string",
  "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": "string"
  }
}
====

== Response
```

Status: 202, Accepted

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
====

== Error

```

Status: Default

ONTAP Error Response Codes

```

|===
| Error Code | Description

| 852046
| HA partner node

| 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.

| 9240606
| The reboot/shutdown is prevented due to quorum warnings.
|===
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|error
```

```
|link:#error[error]
```

```
a|
```

```
|===
```

```
.Example error
```

```
[%collapsible%closed]
```

```
====
```

```
[source,json,subs=+macros]
```

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

```
====
```

```
== Definitions
```

```

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|====
|Name
|Type
|Description

|href
|string
a|

|====

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|====
|Name
|Type
|Description

|self
|link:#href[href]
a|

|====

[#node_setup_ip]
[.api-collapsible-fifth-title]
node_setup_ip

The IP configuration for cluster setup.

```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|address
```

```
|string
```

```
a|IPv4 or IPv6 address
```

```
|===
```

```
[#cluster_interface]
```

```
[.api-collapsible-fifth-title]
```

```
cluster_interface
```

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

```
[#ip]
```

```
[.api-collapsible-fifth-title]
```

```
ip
```

IP information

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|address
```

```
|string
```

```
a|IPv4 or IPv6 address
```

```
|===
```

```
[#cluster_interfaces]
```

```
[.api-collapsible-fifth-title]
```

```
cluster_interfaces
```

Network interface


```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|ip
|link:#ip[ip]
a|IP information

|name
|string
a|The name of the interface.

|uuid
|string
a|The UUID that uniquely identifies the interface.

|===

[#flash_cache]
|.api-collapsible-fifth-title]
flash_cache

[cols=3*,options=header]
|===
|Name
|Type
|Description

|capacity
|integer
a|Size in bytes

|firmware_version
|string
a|

```

```

|hardware_revision
|string
a|

|model
|string
a|

|part_number
|string
a|

|serial_number
|string
a|

|slot
|string
a|

|state
|string
a|

|===

[#frus]
[.api-collapsible-fifth-title]
frus

[cols=3*,options=header]
|===
|Name
|Type
|Description

|id
|integer
a|

|state
|string
a|

|type

```

```

|string
a|

|===

[#controller]
[.api-collapsible-fifth-title]
controller

Controller information

[cols=3*,options=header]
|===
|Name
|Type
|Description

|flash_cache
|array[link:#flash_cache[flash_cache]]
a|A list of Flash-Cache devices. Only returned when requested by name.

|frus
|array[link:#frus[frus]]
a|List of FRUs on the node. Only returned when requested by name.

|over_temperature
|string
a|Specifies whether the hardware is currently operating outside of its
recommended temperature range. The hardware shuts down if the temperature
exceeds critical thresholds.

|===

[#failure]
[.api-collapsible-fifth-title]
failure

Indicates the failure code and message.

[cols=3*,options=header]

```

```

|===
|Name
|Type
|Description

|code
|integer
a|Message code

|message
|string
a|Detailed message based on the state.

```

```

|===

```

```

[#giveback]
[.api-collapsible-fifth-title]
giveback

```

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

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|failure
|link:#failure[failure]
a|Indicates the failure code and message.

```

```

|state
|string
a|

```

```

|===

```

```

[#partners]
[.api-collapsible-fifth-title]
partners

```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|name
```

```
|string
```

```
a|
```

```
|uuid
```

```
|string
```

```
a|
```

```
|===
```

```
[#ports]
```

```
[.api-collapsible-fifth-title]
```

```
ports
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|number
```

```
|unsigned
```

```
a|HA port number
```

```
|state
```

```
|string
```

```
a|HA port state:
```

```
* _down_ - Logical HA link is down.
```

```
* _initialized_ - Logical HA link is initialized. The physical link is up,  
but the subnet manager hasn't started to configure the port.
```

```
* _armed_ - Logical HA link is armed. The physical link is up and the  
subnet manager started but did not yet complete configuring the port.
```

```
* _active_ - Logical HA link is active.
```

* `_reserved_` - Logical HA link is active, but the physical link is down.

|===

```
[#takeover]
[.api-collapsible-fifth-title]
takeover
```

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

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|failure
|link:#failure[failure]
a|Indicates the failure code and message.
```

```
|state
|string
a|
```

|===

```
[#ha]
[.api-collapsible-fifth-title]
ha
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|auto_giveback
|boolean
a|Specifies whether giveback is automatically initiated when the node that owns the storage is ready.
```

```
|enabled
|boolean
a|Specifies whether or not storage failover is enabled.
```

```
|giveback
|link:#giveback[giveback]
a|Represents the state of the node that is giving storage back to its HA
partner.
```

```
|partners
|array[link:#partners[partners]]
a|Nodes in this node's High Availability (HA) group.
```

```
|ports
|array[link:#ports[ports]]
a|
```

```
|takeover
|link:#takeover[takeover]
a|This represents the state of the node that is taking over storage from
its HA partner.
```

```
|===
```

```
[#management_interface]
[.api-collapsible-fifth-title]
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]
[.api-collapsible-fifth-title]
management_interfaces
```

Network interface

```
[cols=3*,options=header]
|===
```

```
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|
```

```
|ip
|link:#ip[ip]
a|IP information
```

```
|name
|string
a|The name of the interface.
```

```
|uuid
|string
a|The UUID that uniquely identifies the interface.
```

```
|===
```

```
[#ipv4_interface]
[.api-collapsible-fifth-title]
ipv4_interface
```

Object to setup an interface along with its default router.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|address
|string
a|IPv4 or IPv6 address
```

```
|gateway
|string
a|The IPv4 or IPv6 address of the default router.
```



```
|netmask
|string
a|Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, you
must set the netmask length. The default value is 64. Output is always
netmask length.
```

```
|===
```

```
[#ipv6_interface]
[.api-collapsible-fifth-title]
ipv6_interface
```

Object to setup an interface along with its default router.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|address
|string
a|IPv6 address
```

```
|gateway
|string
a|The IPv6 address of the default router.
```

```
|netmask
|integer
a|The IPv6 netmask/prefix length. The default value is 64 with a valid
range of 1 to 127.
```

```
|===
```

```
[#service_processor]
[.api-collapsible-fifth-title]
service_processor
```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|dhcp_enabled
|boolean
a|Set to "true" to use DHCP to configure an IPv4 interface.

|firmware_version
|string
a|The version of firmware installed.

|ipv4_interface
|link:#ipv4_interface[ipv4_interface]
a|Object to setup an interface along with its default router.

|ipv6_interface
|link:#ipv6_interface[ipv6_interface]
a|Object to setup an interface along with its default router.

|link_status
|string
a|

|mac_address
|string
a|

|state
|string
a|

|===

[#version]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|full
|string
a|The full cluster version string.

|generation
|integer
a|The generation portion of the version.

|major
|integer
a|The major portion of the version.

|minor
|integer
a|The minor portion of the version.

|===

[#vm]
[.api-collapsible-fifth-title]
vm

[cols=3*,options=header]
|===
|Name
|Type
|Description

|provider_type
|string
a|Cloud provider where the VM is hosted.
```

```

|===

[#node]
[.api-collapsible-fifth-title]
node

Complete node information

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|cluster_interfaces
|array[link:#cluster_interfaces[cluster_interfaces]]
a|

|controller
|link:#controller[controller]
a|Controller information

|date
|string
a|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.

* example: 2019-04-17 11:49:26 -0400
* format: date-time
* readOnly: 1

|ha
|link:#ha[ha]
a|

|location

```

```
|string
a|

|management_interfaces
|array[link:#management_interfaces[management_interfaces]]
a|
```

```
|membership
|string
a|Possible values:
```

* `_available_` - 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 `_available_` to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created.

* `_joining_` - 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.

* `_member_` - Nodes that are members have successfully joined the cluster.

```
|model
|string
a|
```

```
|name
|string
a|
```

```
|serial_number
|string
a|
```

```
|service_processor
|link:#service_processor[service_processor]
a|
```

```
|state
|string
a|State of the node:
```

* `_up_` - Node is up and operational.

* `_booting_` - Node is booting up.

* `_down_` - Node has stopped or is dumping core.

* `_taken_over_` - Node has been taken over by its HA partner and is not yet waiting for giveback.
* `_waiting_for_giveback_` - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.
* `_degraded_` - Node has one or more critical services offline.
* `_unknown_` - Node or its HA partner cannot be contacted and there is no information on the node's state.

|system_id
|string
a|

|system_machine_type
|string
a|OEM system machine type.

|uptime
|integer
a|The total time, in seconds, that the node has been up.

|uuid
|string
a|

|vendor_serial_number
|string
a|OEM vendor serial number.

|version
|link:#version[version]
a|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
|link:#vm[vm]
a|

|===

[#job_link]

```

[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

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

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]

```

```

error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments


|code
|string
a|Error code


|message
|string
a|Error message


|target
|string
a|The target parameter that caused the error.


|===


//end collapsible .Definitions block
====

:leveloffset: -1

= Cluster NTP

:leveloffset: +1


[[ID8937aa80b68c69c65d690ddfc64ffd44]]
= 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.

=== xref:{relative_path}cluster-endpoint-overview.html[/api/cluster]

More details can be found under the documentation for xref:{relative_path}cluster-endpoint-overview.html[/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.

=== xref:{relative_path}cluster-ntp-servers-endpoint-overview.html[/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.

```
=== xref:{relative_path}cluster-ntp-keys-endpoint-  
overview.html[/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.

```
:leveloffset: -1
```

= Manage cluster NTP keys

```
:leveloffset: +1
```

```
[[IDca80b947bc9554a01e1ceec381d07f68]]  
= 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

body =

```
{
  "id": 10,
  "digest_type": "sha1",
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
```

Request

curl -X POST "https://<mgmt-ip>/api/cluster/ntp/keys" -d body

[[ID61263dd646db7c89a9b7b8d0b359340a]]

= Retrieve the NTP symmetric authentication keys

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-block]#`/cluster/ntp/keys`#

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

* xref:{relative_path}cluster_ntp_keys_endpoint_overview.html[DOC /cluster/ntp/keys]

== Parameters

[cols=5*,options=header]

|===

```
|Name
|Type
|In
|Required
|Description

|id
|integer
|query
|False
a|Filter by id
```

```
|value
|string
|query
|False
a|Filter by value
```

```
|digest_type
|string
|query
|False
a|Filter by digest_type
```

```
|fields
|array[string]
|query
|False
a|Specify the fields to return.
```

```
|max_records
|integer
|query
|False
a|Limit the number of records returned.
```

```
|return_records
|boolean
|query
|False
a|The default is true for GET calls. When set to false, only the number
of records is returned.
```

```
|return_timeout
|integer
|query
|False
a|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.
```

```
|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.
```

```
|===
```

```
== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|Number of records.

|records
|array[link:#ntp_key[ntp_key]]
a|

|===
```

```
.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_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

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===
```

```

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]

```

```

    _links

    [cols=3*,options=header]
    |===
    |Name
    |Type
    |Description

    |next
    |link:href[href]
    a|

    |self
    |link:href[href]
    a|

    |===

    [#_links]
    [.api-collapsible-fifth-title]
    _links

    [cols=3*,options=header]
    |===
    |Name
    |Type
    |Description

    |self
    |link:href[href]
    a|

    |===

    [#ntp_key]
    [.api-collapsible-fifth-title]
    ntp_key

    [cols=3*,options=header]
    |===
    |Name
    |Type
    |Description

    |_links

```



```
|link:#_links[_links]
```

```
a|
```

```
|digest_type
```

```
|string
```

```
a|The type of cryptographic hash used to create and verify the NTP's  
message authentication code appended to each NTP packet header.
```

```
|id
```

```
|integer
```

```
a|NTP symmetric authentication key identifier or index number (ID). This  
ID is included  
in the NTP cryptographic hash encoded header.
```

```
|value
```

```
|string
```

```
a|A hexadecimal digit string that represents the cryptographic key that is  
shared with the remote NTP server.  
The current expected length is 40 characters.
```

```
Use the cryptographic key and key ID to create a unique hash value used to  
authenticate the rest of the NTP data.
```

```
|===
```

```
[#error_arguments]
```

```
[.api-collapsible-fifth-title]
```

```
error_arguments
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|code
```

```
|string
```

```
a|Argument code
```

```
|message
```

```
|string
```

```
a|Message argument
```

```

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID9305a593792f288d1789cb494faa70bc]]
= Create an NTP symmetric authentication key entry

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
```

```
block]#`/cluster/ntp/keys`#
```

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

- * [xref:{relative_path}cluster_ntp_keys_endpoint_overview.html](#) [DOC /cluster/ntp/keys]

== Parameters

```
[cols=5*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|return_records
```

```
|boolean
```

```
|query
```

```
|False
```

```
a|The default is false. If set to true, the records are returned.
```

```
|===
```

== Request Body

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|digest_type
|string
a|The type of cryptographic hash used to create and verify the NTP's
message authentication code appended to each NTP packet header.

|id
|integer
a|NTP symmetric authentication key identifier or index number (ID). This
ID is included
in the NTP cryptographic hash encoded header.

|value
|string
a|A hexadecimal digit string that represents the cryptographic key that is
shared with the remote NTP server.
The current expected length is 40 characters.

Use the cryptographic key and key ID to create a unique hash value used to
authenticate the rest of the NTP data.

|===

.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",

```

```
"id": 10,
"value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
====

== Response
```

Status: 201, Created

```
== 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.
|===
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|error
```

```
|link:#error[error]
```

```
a|
```

```
|===
```

```
.Example error
```

```
[%collapsible%closed]
```

```
====
```

```
[source,json,subs=+macros]
```

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

====

== Definitions

```
[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
```

====

```
[#href]
[.api-collapsible-fifth-title]
href
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|href
|string
a|
```

|===

```
[#_links]
[.api-collapsible-fifth-title]
_links
```

```
[cols=3*,options=header]
|===
|Name
```

```

|Type
|Description

|self
|link:#href[href]
a|

|===

[#ntp_key]
[.api-collapsible-fifth-title]
ntp_key

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|digest_type
|string
a|The type of cryptographic hash used to create and verify the NTP's
message authentication code appended to each NTP packet header.

|id
|integer
a|NTP symmetric authentication key identifier or index number (ID). This
ID is included
in the NTP cryptographic hash encoded header.

|value
|string
a|A hexadecimal digit string that represents the cryptographic key that is
shared with the remote NTP server.
The current expected length is 40 characters.

Use the cryptographic key and key ID to create a unique hash value used to
authenticate the rest of the NTP data.

```

```
|===
```

```
[#error_arguments]  
[.api-collapsible-fifth-title]  
error_arguments
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name  
|Type  
|Description
```

```
|code  
|string  
a|Argument code
```

```
|message  
|string  
a|Message argument
```

```
|===
```

```
[#error]  
[.api-collapsible-fifth-title]  
error
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name  
|Type  
|Description
```

```
|arguments  
|array[link:#error_arguments[error_arguments]]  
a|Message arguments
```

```
|code  
|string  
a|Error code
```

```
|message
```



```

|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID41332b2e192b21f27b8c74e9fb84ab82]]
= Delete an NTP key

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/cluster/ntp/keys/{id}`#

Deletes an NTP key.

== Related ONTAP commands

* `cluster time-service ntp key delete`

== Learn more

* xref:{relative_path}cluster_ntp_keys_endpoint_overview.html[DOC
/ccluster/ntp/keys]

== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

```

```
|id
|integer
|path
|True
a|
|===

== 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.
|===
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|error
|link:#error[error]
a|
```

```
|===
```

```
.Example error
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
```

```

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

```

====

== Definitions

```

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block

```

====

```

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

```

```

[cols=3*,options=header]

```

|===

```

|Name
|Type
|Description

```

```

|code
|string
a|Argument code

```

```

|message
|string
a|Message argument

```

|===

```

[#error]
[.api-collapsible-fifth-title]
error

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[IDd09c6764f861b3a3d20102747bd9f7b8]]
= Retrieve NTP symmetric authentication key details

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/ntp/keys/{id}`#

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

```
* xref:{relative_path}cluster_ntp_keys_endpoint_overview.html[DOC  
/cluster/ntp/keys]
```

== Parameters

```
[cols=5*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|id
```

```
|integer
```

```
|path
```

```
|True
```

```
a|Key identifier
```

```
|fields
```

```
|array[string]
```

```
|query
```

```
|False
```

```
a|Specify the fields to return.
```

```
|===
```

== Response

Status: 200, Ok

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|digest_type
```

```
|string
```

```
a|The type of cryptographic hash used to create and verify the NTP's  
message authentication code appended to each NTP packet header.
```

```
|id
```

```
|integer
```

```
a|NTP symmetric authentication key identifier or index number (ID). This  
ID is included  
in the NTP cryptographic hash encoded header.
```

```
|value
```

```
|string
```

```
a|A hexadecimal digit string that represents the cryptographic key that is  
shared with the remote NTP server.  
The current expected length is 40 characters.
```

```
Use the cryptographic key and key ID to create a unique hash value used to  
authenticate the rest of the NTP data.
```

```
|===
```

```
.Example response
```

```
[%collapsible%closed]
```

```
====
```

```
[source,json,subs=+macros]
```

```
{  
  "_links": {  
    "self": {  
      "href": "/api/resourcelink"  
    }  
  },  
  "digest_type": "sha1",  
  "id": 10,  
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"  
}
```

```
====
```

```
== Error
```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]

```

```

|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

```



```

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[IDf08b48bf8169b9e6224e49bc25cbcb91]]
= Update NTP symmetric authentication key details

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
```

```
block]#`/cluster/ntp/keys/{id}`#
```

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

* xref:{relative_path}cluster_ntp_keys_endpoint_overview.html[DOC /cluster/ntp/keys]

== Parameters

```
[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description
```

```
|id
|integer
|path
|True
a|Key identifier
```

```
|===
```

== Request Body

```
[cols=3*,options=header]
```

```

|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|digest_type
|string
a|The type of cryptographic hash used to create and verify the NTP's
message authentication code appended to each NTP packet header.

|value
|string
a|A hexadecimal digit string that represents the cryptographic key that is
shared with the remote NTP server.
The current expected length is 40 characters.

Use the cryptographic key and key ID to create a unique hash value used to
authenticate the rest of the NTP data.

|===

.Example request
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
=====

== Response

```

Status: 200, Ok

```
== Error
```

Status: Default

ONTAP Error Response Codes

```
|===  
| Error Code | Description  
  
| 2097187  
| An invalid SHA1 key was provided.  
|===
```

```
[cols=3*,options=header]
```

```
|===  
|Name  
|Type  
|Description
```

```
|error  
|link:#error[error]  
a|
```

```
|===
```

.Example error

```
[%collapsible%closed]
```

```
=====
```

```
[source,json,subs=+macros]
```

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

```

====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#ntp_key]
[.api-collapsible-fifth-title]
ntp_key

```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|digest_type
```

```
|string
```

a|The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.

```
|value
```

```
|string
```

a|A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server.

The current expected length is 40 characters.

Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.

```
|===
```

```
[#error_arguments]
```

```
[.api-collapsible-fifth-title]
```

```
error_arguments
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|code
```

```
|string
```

a|Argument code

```
|message
```

```
|string
```

a|Message argument

```

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

:leveloffset: -1

= Manage cluster NTP servers

```

```
:leveloffset: +1
```

```
[[IDa63ab0623891908a136062ae03198098]]  
= 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  
body =  
{  
  "server": "time.nist.gov"  
}
```

```
# Request  
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/servers" -d body  
----
```



```
'''
```

```
=== Adding an NTP server with an authentication key
```

```
----
```

```
# Body
```

```
body =
```

```
{  
  "server": "time.nist.gov",  
  "key": { "id": 10 }  
}
```

```
# Request
```

```
curl -X POST "https://<mgmt-ip>/api/cluster/ntp/servers" -d body
```

```
----
```

```
'''
```

```
=== 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
```

```
body =
```

```
{  
  "key": { "id": 10 },  
  "authentication_enabled": true  
}
```

```
# Request
```

```
curl -X PATCH "https://<mgmt-ip>/api/cluster/ntp/servers/time.nist.gov" -d  
body
```

```
----
```

```
'''
```

```
[[ID2ecfb1169aae2c8092bd69594e35f984]]
```

= Retrieve external NTP time servers

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-block]#`/cluster/ntp/servers`#

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

* xref:{relative_path}cluster_ntp_servers_endpoint_overview.html[DOC /cluster/ntp/servers]

== Parameters

[cols=5*,options=header]
|==

|Name
|Type
|In
|Required
|Description

|version
|string
|query
|False
a|Filter by version

|key.id
|integer
|query
|False
a|Filter by key.id

|server
|string

```
|query
|False
a|Filter by server
```

```
|authentication_enabled
|boolean
|query
|False
a|Filter by authentication_enabled
```

```
|fields
|array[string]
|query
|False
a|Specify the fields to return.
```

```
|max_records
|integer
|query
|False
a|Limit the number of records returned.
```

```
|return_records
|boolean
|query
|False
a|The default is true for GET calls. When set to false, only the number
of records is returned.
```

```
|return_timeout
|integer
|query
|False
a|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.
```

```
|order_by
|array[string]
|query
```

```
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|Number of records.

|records
|array[link:#ntp_server[ntp_server]]
a|

|===

.Example response
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 3,
```

```

"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

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{

```

```

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

```

====

== Definitions

```

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block

```

====

```

[#href]
[.api-collapsible-fifth-title]
href

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|href
|string
a|

```

|===

```

[#_links]
[.api-collapsible-fifth-title]
_links

```

```

[cols=3*,options=header]
|===
|Name
|Type

```

```

|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#ntp_key_reference]
[.api-collapsible-fifth-title]
ntp_key_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|id
|integer
a|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]
[.api-collapsible-fifth-title]
ntp_server

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication_enabled
|boolean
a|Set NTP symmetric authentication on (true) or off (false).

|key
|link:#ntp_key_reference[ntp_key_reference]
a|

|server
|string
a|NTP server host name, IPv4, or IPv6 address.

|version
|string
a|NTP protocol version for server. Valid versions are 3, 4, or auto.

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments


```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|code
```

```
|string
```

```
a|Argument code
```

```
|message
```

```
|string
```

```
a|Message argument
```

```
|===
```

```
[#error]
```

```
[.api-collapsible-fifth-title]
```

```
error
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|arguments
```

```
|array[link:#error_arguments[error_arguments]]
```

```
a|Message arguments
```

```
|code
```

```
|string
```

```
a|Error code
```

```
|message
```

```
|string
```

```
a|Error message
```

```
|target
```

```
|string
```

a|The target parameter that caused the error.

|===

//end collapsible .Definitions block

====

[[ID0211e85b477c1c8b9c228b63efba912c]]
= Validate an external NTP time server

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/cluster/ntp/servers`#

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

* xref:{relative_path}cluster_ntp_servers_endpoint_overview.html[DOC
/cluster/ntp/servers]

== Parameters

```
[cols=5*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|return_timeout
```

```
|integer
```

```
|query
```

```
|False
```

a|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.

```
|return_records
```

```
|boolean
```

```
|query
```

```
|False
```

a|The default is false. If set to true, the records are returned.

```
|===
```

```
== Request Body
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|key
```

```
|link:#ntp_key_reference[ntp_key_reference]
```

```

a|

|server
|string
a|NTP server host name, IPv4, or IPv6 address.

|version
|string
a|NTP protocol version for server. Valid versions are 3, 4, or auto.

```

```

|===

```

```

.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_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

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
====

== 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.

| 2097169
| NTP server provided was not synchronized with a clock or another NTP
server.

| 2097174
| NTP server provided had too high of root distance.

| 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.
|===

```

```

[cols=3*,options=header]

```

```

|===

```

```

|Name

```

```

|Type

```

```

|Description

```

```

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

```

```

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#ntp_key_reference]
[.api-collapsible-fifth-title]
ntp_key_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|id
|integer
a|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]
[.api-collapsible-fifth-title]

```



```

ntp_server

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|key
|link:#ntp_key_reference[ntp_key_reference]
a|

|server
|string
a|NTP server host name, IPv4, or IPv6 address.

|version
|string
a|NTP protocol version for server. Valid versions are 3, 4, or auto.

|===

[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

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

```

|===

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments
```

```
[cols=3*,options=header]
```

|===

|Name

|Type

|Description

|code

|string

a|Argument code

|message

|string

a|Message argument

|===

```
[#error]
```

```
[.api-collapsible-fifth-title]
error
```

```
[cols=3*,options=header]
```

|===

|Name

|Type

|Description

|arguments

|array[link:#error_arguments[error_arguments]]

a|Message arguments

|code

|string

a|Error code

```
|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.
```

```
|===
```

```
//end collapsible .Definitions block
=====
```

```
[[IDf273ea7e4b28b81e4bdfb9d7f68aa26d]]
= Delete an external NTP server
```

```
[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/cluster/ntp/servers/{server}`#
```

Deletes an external NTP server used by ONTAP.

== Related ONTAP commands

* `cluster time-service ntp server delete`

== Learn more

* xref:{relative_path}cluster_ntp_servers_endpoint_overview.html[DOC
/cluster/ntp/servers]

== Parameters

```
[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
```

|Required
|Description

|return_timeout
|integer
|query
|False

a|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.

|server
|string
|path
|True

a|Server address or host name

|===

== Response

Status: 202, Accepted

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
====

== Error

```

Status: Default, Error

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

```

```

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]

```

```

_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

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

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```
|code
|string
a|Argument code
```

```
|message
|string
a|Message argument
```

```
|===
```

```
[#error]
[.api-collapsible-fifth-title]
error
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments
```

```
|code
|string
a|Error code
```

```
|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.
```

```
|===
```



```
//end collapsible .Definitions block
```

```
====
```

```
[[IDa02adf87ffffab720699814893d97ed58]]
```

```
= Retrieve an external NTP server configuration
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-  
block]#`/cluster/ntp/servers/{server}`#
```

Retrieves the configuration of an external NTP server used by ONTAP.

```
== Related ONTAP commands
```

```
* `cluster time-service ntp server show`
```

```
== Learn more
```

```
* xref:{relative_path}cluster_ntp_servers_endpoint_overview.html[DOC  
/cluster/ntp/servers]
```

```
== Parameters
```

```
[cols=5*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|server
```

```
|string
```

```
|path
```

```
|True
```

```
a|NTP server host name, IPv4, or IPv6 address.
```

```
|fields
```

```
|array[string]
```

```
|query
```

```
|False
```

```
a|Specify the fields to return.
```

```
|===
```

```
== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|authentication_enabled
```

```
|boolean
```

```
a|Set NTP symmetric authentication on (true) or off (false).
```

```
|key
```

```
|link:#ntp_key_reference[ntp_key_reference]
```

```
a|
```

```
|server
```

```
|string
```

```
a|NTP server host name, IPv4, or IPv6 address.
```

```
|version
```

```
|string
```

```
a|NTP protocol version for server. Valid versions are 3, 4, or auto.
```

```
|===
```

```
.Example response
```

```
[%collapsible%closed]
```

```
=====
```

```
[source,json,subs=+macros]
```

```
{
```

```
  "_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

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ]
  }
}

```

```

    }
  ],
  "code": "4",
  "message": "entry doesn't exist",
  "target": "uuid"
}
}
====

```

== Definitions

```

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====

```

```

[#href]
[.api-collapsible-fifth-title]
href

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|href
|string
a|

```

```

|===

```

```

[#_links]
[.api-collapsible-fifth-title]
_links

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|self
|link:#href[href]
a|

```

```

|===

[#ntp_key_reference]
[.api-collapsible-fifth-title]
ntp_key_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|id
|integer
a|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]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

```

```

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID8834ce05c8bf1a7065cd54ade51c1fc2]]
= Update an NTP server configuration after validation

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/cluster/ntp/servers/{server}`#

```

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

- * [xref:{relative_path}cluster_ntp_servers_endpoint_overview.html\[DOC /cluster/ntp/servers\]](#)

== Parameters

[cols=5*,options=header]
|===

Name
Type
In
Required
Description

return_timeout
integer
query
False

a|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.

```
|server
|string
|path
|True
a|Server address or host name
```

```
|===
```

```
== Request Body
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|authentication_enabled
|boolean
a|Set NTP symmetric authentication on (true) or off (false).
```

```
|key
|link:#ntp_key_reference[ntp_key_reference]
a|
```

```
|version
|string
a|NTP protocol version for server. Valid versions are 3, 4, or auto.
```

```
|===
```

```
.Example request
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
```



```
"_links": {
  "self": {
    "href": "/api/resourcelink"
  }
},
"authentication_enabled": 1,
"key": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "id": 10
},
"version": "auto"
}
====
```

== Response

Status: 202, Accepted

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
====

== 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.
|===

[cols=3*,options=header]
|===
|Name

```

```

|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#ntp_key_reference]
[.api-collapsible-fifth-title]
ntp_key_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|id
|integer
a|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]
[.api-collapsible-fifth-title]
ntp_server

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication_enabled
|boolean
a|Set NTP symmetric authentication on (true) or off (false).

|key
|link:#ntp_key_reference[ntp_key_reference]
a|

|version
|string
a|NTP protocol version for server. Valid versions are 3, 4, or auto.

|===

[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

```

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

```
|===
```

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|code
|string
a|Argument code
```

```
|message
|string
a|Message argument
```

```
|===
```

```
[#error]
[.api-collapsible-fifth-title]
error
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments
```

```

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

```

```

|===

```

```

//end collapsible .Definitions block
=====

```

```

:leveloffset: -1

```

```

= Manage cluster peers

```

```

:leveloffset: +1

```

```

[[IDb6f0a0a360a51049e5ee7574daf299db]]
= 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.

=== Sample request

```
-----
curl -X POST 'https://<mgmt-ip>/api/cluster/peers/' -d
'{"authentication":{"expiry_time":"12/25/2018
12:34:56","generate_passphrase":true}}'
-----
```

=== Examples

```
-----

# Create - no params
body = {}

# Creating with a peer address and a passphrase
body =
{
  "remote":
  {
    "ip_addresses":["1.2.3.4"]
  }
}

# Creating with a peer name and a generated passphrase that is true
body =
{
  "name":"cp_xyz123",
  "authentication":
  {
    "generate_passphrase":true
  }
}

# Creating with a name, a peer address, and a passphrase
body =
{
```

```

"name":"cp_xyz123",
"remote":
{
    "ip_addresses": ["1.2.3.4"]
},
"authentication":
{
    "passphrase":"xyz12345"
}
}

# Creating with a proposed encryption protocol
body =
{
    "encryption":
    {
        "proposed":"tls-psk"
    }
}
----

'''

```

== Create 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.

=== Example

```
-----  
curl -X POST "https://<mgmt-ip>/api/cluster/peers" -d body  
-----
```

Note that "+++<mgmt-ip>+++" is replaced by the IP address of the cluster management LIF, and "body" is replaced by the JSON body of the POST request containing the fields for the new peering relationship and local LIFs.+++</mgmt-ip>+++

=== Example POST body

This example shows the POST body when creating four intercluster LIFs on a 4-node cluster before creating a cluster peer relationship.

```
-----  
{  
  "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"  
}  
-----
```

'''

== Retrieve a cluster peer

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.

The following fields are used for retrieving a cluster peer.

=== Required fields

There are no required fields for GET requests.

=== Optional fields

The following fields are optional for GET requests

* UUID - UUID of the cluster peer.

=== Examples

```
----
curl -X GET "https://<mgmt-ip>/api/cluster/peers/"
curl -X GET "https://<mgmt-ip>/api/cluster/peers/{uuid}"
curl -X GET "https://<mgmt-ip>/api/cluster/peers/{uuid}?fields=*"
----
```

'''

== Update a 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 the generate_passphrase is "true", the passphrase is returned in the PATCH response.

This following fields highlight the parameters that control the modification of an existing cluster peering relationship.

=== Required fields

A PATCH request with an empty body has no effect on the cluster peer instance. All other fields and the combinations in which they are valid are indicated below:

* `encryption_proposed` - Toggle the proposed encryption protocol (from "none" to "tls-psk" or otherwise). Authentication must be "true" and a passphrase must be present in body.

* `passphrase`

* `passphrase` or `generate passphrase`

```

* `remote.ip_addresses`

=== Optional fields

* `expiration time` - Set the expiration time of the passphrase.

=== Examples

----

# Updating with an empty body
body = {}

# Updating the proposed encryption protocol from tls-psk to none
body =
{
  "authentication":
    {
      "passphrase": "xyz12345",
      "in_use": "ok"
    },
  "encryption":
    {
      "proposed": "none"
    }
}

# Updating the passphrase
body =
{
  "authentication":
    {
      "passphrase": "xyz12345",
      "in_use": "ok"
    }
}

# Setting an auto-generated passphrase
body =
{
  "authentication":
    {
      "generate_passphrase": true,
      "in_use": "ok"
    }
}

```

```

# Updating remote IP addresses
body =
{
  "remote":
  {
    "ip_addresses":["10.224.65.30"]
  }
}
-----

=== Sample requests

-----

# Setting a passphrase
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/73123071-d0b9-11e8-
a686-005056a7179a' -d
'{"authentication":{"passphrase":"xyz12345","in_use":"ok"}}'

# Updating a peer address
curl -X PATCH 'https://<mgmt-ip>/api/cluster/peers/73123071-d0b9-11e8-
a686-005056a7179a' -d '{"remote":{"ip_addresses":["1.2.3.4"]}}'
-----

'''

== Delete a cluster peer

You can delete a cluster peer using the HTTP DELETE request.

=== Required fields

Perform all delete operations on a valid peer UUID. Deleting an invalid
peer returns "HTTP 404", which indicates an error.

=== Optional fields

The DELETE operation has no optional fields.

=== Request format

DELETE "https://+++<mgmt-ip>+++</mgmt-ip>+++

=== Example

The following request deletes a peer with peer UUID "8becc0d4-c12c-11e8-
9ceb-005056bbd143".

```

```
----
curl -X DELETE "https://<mgmt-ip>/api/cluster/peers/8becc0d4-c12c-11e8-
9ceb-005056bbd143"
----
```

```
[[ID50876c0df51ef0cf05e616ea99a40c1c]]
= Retrieve cluster peers
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/peers`#
```

Retrieves the collection of cluster peers.

== Learn more

* xref:{relative_path}cluster_peers_endpoint_overview.html[DOC
/cluster/peers]

== Parameters

```
[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description
```

```
|fields
|array[string]
|query
|False
a|Specify the fields to return.
```

```
|max_records
|integer
|query
```

```

|False
a|Limit the number of records returned.

|return_records
|boolean
|query
|False
a|The default is true for GET calls. When set to false, only the number
of records is returned.

|return_timeout
|integer
|query
|False
a|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.

|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response

```

Status: 200, Ok

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records

```



```

|integer
a|Number of records

|records
|array[link:#cluster_peer[cluster_peer]]
a|

|===

.Example response
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "interfaces": {
          "href": "/api/resourcelink"
        },
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "authentication": {
        "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
        "in_use": "string",
        "passphrase": "string",
        "state": "string"
      },
      "encryption": {
        "proposed": "string",
        "state": "string"
      },
      "initial_allowed_svms": [
        {

```

```

    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
],
"ipspace": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "exchange",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": [
    "10.10.10.7"
  ],
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25 11:20:13 UTC"
},
"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
}
}
]
}
=====

```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href
```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:href[href]
a|

|self
|link:href[href]
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|interfaces
|link:href[href]

```

```

a|

|self
|link:#href[href]
a|

|===

[#authentication]
[.api-collapsible-fifth-title]
authentication

[cols=3*,options=header]
|===
|Name
|Type
|Description

|expiry_time
|string
a|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
a|Auto generate a passphrase when true.

|in_use
|string
a|

|passphrase
|string
a|A password to authenticate the cluster peer relationship.

|state
|string
a|

|===

[#encryption]

```

```

[.api-collapsible-fifth-title]
encryption

[cols=3*,options=header]
|===
|Name
|Type
|Description

|proposed
|string
a|

|state
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#initial_allowed_svms]
[.api-collapsible-fifth-title]
initial_allowed_svms

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```
|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|The name of the SVM.
```

```
|uuid
|string
a|The unique identifier of the SVM.
```

```
|===
```

```
[#ipspace]
[.api-collapsible-fifth-title]
ipspace
```

The IPspace of the local intercluster LIFs.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|IPspace name
```

```
|uuid
|string
a|IPspace UUID
```

```
|===
```

```
[#interfaces]
[.api-collapsible-fifth-title]
interfaces
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|ip_address
|string
a|IPv4 or IPv6 address
```

```
|===
```

```
[#local_network]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|broadcast_domain
|string
a|Broadcast domain that is in use within the IPspace.
```

```
|gateway
|string
a|The IPv4 or IPv6 address of the default router.
```

```
|interfaces
|array[link:#interfaces[interfaces]]
a|
```



```

|netmask
|string
a|IPv4 mask or netmask length.

|===

[#remote]
[.api-collapsible-fifth-title]
remote

[cols=3*,options=header]
|===
|Name
|Type
|Description

|ip_addresses
|array[string]
a|The IPv4 addresses, IPv6 addresses, or hostnames of the peers.

|name
|string
a|The name of the remote cluster.

|serial_number
|string
a|The serial number of the remote cluster.

|===

[#status]
[.api-collapsible-fifth-title]
status

[cols=3*,options=header]
|===
|Name
|Type
|Description

|state

```

```
|string
a|

|update_time
|string
a|The last time the state was updated.
```

```
|===
```

```
[#version]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|full
|string
a|The full cluster version string.
```

```
|generation
|integer
a|The generation portion of the version.
```

```
|major
|integer
a|The major portion of the version.
```

```
|minor
|integer
a|The minor portion of the version.
```

```
|===
```

```

[#cluster_peer]
[.api-collapsible-fifth-title]
cluster_peer

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication
|link:#authentication[authentication]
a|

|encryption
|link:#encryption[encryption]
a|

|initial_allowed_svms
|array[link:#initial_allowed_svms[initial_allowed_svms]]
a|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.

|ipspace
|link:#ipspace[ipspace]
a|The IPspace of the local intercluster LIFs.

|name
|string
a|Optional name for the cluster peer relationship. By default, it is the
name of the remote cluster.

|peer_applications
|array[string]
a|Peering applications against which allowed SVMs are configured.

```

```

|remote
|link:#remote[remote]
a|

|status
|link:#status[status]
a|

|uuid
|string
a|UUID of the cluster peer relationship. For anonymous cluster peer
offers, the UUID will change when the remote cluster accepts the
relationship.

|version
|link:#version[version]
a|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]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

```

```

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID0183c979ca46e4a0e49f3ad40a2d1483]]
= Create a peering relationship

[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/cluster/peers`#

```

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)

== Learn more

* xref:{relative_path}cluster_peers_endpoint_overview.html[DOC
/cluster/peers]

== Parameters

[cols=5*,options=header]

|===

|Name

|Type

|In

|Required

|Description

|return_records

|boolean

|query

|False

a|The default is false. If set to true, the records are returned.

|===

== Request Body

[cols=3*,options=header]

|===

|Name

|Type

|Description

```

|_links
|link:#_links[_links]
a|

|authentication
|link:#authentication[authentication]
a|

|encryption
|link:#encryption[encryption]
a|

|initial_allowed_svms
|array[link:#initial_allowed_svms[initial_allowed_svms]]
a|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.

|ipspace
|link:#ipspace[ipspace]
a|The IPspace of the local intercluster LIFs.

|local_network
|link:#local_network[local_network]
a|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
a|Optional name for the cluster peer relationship. By default, it is the
name of the remote cluster.

|peer_applications
|array[string]
a|Peering applications against which allowed SVMs are configured.

|remote
|link:#remote[remote]
a|

```



```

|status
|link:#status[status]
a|

|uuid
|string
a|UUID of the cluster peer relationship. For anonymous cluster peer
offers, the UUID will change when the remote cluster accepts the
relationship.

|version
|link:#version[version]
a|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
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "string",
    "passphrase": "string",
    "state": "string"
  },
  "encryption": {
    "proposed": "string",
    "state": "string"
  },
  "initial_allowed_svms": [
    {

```

```

    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "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": [
      "10.10.10.7"
    ],
    "name": "cluster2",
    "serial_number": "4048820-60-9"
  },
  "status": {
    "state": "available",
    "update_time": "2017-01-25 11:20:13 UTC"
  },
  "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

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication
|link:#authentication[authentication]
a|

|ip_address
|string
a|IPv4 or IPv6 address

|name
|string
a|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.

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{

```

```

    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "authentication": {
      "expiry_time": "2017-01-25 11:20:13 UTC",
      "passphrase": "string"
    },
    "ip_address": "10.10.10.7",
    "name": "cluster2"
  }
}
====

== Error

```

Status: Default

ONTAP Error Response Codes

```

|====
| Error Code | Description
|
| 1966366
| The system SVM of the cluster IPspace hosts cluster LIFs only.
|
| 4653365
| IPspaces are unavailable with cluster peering: \{ipspace}.
|
| 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.

| 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.

| 4656096

| Creating an intercluster LIF requires an IPv4 or IPv6 address of the default router.

|===

[cols=3*,options=header]

|===

|Name

```

|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|interfaces
|link:href[href]
a|

|self
|link:href[href]
a|

|===

[#authentication]
[.api-collapsible-fifth-title]
authentication

[cols=3*,options=header]
|===
|Name
|Type
|Description

|expiry_time
|string
a|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
a|Auto generate a passphrase when true.

```

```

|in_use
|string
a|

|passphrase
|string
a|A password to authenticate the cluster peer relationship.

|state
|string
a|

|===

[#encryption]
[.api-collapsible-fifth-title]
encryption

[cols=3*,options=header]
|===
|Name
|Type
|Description

|proposed
|string
a|

|state
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type

```



```

|Description

|self
|link:#href[href]
a|

|===

[#initial_allowed_svms]
[.api-collapsible-fifth-title]
initial_allowed_svms

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM.

|uuid
|string
a|The unique identifier of the SVM.

|===

[#ipspace]
[.api-collapsible-fifth-title]
ipspace

The IPspace of the local intercluster LIFs.

[cols=3*,options=header]
|===
|Name
|Type

```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|name
```

```
|string
```

```
a|IPspace name
```

```
|uuid
```

```
|string
```

```
a|IPspace UUID
```

```
|===
```

```
[#interfaces]
```

```
[.api-collapsible-fifth-title]
```

```
interfaces
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|ip_address
```

```
|string
```

```
a|IPv4 or IPv6 address
```

```
|===
```

```
[#local_network]
```

```
[.api-collapsible-fifth-title]
```

```
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.

```
[cols=3*,options=header]
```

```

|===
|Name
|Type
|Description

|broadcast_domain
|string
a|Broadcast domain that is in use within the IPspace.

|gateway
|string
a|The IPv4 or IPv6 address of the default router.

|interfaces
|array[link:#interfaces[interfaces]]
a|

|netmask
|string
a|IPv4 mask or netmask length.

|===

[#remote]
[.api-collapsible-fifth-title]
remote

[cols=3*,options=header]
|===
|Name
|Type
|Description

|ip_addresses
|array[string]
a|The IPv4 addresses, IPv6 addresses, or hostnames of the peers.

|name
|string
a|The name of the remote cluster.

```

```
|serial_number
|string
a|The serial number of the remote cluster.
```

```
|===
```

```
[#status]
[.api-collapsible-fifth-title]
status
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|state
|string
a|
```

```
|update_time
|string
a|The last time the state was updated.
```

```
|===
```

```
[#version]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|full
|string
```

a|The full cluster version string.

|generation

|integer

a|The generation portion of the version.

|major

|integer

a|The major portion of the version.

|minor

|integer

a|The minor portion of the version.

|===

[#cluster_peer]

[.api-collapsible-fifth-title]

cluster_peer

[cols=3*,options=header]

|===

|Name

|Type

|Description

|_links

|link:#_links[_links]

a|

|authentication

|link:#authentication[authentication]

a|

|encryption

|link:#encryption[encryption]

a|

|initial_allowed_svms

|array[link:#initial_allowed_svms[initial_allowed_svms]]

a|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.

|ipspace

|link:#ipspace[ipspace]

a|The IPspace of the local intercluster LIFs.

|local_network

|link:#local_network[local_network]

a|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

a|Optional name for the cluster peer relationship. By default, it is the name of the remote cluster.

|peer_applications

|array[string]

a|Peering applications against which allowed SVMs are configured.

|remote

|link:#remote[remote]

a|

|status

|link:#status[status]

a|

|uuid

|string

a|UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.

|version

|link:#version[version]

a|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.

```
|===
```

```
[#authentication]
```

```
[.api-collapsible-fifth-title]
```

```
authentication
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|expiry_time
```

```
|string
```

```
a|The date and time the passphrase will expire. The default expiry time  
is one hour.
```

```
|passphrase
```

```
|string
```

```
a|A password to authenticate the cluster peer relationship.
```

```
|===
```

```
[#error_arguments]
```

```
[.api-collapsible-fifth-title]
```

```
error_arguments
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|code
```

```
|string
```

```
a|Argument code
```

```
|message
```

```
|string
```

```
a|Message argument
```

```

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID371ebfe1a1e5b5fa9a3caa0359bbb501]]
= Delete a cluster peer

[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/cluster/peers/{uuid}`#

```


Deletes a cluster peer.

== Learn more

* xref:{relative_path}cluster_peers_endpoint_overview.html[DOC
/cluster/peers]

== Parameters

[cols=5*,options=header]
|===

Name
Type
In
Required
Description

uuid
string
path
True
a
===

== Response

Status: 200, Ok

== Error

Status: Default

ONTAP Error Response Codes

===
Error Code Description
4663070
Unable to delete cluster peer relationship due to an ongoing Vserver migration.

```

|===

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
=====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
=====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

```

|===

//end collapsible .Definitions block
=====

[[ID651b68305290f0f0dc0d69f91e676ea7]]
= Retrieve a cluster peer instance

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-block]#`/cluster/peers/{uuid}`#

Retrieves a specific cluster peer instance.

== Learn more

* xref:{relative_path}cluster_peers_endpoint_overview.html[DOC
/cluster/peers]

== Parameters

[cols=5*,options=header]
|===

Name
Type
In
Required
Description

uuid
string
path
True
a Cluster peer relationship UUID

fields
array[string]
query

```
|False
a|Specify the fields to return.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|authentication
|link:#authentication[authentication]
a|

|encryption
|link:#encryption[encryption]
a|

|initial_allowed_svms
|array[link:#initial_allowed_svms[initial_allowed_svms]]
a|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.

|ipspace
|link:#ipspace[ipspace]
a|The IPspace of the local intercluster LIFs.

|name
|string
a|Optional name for the cluster peer relationship. By default, it is the
name of the remote cluster.

|peer_applications
```

```

|array[string]
a|Peering applications against which allowed SVMs are configured.

|remote
|link:#remote[remote]
a|

|status
|link:#status[status]
a|

|uuid
|string
a|UUID of the cluster peer relationship. For anonymous cluster peer
offers, the UUID will change when the remote cluster accepts the
relationship.

|version
|link:#version[version]
a|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
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "string",
    "passphrase": "string",
    "state": "string"
  }
}

```

```

},
"encryption": {
  "proposed": "string",
  "state": "string"
},
"initial_allowed_svms": [
  {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
],
"ipspace": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "exchange",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": [
    "10.10.10.7"
  ],
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25 11:20:13 UTC"
},
"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

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]

```



```
//Start collapsible Definitions block
```

```
====
```

```
[#href]
```

```
[.api-collapsible-fifth-title]
```

```
href
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|href
```

```
|string
```

```
a|
```

```
|===
```

```
[#_links]
```

```
[.api-collapsible-fifth-title]
```

```
_links
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|interfaces
```

```
|link:#href[href]
```

```
a|
```

```
|self
```

```
|link:#href[href]
```

```
a|
```

```
|===
```

```
[#authentication]
```

```
[.api-collapsible-fifth-title]
```

```
authentication
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```

|Type
|Description

|expiry_time
|string
a|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
a|Auto generate a passphrase when true.

|in_use
|string
a|

|passphrase
|string
a|A password to authenticate the cluster peer relationship.

|state
|string
a|

|===

[#encryption]
[.api-collapsible-fifth-title]
encryption

[cols=3*,options=header]
|===
|Name
|Type
|Description

|proposed
|string
a|

|state
|string
a|

```

```

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#initial_allowed_svms]
[.api-collapsible-fifth-title]
initial_allowed_svms

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM.

|uuid
|string
a|The unique identifier of the SVM.

|===

```

```
[#ipspace]
[.api-collapsible-fifth-title]
ipspace
```

The IPspace of the local intercluster LIFs.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|IPspace name
```

```
|uuid
|string
a|IPspace UUID
```

```
|===
```

```
[#interfaces]
[.api-collapsible-fifth-title]
interfaces
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|ip_address
|string
a|IPv4 or IPv6 address
```

```
|===
```

```
[#local_network]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|broadcast_domain
|string
a|Broadcast domain that is in use within the IPspace.
```

```
|gateway
|string
a|The IPv4 or IPv6 address of the default router.
```

```
|interfaces
|array[link:#interfaces[interfaces]]
a|
```

```
|netmask
|string
a|IPv4 mask or netmask length.
```

```
|===
```

```
[#remote]
[.api-collapsible-fifth-title]
remote
```

```
[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|ip_addresses
|array[string]
a|The IPv4 addresses, IPv6 addresses, or hostnames of the peers.
```

```
|name
|string
a|The name of the remote cluster.
```

```
|serial_number
|string
a|The serial number of the remote cluster.
```

```
|===
```

```
[#status]
[.api-collapsible-fifth-title]
status
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|state
|string
a|
```

```
|update_time
|string
a|The last time the state was updated.
```

```
|===
```

```
[#version]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|full
|string
a|The full cluster version string.

|generation
|integer
a|The generation portion of the version.

|major
|integer
a|The major portion of the version.

|minor
|integer
a|The minor portion of the version.

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code
```

```

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
=====

```



```
[[ID54db1575dbbfc34f35b94ad6f2c3aecb]]  
= Update a cluster peer instance  
  
[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-  
block]#`/cluster/peers/{uuid}`#
```

Updates a cluster peer instance.

== Learn more

* xref:{relative_path}cluster_peers_endpoint_overview.html[DOC
/cluster/peers]

== Parameters

```
[cols=5*,options=header]  
|===
```

```
|Name  
|Type  
|In  
|Required  
|Description
```

```
|uuid  
|string  
|path  
|True  
a|Cluster peer relationship UUID
```

```
|===
```

== Request Body

```
[cols=3*,options=header]  
|===
```

```
|Name  
|Type  
|Description
```

```
|_links  
|link:#_links[_links]
```

```

a|

|authentication
|link:#authentication[authentication]
a|

|encryption
|link:#encryption[encryption]
a|

|initial_allowed_svms
|array[link:#initial_allowed_svms[initial_allowed_svms]]
a|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.

|ipspace
|link:#ipspace[ipspace]
a|The IPspace of the local intercluster LIFs.

|name
|string
a|Optional name for the cluster peer relationship. By default, it is the
name of the remote cluster.

|peer_applications
|array[string]
a|Peering applications against which allowed SVMs are configured.

|remote
|link:#remote[remote]
a|

|status
|link:#status[status]
a|

|uuid
|string
a|UUID of the cluster peer relationship. For anonymous cluster peer
offers, the UUID will change when the remote cluster accepts the
relationship.

```

```
|version
|link:#version[version]
a|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
```

```
[%collapsible%closed]
```

```
=====
```

```
[source,json,subs=+macros]
```

```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "string",
    "passphrase": "string",
    "state": "string"
  },
  "encryption": {
    "proposed": "string",
    "state": "string"
  },
  "initial_allowed_svms": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    }
  ],
  "ipspace": {
```

```

    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "cluster2",
  "peer_applications": [
    "snapmirror",
    "flexcache"
  ],
  "remote": {
    "ip_addresses": [
      "10.10.10.7"
    ],
    "name": "cluster2",
    "serial_number": "4048820-60-9"
  },
  "status": {
    "state": "available",
    "update_time": "2017-01-25 11:20:13 UTC"
  },
  "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

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links

```

```

|link:#_links[_links]
a|

|authentication
|link:#authentication[authentication]
a|

|ip_address
|string
a|IPv4 or IPv6 address

|name
|string
a|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.

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "2017-01-25 11:20:13 UTC",
    "passphrase": "string"
  },
  "ip_address": "10.10.10.7",
  "name": "cluster2"
}
====

== Error

```

Status: Default

```

|===
| Error Code | Description

| 4653261
| Error finding IPspace.

| 4655058
| Expiration time cannot be more than 7 days in the future.

| 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.

| 4656081
| The remote IP address list is empty.

| 4656082
| Specify either a passphrase or "-generate-passphrase".

| 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.
|===
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|error
```

```
|link:#error[error]
```

```
a|
```

```
|===
```

```
.Example error
```

```
[%collapsible%closed]
```

```
=====
```

```
[source,json,subs=+macros]
```

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

```
=====
```

```
== Definitions
```

```
[.api-def-first-level]
```

```
.See Definitions
```

```
[%collapsible%closed]
```

```
//Start collapsible Definitions block
```

```
====
```

```
[#href]
```

```
[.api-collapsible-fifth-title]
```

```
href
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|href
```

```
|string
```

```
a|
```

```
|===
```

```
[#_links]
```

```
[.api-collapsible-fifth-title]
```

```
_links
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|interfaces
```

```
|link:#href[href]
```

```
a|
```

```
|self
```

```
|link:#href[href]
```

```
a|
```

```
|===
```

```
[#authentication]
```

```
[.api-collapsible-fifth-title]
```

```
authentication
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```



```

|Type
|Description

|expiry_time
|string
a|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
a|Auto generate a passphrase when true.

|in_use
|string
a|

|passphrase
|string
a|A password to authenticate the cluster peer relationship.

|state
|string
a|

|===

[#encryption]
[.api-collapsible-fifth-title]
encryption

[cols=3*,options=header]
|===
|Name
|Type
|Description

|proposed
|string
a|

|state
|string
a|

```

```

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#initial_allowed_svms]
[.api-collapsible-fifth-title]
initial_allowed_svms

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|The name of the SVM.

|uuid
|string
a|The unique identifier of the SVM.

|===

```

```
[#ipspace]
[.api-collapsible-fifth-title]
ipspace
```

The IPspace of the local intercluster LIFs.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|name
|string
a|IPspace name
```

```
|uuid
|string
a|IPspace UUID
```

```
|===
```

```
[#interfaces]
[.api-collapsible-fifth-title]
interfaces
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|ip_address
|string
a|IPv4 or IPv6 address
```

```
|===
```

```
[#local_network]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|broadcast_domain
|string
a|Broadcast domain that is in use within the IPspace.
```

```
|gateway
|string
a|The IPv4 or IPv6 address of the default router.
```

```
|interfaces
|array[link:#interfaces[interfaces]]
a|
```

```
|netmask
|string
a|IPv4 mask or netmask length.
```

```
|===
```

```
[#remote]
[.api-collapsible-fifth-title]
remote
```

```
[cols=3*,options=header]
|===
|Name
|Type
```

```
|Description

|ip_addresses
|array[string]
a|The IPv4 addresses, IPv6 addresses, or hostnames of the peers.
```

```
|name
|string
a|The name of the remote cluster.
```

```
|serial_number
|string
a|The serial number of the remote cluster.
```

```
|===
```

```
[#status]
[.api-collapsible-fifth-title]
status
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|state
|string
a|
```

```
|update_time
|string
a|The last time the state was updated.
```

```
|===
```

```
[#version]
[.api-collapsible-fifth-title]
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.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|full
|string
a|The full cluster version string.

|generation
|integer
a|The generation portion of the version.

|major
|integer
a|The major portion of the version.

|minor
|integer
a|The minor portion of the version.

|===

[#cluster_peer]
[.api-collapsible-fifth-title]
cluster_peer

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|
```

```

|authentication
|link:#authentication[authentication]
a|

|encryption
|link:#encryption[encryption]
a|

|initial_allowed_svms
|array[link:#initial_allowed_svms[initial_allowed_svms]]
a|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.

|ipspace
|link:#ipspace[ipspace]
a|The IPspace of the local intercluster LIFs.

|name
|string
a|Optional name for the cluster peer relationship. By default, it is the
name of the remote cluster.

|peer_applications
|array[string]
a|Peering applications against which allowed SVMs are configured.

|remote
|link:#remote[remote]
a|

|status
|link:#status[status]
a|

|uuid
|string
a|UUID of the cluster peer relationship. For anonymous cluster peer
offers, the UUID will change when the remote cluster accepts the
relationship.

|version

```

```
|link:#version[version]
```

a|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.

```
|===
```

```
[#authentication]
```

```
[.api-collapsible-fifth-title]
```

authentication

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|expiry_time
```

```
|string
```

a|The date and time the passphrase will expire. The default expiry time is one hour.

```
|passphrase
```

```
|string
```

a|A password to authenticate the cluster peer relationship.

```
|===
```

```
[#error_arguments]
```

```
[.api-collapsible-fifth-title]
```

error_arguments

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|code
```

```
|string
```

a|Argument code


```

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
=====

```

```
:leveloffset: -1
```

```
= Manage cluster schedules
```

```
:leveloffset: +1
```

```
[[ID4d902445249c544d6d1a5bb84b15b11e]]
```

```
= 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": "08ceae53-0158-11e9-a82c-005056bb4301",
      "name": "RepositoryBalanceMonitorJobSchedule",
      "type": "interval",
      "interval": "PT10M",
      "_links": {
        "self": {
          "href": "/api/cluster/schedules/08ceae53-0158-11e9-a82c-005056bb4301"
        }
      }
    }
  ]
}
```

```

    }
  },
  {
    "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-tsundere",
    "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.

=== Example

The API:

/api/cluster/schedules

The call:

curl -X POST "https://<mgmt-ip>/api/cluster/schedules" -d body

The response of a successful POST is empty.

Example body to create an interval schedule with a 1-week interval:

```
{
  "name": "test_interval_1",
  "interval": "P1W"
}
```

Example body to create a cron schedule that runs daily at 12:05 :

```
{
  "name": "test_cron_1",
  "cron":
```

```

{
    "minutes": [ 5 ],
    "hours": [ 12 ]
}
}
-----

```

=== 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.

=== Example

```
-----
```

```

# The API:
/api/cluster/schedules/{uuid}

```

```

# The call:

```

```
curl -X PATCH "https://<mgmt-ip>/api/cluster/schedules/{uuid}" -d body
```

The response of a successful PATCH is empty.

Example body to modify an interval schedule with a 2-day and 5-minute interval:

```
{
  "interval": "P2DT5M"
}
```

Example body to modify a cron schedule to run Mondays at 2:

```
{
  "cron":
  {
    "hours": [ 2 ],
    "weekdays": [ 1 ]
  }
}
```

'''

== 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.

```
[[IDb2cc4458dd42280b71d1b7fd863580a5]]
```

= Retrieve schedules

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/schedules`#
```

Retrieves a schedule.

== Learn more

* xref:{relative_path}cluster_schedules_endpoint_overview.html[DOC
/cluster/schedules]

== Parameters


```
[cols=5*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|cluster.name
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by cluster.name
```

```
|cluster.uuid
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by cluster.uuid
```

```
|cron.hours
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by cron.hours
```

```
|cron.days
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by cron.days
```

```
|cron.weekdays
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by cron.weekdays
```

```
|cron.minutes
```

```
|integer
```

```
|query
```

```
|False
a|Filter by cron.minutes

|cron.months
|integer
|query
|False
a|Filter by cron.months

|uuid
|string
|query
|False
a|Filter by uuid

|name
|string
|query
|False
a|Filter by name

|type
|string
|query
|False
a|Filter by type

|interval
|string
|query
|False
a|Filter by interval

|fields
|array[string]
|query
|False
a|Specify the fields to return.

|max_records
```

```

|integer
|query
|False
a|Limit the number of records returned.

|return_records
|boolean
|query
|False
a|The default is true for GET calls. When set to false, only the number
of records is returned.

|return_timeout
|integer
|query
|False
a|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.

|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response

```

Status: 200, Ok

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

```

```
|num_records
|integer
a|Number of records
```

```
|records
|array[link:#schedule[schedule]]
a|

|===
```

```
.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_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": [
          "integer"
        ],
        "hours": [
          "integer"
        ],
        "minutes": [
```

```

        "integer"
      ],
      "months": [
        "integer"
      ],
      "weekdays": [
        "integer"
      ]
    },
    "interval": "P1DT2H3M4S",
    "name": "string",
    "type": "string",
    "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.
|===

```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|error
```

```
|link:#error[error]
```

```
a|
```

```
|===
```

```
.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links
```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#cluster]
[.api-collapsible-fifth-title]
cluster

```

The cluster that owns the schedule. Defaults to the local cluster.

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```
|name
|string
a|Cluster name
```

```
|uuid
|string
a|Cluster UUID
```

```
|===
```

```
[#cron]
[.api-collapsible-fifth-title]
cron
```

Details for schedules of type cron.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|days
|array[integer]
a|The days of the month the schedule runs. Leave empty for all.
```

```
|hours
|array[integer]
a|The hours of the day the schedule runs. Leave empty for all.
```

```
|minutes
|array[integer]
a|The minutes the schedule runs. Required on POST for a cron schedule.
```

```
|months
|array[integer]
a|The months of the year the schedule runs. Leave empty for all.
```

```
|weekdays
```



```

|array[integer]
a|The weekdays the schedule runs. Leave empty for all.

|===

[#schedule]
[.api-collapsible-fifth-title]
schedule

Complete schedule information

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|cluster
|link:#cluster[cluster]
a|The cluster that owns the schedule. Defaults to the local cluster.

|cron
|link:#cron[cron]
a|Details for schedules of type cron.

|interval
|string
a|An ISO-8601 duration formatted string.

|name
|string
a|Schedule name. Required in the URL or POST body.

|type
|string
a|Schedule type

```

```
|uuid
|string
a|Job schedule UUID
```

```
|===
```

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|code
|string
a|Argument code
```

```
|message
|string
a|Message argument
```

```
|===
```

```
[#error]
[.api-collapsible-fifth-title]
error
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments
```

```
|code
|string
a|Error code
```

```
|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.
```

```
|===
```

```
//end collapsible .Definitions block
====
```

```
[[ID934bbc4023bb27597a689429b4b99e84]]
= Create a schedule
```

```
[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-
block]#`/cluster/schedules`#
```

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.

== Learn more

* xref:{relative_path}cluster_schedules_endpoint_overview.html[DOC
/cluster/schedules]

== Parameters

```
[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description
```

```
|return_records
|boolean
|query
|False
```

a|The default is false. If set to true, the records are returned.

```
|===
```

== Request Body

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|_links
|link:#_links[_links]
a|
```

```
|cluster
|link:#cluster[cluster]
```

a|The cluster that owns the schedule. Defaults to the local cluster.

```
|cron
|link:#cron[cron]
```

a|Details for schedules of type cron.

```
|interval
|string
```

a|An ISO-8601 duration formatted string.

```
|name
|string
a|Schedule name. Required in the URL or POST body.
```

```
|type
|string
a|Schedule type
```

```
|uuid
|string
a|Job schedule UUID
```

```
|===
```

```
.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": [
      "integer"
    ],
    "hours": [
      "integer"
    ],
    "minutes": [
      "integer"
    ],
    "months": [
      "integer"
    ],
  },
}
```

```

    "weekdays": [
        "integer"
    ]
},
"interval": "P1DT2H3M4S",
"name": "string",
"type": "string",
"uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
====

== Response

```

Status: 201, Created

```

== 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.
|====

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#cluster]
[.api-collapsible-fifth-title]
cluster

```

The cluster that owns the schedule. Defaults to the local cluster.

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Cluster name

```



```
|uuid
|string
a|Cluster UUID
```

```
|===
```

```
[#cron]
[.api-collapsible-fifth-title]
cron
```

Details for schedules of type cron.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
|Type
|Description
```

```
|days
|array[integer]
a|The days of the month the schedule runs. Leave empty for all.
```

```
|hours
|array[integer]
a|The hours of the day the schedule runs. Leave empty for all.
```

```
|minutes
|array[integer]
a|The minutes the schedule runs. Required on POST for a cron schedule.
```

```
|months
|array[integer]
a|The months of the year the schedule runs. Leave empty for all.
```

```
|weekdays
|array[integer]
a|The weekdays the schedule runs. Leave empty for all.
```

```

|===

[#schedule]
[.api-collapsible-fifth-title]
schedule

Complete schedule information


[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|cluster
|link:#cluster[cluster]
a|The cluster that owns the schedule. Defaults to the local cluster.


|cron
|link:#cron[cron]
a|Details for schedules of type cron.


|interval
|string
a|An ISO-8601 duration formatted string.


|name
|string
a|Schedule name. Required in the URL or POST body.


|type
|string
a|Schedule type


|uuid
|string

```

a|Job schedule UUID

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]

|===

|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]

|===

|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

```
|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.
```

```
|===
```

```
//end collapsible .Definitions block
====
```

```
[[ID9caa2df82e30e7b6c848a1a7271571f4]]
= Delete a schedule
```

```
[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/cluster/schedules/{uuid}`#
```

Deletes a schedule.

== Learn more

* xref:{relative_path}cluster_schedules_endpoint_overview.html[DOC
/cluster/schedules]

== Parameters

```
[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description
```

```
|uuid
|string
|path
|True
a|
|===

== 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.
|===
```

```
[cols=3*,options=header]
```

```
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===
```

```
.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
=====
```

== Definitions

```
[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
=====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument
```

```

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID97673ebf72ddc1f84c15bleccf2cfd6]]
= Retrieve a schedule

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/schedules/{uuid}`#

```

Retrieves a schedule.

== Learn more

* xref:{relative_path}cluster_schedules_endpoint_overview.html[DOC
/cluster/schedules]

== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|uuid
|string
|path
|True
a|Schedule UUID

|fields
|array[string]
|query
|False
a|Specify the fields to return.

|===

== Response

Status: 200, Ok

[cols=3*,options=header]
|===
|Name
|Type
|Description


```

|_links
|link:#_links[_links]
a|

|cluster
|link:#cluster[cluster]
a|The cluster that owns the schedule. Defaults to the local cluster.

|cron
|link:#cron[cron]
a|Details for schedules of type cron.

|interval
|string
a|An ISO-8601 duration formatted string.

|name
|string
a|Schedule name. Required in the URL or POST body.

|type
|string
a|Schedule type

|uuid
|string
a|Job schedule UUID

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}

```

```

},
"cluster": {
  "name": "cluster1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"cron": {
  "days": [
    "integer"
  ],
  "hours": [
    "integer"
  ],
  "minutes": [
    "integer"
  ],
  "months": [
    "integer"
  ],
  "weekdays": [
    "integer"
  ]
},
"interval": "P1DT2H3M4S",
"name": "string",
"type": "string",
"uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}
====

== Error

```

Status: Default, Error

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

```

```

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|self
```

```
|link:#href[href]
```

```
a|
```

```
|===
```

```
[#cluster]
```

```
[.api-collapsible-fifth-title]
```

```
cluster
```

The cluster that owns the schedule. Defaults to the local cluster.

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|name
```

```
|string
```

```
a|Cluster name
```

```
|uuid
```

```
|string
```

```
a|Cluster UUID
```

```
|===
```

```
[#cron]
```

```
[.api-collapsible-fifth-title]
```

```
cron
```

Details for schedules of type cron.

```
[cols=3*,options=header]
```

```

|===
|Name
|Type
|Description

|days
|array[integer]
a|The days of the month the schedule runs. Leave empty for all.

|hours
|array[integer]
a|The hours of the day the schedule runs. Leave empty for all.

|minutes
|array[integer]
a|The minutes the schedule runs. Required on POST for a cron schedule.

|months
|array[integer]
a|The months of the year the schedule runs. Leave empty for all.

|weekdays
|array[integer]
a|The weekdays the schedule runs. Leave empty for all.

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

```

```

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
=====

```

```
[[IDa1317c9608396462e3d8b58f1a114f18]]
```

= Update a schedule

```
[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-  
block]#`/cluster/schedules/{uuid}`#
```

Updates a schedule. Note that you cannot modify a cron field of an interval schedule, or the interval field of a cron schedule.

== Learn more

* xref:{relative_path}cluster_schedules_endpoint_overview.html[DOC
/cluster/schedules]

== Parameters

```
[cols=5*,options=header]  
|===
```

```
|Name  
|Type  
|In  
|Required  
|Description
```

```
|uuid  
|string  
|path  
|True  
a|Schedule UUID
```

```
|===
```

== Request Body

```
[cols=3*,options=header]  
|===
```

```
|Name  
|Type  
|Description
```

```
|_links
```

```

|link:#_links[_links]
a|

|cron
|link:#cron[cron]
a|Details for schedules of type cron.

|interval
|string
a|An ISO-8601 duration formatted string.

|type
|string
a|Schedule type

|uuid
|string
a|Job schedule UUID

|===

```

```

.Example request
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cron": {
    "days": [
      "integer"
    ],
    "hours": [
      "integer"
    ],
    "minutes": [
      "integer"
    ],
    "months": [

```



```

        "integer"
    ],
    "weekdays": [
        "integer"
    ]
},
"interval": "P1DT2H3M4S",
"type": "string",
"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.
|===

[cols=3*,options=header]
|===
|Name

```

```

|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```
|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|self
|link:#href[href]
a|
```

```
|===
```

```
[#cluster]
[.api-collapsible-fifth-title]
cluster
```

The cluster that owns the schedule. Defaults to the local cluster.

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|name
|string
a|Cluster name
```

```
|uuid
|string
a|Cluster UUID
```

```

|===

[#cron]
[.api-collapsible-fifth-title]
cron

Details for schedules of type cron.


[cols=3*,options=header]
|===
|Name
|Type
|Description

|days
|array[integer]
a|The days of the month the schedule runs. Leave empty for all.


|hours
|array[integer]
a|The hours of the day the schedule runs. Leave empty for all.


|minutes
|array[integer]
a|The minutes the schedule runs. Required on POST for a cron schedule.


|months
|array[integer]
a|The months of the year the schedule runs. Leave empty for all.


|weekdays
|array[integer]
a|The weekdays the schedule runs. Leave empty for all.


|===

[#schedule]
[.api-collapsible-fifth-title]
schedule

```

Complete schedule information

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|cron
|link:#cron[cron]
a|Details for schedules of type cron.

|interval
|string
a|An ISO-8601 duration formatted string.

|type
|string
a|Schedule type

|uuid
|string
a|Job schedule UUID

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block

```

====

:leveloffset: -1

= Manage cluster software

:leveloffset: +1

[[ID191a4e41a94e072dd2705110f27aa7f0]]

= Cluster software endpoint overview

:doctype: book

== Overview

You can use the ONTAP cluster software API to retrieve and display relevant information about a software profile, software packages collection, and software history collection. This API retrieves the information about all software packages present in the cluster, or a specific software package.

You can use the POST request to download a software package 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 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": {
        "code": 166,
        "message": "Use NFS hard mounts, if possible.",
      }
    },
    {
      "action": {
        "code": 166,
        "message": "Use NFS hard mounts, if possible.",
      }
    }
  ],
  "version": "9.5.0",
  "pending_version": "9.6.0",
  "nodes": [
    {
      "node": "sti70-vsim-ucs165n",
      "version": "9.5.0"
    }
  ],
  "metrocluster": {
    "progress_summary": {
      "message": "Update paused by user"
    },
    "progress_details": {
      "message": "Installing software image on cluster \"sti70-vsim-ucs165n_siteA\"."
    },
    "clusters": [
      {
        "name": "sti70-vsim-ucs165n_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-vsim-ucs165n"
        }
    }
],
"status_details": [
    {
        "name": "do-download-job",
        "state": "completed",
        "issue": {
            "message": "Image update complete"
        },
        "start_time": "2018-05-21T09:53:04+05:30",
        "end_time": "2018-05-21T11:53:04+05:30",
        "node": {
            "name": "sti70-vsim-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.

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 \"Performing manual checks before an automated
cluster upgrade\" section in the \"Clustered Data ONTAP Upgrade Express
Guide\" 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 \"Performing manual
checks before an automated cluster upgrade\" section in the \"Clustered
Data ONTAP Upgrade Express Guide\" for the remaining validation checks
that need to be performed before update."
    }
  }
],
"nodes": [
  {
    "node": "node1",
    "version": "9.7.0"
  },
  {
    "node": "node2",
    "version": "9.7.0"
  }
],
"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.

```

-----

# 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`.

```
----
```

```
# 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 \"Performing manual checks before an automated
cluster upgrade\" section in the \"Clustered Data ONTAP Upgrade Express
Guide\" 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 \"Performing manual
checks before an automated cluster upgrade\" section in the \"Clustered
Data ONTAP Upgrade Express Guide\" for the remaining validation checks
that need to be performed before update."
    }
},
],
"nodes": [
    {
        "node": "node1",
        "version": "9.7.0"
    },
    {
        "node": "node2",
        "version": "9.7.0"
    }
],
"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."
        },
        "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."
    },
    "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"
    }
}
}

```

'''

==== 3. Pausing/resuming/canceling the 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 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 \"Performing manual checks before an automated
cluster upgrade\" section in the \"Clustered Data ONTAP Upgrade Express
Guide\" 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 \"Performing manual
checks before an automated cluster upgrade\" section in the \"Clustered
Data ONTAP Upgrade Express Guide\" for the remaining validation checks

```

```

that need to be performed before update."
    }
  },
  "nodes": [
    {
      "node": "node1",
      "version": "9.7.0"
    },
    {
      "node": "node2",
      "version": "9.7.0"
    }
  ],
  "pending_version": "9.7.0",
  "state": "pause_pending",
  "elapsed_duration": 103,
  "estimated_duration": 5220,
  "status_details": [
    {
      "status": "in-progress",
      "issue": {
        "message": "Installing software image."
      },
      "start_time": "2019-01-08T02:54:36+05:30",
      "node": {
        "name": "node1"
      }
    },
    {
      "status": "in-progress",
      "issue": {
        "message": "Installing software image."
      },
      "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 package from an HTTP or FTP server. Provide the ``url``, ``username``, and ``password``, if required, to start the download of the software 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://nbsweb.eng.btc.netapp.in/~suvadipd/99/image1.tgz", "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 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": 10551760,  
  "_links": {  
    "self": {  
      "href": "/api/cluster/software/download"  
    }  
  }  
}
```

```
----
```

```
'''
```

```
=== 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

| 10551367
| A package synchronization is in progress

| 10551388
| Package delete operation timed out
|===
```

```
'''
```

```
[discrete]
```

```
=== 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-vsim-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"
}
----

'''

```

```

[[ID831615fe0acd7c71d89069f569d86162]]
= Retrieve the cluster software profile

```

```

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/software`#

```

Retrieves the software profile of a cluster.

== Related ONTAP commands

```

* `cluster image show`
* `cluster image show-update-progress`

```

== Learn more

```

* xref:{relative_path}cluster_software_endpoint_overview.html[DOC
/cluster/software]

```

== Parameters

```

[cols=5*,options=header]
|===

```

```

|Name
|Type
|In
|Required
|Description

|max_records
|integer
|query
|False
a|Limit the number of records returned.

|return_records
|boolean
|query
|False
a|The default is true for GET calls. When set to false, only the number
of records is returned.

|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|fields
|array[string]
|query
|False
a|Specify the fields to return.

|return_timeout
|integer
|query
|False
a|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.

|===

```

== Response

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|action
|string
a|User triggered action to apply to the install operation

|elapsed_duration
|integer
a|Elapsed time during the upgrade or validation operation

|estimated_duration
|integer
a|Estimated time remaining until completion of the upgrade or validation
operation.

|metrocluster
|link:#metrocluster[metrocluster]
a|

|nodes
|array[link:#software_node_reference[software_node_reference]]
a|List of nodes and active versions.

|pending_version
|string
a|Version being installed on the system.

* example: ONTAP_X_1
* readOnly: 1
```

```
|state
|string
a|Operational state of the upgrade
```

```
|status_details
|array[link:#software_status_details_reference[software_status_details_ref
erence]]
a|Display status details.
```

```
|update_details
|array[link:#software_update_details_reference[software_update_details_ref
erence]]
a|Display update progress details.
```

```
|validation_results
|array[link:#software_validation_reference[software_validation_reference]]
a|List of validation warnings, errors, and advice.
```

```
|version
|string
a|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.
```

* example: ONTAP_X

|===

```
.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_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": [
  {
    "name": "node1",
    "version": "ONTAP_X"
  }
],
"pending_version": "ONTAP_X_1",
"state": "completed",
"status_details": [
  {
    "action": {
      "message": "string"
    },
    "end_time": "2019-02-02 19:00:00 UTC",
    "issue": {
      "message": "Image update complete"
    },
    "name": "initialize",
    "node": {
      "name": "node1"
    },
    "start_time": "2019-02-02 19:00:00 UTC",
    "state": "failed"
  }
],
"update_details": [
  {
    "elapsed_duration": 2100,
    "estimated_duration": 4620,

```

```

    "node": {
      "name": "node1"
    },
    "phase": "Pre-update checks",
    "state": "failed"
  }
],
"validation_results": [
  {
    "action": {
      "message": "string"
    },
    "issue": {
      "message": "Validation error: Cluster HA is not configured in the
cluster"
    },
    "status": "warning",
    "update_check": "nfs_mounts"
  }
],
"version": "ONTAP_X"
}
====

== Error

```

Status: Default, Error

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]

```



```

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

```

====

== Definitions

```

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block

```

====

```

[#href]
[.api-collapsible-fifth-title]
href

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|href
|string
a|

```

|===

```

[#_links]
[.api-collapsible-fifth-title]
_links

```

```

[cols=3*,options=header]
|===
|Name

```

```

|Type
|Description

|self
|link:#href[href]
a|

|===

[#software_mcc_reference]
[.api-collapsible-fifth-title]
software_mcc_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|elapsed_duration
|integer
a|Elapsed duration of update time (in seconds) of MetroCluster.

|estimated_duration
|integer
a|Estimated duration of update time (in seconds) of MetroCluster.

|name
|string
a|Name of the site in MetroCluster.

|state
|
a|Upgrade state of MetroCluster.

|===

[#progress_details]
[.api-collapsible-fifth-title]
progress_details

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|MetroCluster update progress details.

|===

[#progress_summary]
[.api-collapsible-fifth-title]
progress_summary

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|MetroCluster update progress summary.

|===

[#metrocluster]
[.api-collapsible-fifth-title]
metrocluster

[cols=3*,options=header]
|===
|Name
|Type
|Description

|clusters
|array[link:#software_mcc_reference[software_mcc_reference]]
a|List of MetroCluster sites, statuses, and active ONTAP versions.

* readOnly: 1

```

```
|progress_details
|link:#progress_details[progress_details]
a|
```

```
|progress_summary
|link:#progress_summary[progress_summary]
a|
```

```
|===
```

```
[#software_node_reference]
[.api-collapsible-fifth-title]
software_node_reference
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|name
|string
a|Name of the node.
```

```
|version
|string
a|ONTAP version of the node.
```

```
* example: ONTAP_X
* readOnly: 1
```

```
|===
```

```
[#action]
[.api-collapsible-fifth-title]
action
```

```
[cols=3*,options=header]
|===
|Name
|Type
```

```

|Description

|message
|string
a|

|===

[#issue]
[.api-collapsible-fifth-title]
issue

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|

|===

[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Name of the node to be retrieved for status details.

|===

[#software_status_details_reference]
[.api-collapsible-fifth-title]
software_status_details_reference

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|action
|link:#action[action]
a|

|end_time
|string
a|End time for each status phase.

|issue
|link:#issue[issue]
a|

|name
|string
a|Name of the phase to be retrieved for status details.

|node
|link:#node[node]
a|

|start_time
|string
a|Start time for each status phase.

|state
|string
a|Status of the phase

|===

[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]

```

```

|===
|Name
|Type
|Description

|name
|string
a|Name of the node to be retrieved for update details.

```

```

|===

```

```

[#software_update_details_reference]
[.api-collapsible-fifth-title]
software_update_details_reference

```

```

[cols=3*,options=header]

```

```

|===

```

```

|Name
|Type
|Description

```

```

|elapsed_duration
|integer

```

```

a|Elapsed duration for each update phase

```

```

|estimated_duration
|integer

```

```

a|Estimated duration for each update phase

```

```

|node
|link:#node[node]
a|

```

```

|phase
|string
a|Phase details

```

```

|state
|string
a|State of the update phase

```

```

|===

[#action]
[.api-collapsible-fifth-title]
action

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|Specifies the corrective action to be taken to resolve a validation
error

|===

[#issue]
[.api-collapsible-fifth-title]
issue

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|Details of the error or warning encountered by the update checks

|===

[#software_validation_reference]
[.api-collapsible-fifth-title]
software_validation_reference

[cols=3*,options=header]
|===
|Name

```



```

|Type
|Description

|action
|link:#action[action]
a|

|issue
|link:#issue[issue]
a|

|status
|string
a|Status of this update check.

|update_check
|string
a|Name of the update check to be validated.

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

|===

```

```

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID2affbf9302c4fdb8c2b45b7639040b6f]]
= Update the cluster software version

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/cluster/software`#

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.

== Related ONTAP commands

* `cluster image validate`

* `cluster image update`

* `cluster image pause-update`

* `cluster image resume-update`

* `cluster image cancel-update`

== Learn more

* [xref:{relative_path}cluster_software_endpoint_overview.html\[DOC /cluster/software\]](#)

== Parameters

[cols=5*,options=header]

|==

|Name

|Type

|In

|Required

|Description

|return_records

|boolean

|query

```

|False
a|The default is false. If set to true, the records are returned.

|return_timeout
|integer
|query
|False
a|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.

|validate_only
|boolean
|query
|False
a|Validate the operation and its parameters, without actually performing
the operation.

|skip_warnings
|boolean
|query
|False
a|Ignore warnings and proceed with the install.

|action
|string
|query
|False
a|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 `success` or `failure`.

* enum: ["pause", "resume", "cancel"]

|===

== Request Body

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|action
|string
a|User triggered action to apply to the install operation

|elapsed_duration
|integer
a|Elapsed time during the upgrade or validation operation

|estimated_duration
|integer
a|Estimated time remaining until completion of the upgrade or validation
operation.

|metrocluster
|link:#metrocluster[metrocluster]
a|

|nodes
|array[link:#software_node_reference[software_node_reference]]
a|List of nodes and active versions.

|pending_version
|string
a|Version being installed on the system.

* example: ONTAP_X_1
* readOnly: 1

|state
|string

```

a|Operational state of the upgrade

|status_details

|array[link:#software_status_details_reference[software_status_details_reference]]

a|Display status details.

|update_details

|array[link:#software_update_details_reference[software_update_details_reference]]

a|Display update progress details.

|validation_results

|array[link:#software_validation_reference[software_validation_reference]]

a|List of validation warnings, errors, and advice.

|version

|string

a|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.

* example: ONTAP_X

|===

.Example request

[%collapsible%closed]

====

[source,json,subs=+macros]

```
{
  "_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": [
  {
    "name": "node1",
    "version": "ONTAP_X"
  }
],
"pending_version": "ONTAP_X_1",
"state": "completed",
"status_details": [
  {
    "action": {
      "message": "string"
    },
    "end_time": "2019-02-02 19:00:00 UTC",
    "issue": {
      "message": "Image update complete"
    },
    "name": "initialize",
    "node": {
      "name": "node1"
    },
    "start_time": "2019-02-02 19:00:00 UTC",
    "state": "failed"
  }
],
"update_details": [
  {
    "elapsed_duration": 2100,
    "estimated_duration": 4620,
    "node": {
      "name": "node1"
    },
  },

```

```
    "phase": "Pre-update checks",
    "state": "failed"
  }
],
"validation_results": [
  {
    "action": {
      "message": "string"
    },
    "issue": {
      "message": "Validation error: Cluster HA is not configured in the
cluster"
    },
    "status": "warning",
    "update_check": "nfs_mounts"
  }
],
"version": "ONTAP_X"
}
====
```

== Response

Status: 202, Accepted


```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
====

== Error

```

Status: Default, Error

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

```

```

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]

```

`_links`

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|self
```

```
|link:#href[href]
```

```
a|
```

```
|===
```

```
[#software_mcc_reference]
```

```
[.api-collapsible-fifth-title]
```

```
software_mcc_reference
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|elapsed_duration
```

```
|integer
```

```
a|Elapsed duration of update time (in seconds) of MetroCluster.
```

```
|estimated_duration
```

```
|integer
```

```
a|Estimated duration of update time (in seconds) of MetroCluster.
```

```
|name
```

```
|string
```

```
a|Name of the site in MetroCluster.
```

```
|state
```

```
|
```

```
a|Upgrade state of MetroCluster.
```

```
|===
```

```

[#progress_details]
[.api-collapsible-fifth-title]
progress_details

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|MetroCluster update progress details.

|===

[#progress_summary]
[.api-collapsible-fifth-title]
progress_summary

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|MetroCluster update progress summary.

|===

[#metrocluster]
[.api-collapsible-fifth-title]
metrocluster

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|clusters
|array[link:#software_mcc_reference[software_mcc_reference]]
a|List of MetroCluster sites, statuses, and active ONTAP versions.

* readOnly: 1


|progress_details
|link:#progress_details[progress_details]
a|

|progress_summary
|link:#progress_summary[progress_summary]
a|

|===

[#software_node_reference]
[.api-collapsible-fifth-title]
software_node_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Name of the node.

|version
|string
a|ONTAP version of the node.

* example: ONTAP_X
* readOnly: 1

|===

[#action]
[.api-collapsible-fifth-title]
action

```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|

|===

[#issue]
[.api-collapsible-fifth-title]
issue

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|

|===

[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Name of the node to be retrieved for status details.

|===

```

```

[#software_status_details_reference]
[.api-collapsible-fifth-title]
software_status_details_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|action
|link:#action[action]
a|

|end_time
|string
a|End time for each status phase.

|issue
|link:#issue[issue]
a|

|name
|string
a|Name of the phase to be retrieved for status details.

|node
|link:#node[node]
a|

|start_time
|string
a|Start time for each status phase.

|state
|string
a|Status of the phase

|===

```

```

[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===
|Name
|Type
|Description

|name
|string
a|Name of the node to be retrieved for update details.

|===

[#software_update_details_reference]
[.api-collapsible-fifth-title]
software_update_details_reference

[cols=3*,options=header]
|===
|Name
|Type
|Description

|elapsed_duration
|integer
a|Elapsed duration for each update phase

|estimated_duration
|integer
a|Estimated duration for each update phase

|node
|link:#node[node]
a|

|phase
|string
a|Phase details

```



```

|state
|string
a|State of the update phase

|===

[#action]
[.api-collapsible-fifth-title]
action

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|Specifies the corrective action to be taken to resolve a validation
error

|===

[#issue]
[.api-collapsible-fifth-title]
issue

[cols=3*,options=header]
|===
|Name
|Type
|Description

|message
|string
a|Details of the error or warning encountered by the update checks

|===

[#software_validation_reference]
[.api-collapsible-fifth-title]

```

```
software_validation_reference
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|action
```

```
|link:#action[action]
```

```
a|
```

```
|issue
```

```
|link:#issue[issue]
```

```
a|
```

```
|status
```

```
|string
```

```
a|Status of this update check.
```

```
|update_check
```

```
|string
```

```
a|Name of the update check to be validated.
```

```
|===
```

```
[#software_reference]
```

```
[.api-collapsible-fifth-title]
```

```
software_reference
```

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

```
|link:#_links[_links]
```

```
a|
```

```
|action
```

```
|string
```

```
a|User triggered action to apply to the install operation
```

```

|elapsed_duration
|integer
a|Elapsed time during the upgrade or validation operation

|estimated_duration
|integer
a|Estimated time remaining until completion of the upgrade or validation
operation.

|metrocluster
|link:#metrocluster[metrocluster]
a|

|nodes
|array[link:#software_node_reference[software_node_reference]]
a|List of nodes and active versions.

|pending_version
|string
a|Version being installed on the system.

* example: ONTAP_X_1
* readOnly: 1

|state
|string
a|Operational state of the upgrade

|status_details
|array[link:#software_status_details_reference[software_status_details_ref
erence]]
a|Display status details.

|update_details
|array[link:#software_update_details_reference[software_update_details_ref
erence]]
a|Display update progress details.

|validation_results

```

```

|array[link:#software_validation_reference[software_validation_reference]]
a|List of validation warnings, errors, and advice.

|version
|string
a|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.

* example: ONTAP_X

|===

[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

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

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type

```

|Description

|code

|string

a|Argument code

|message

|string

a|Message argument

|===

[#error]

[.api-collapsible-fifth-title]

error

[cols=3*,options=header]

|===

|Name

|Type

|Description

|arguments

|array[link:#error_arguments[error_arguments]]

a|Message arguments

|code

|string

a|Error code

|message

|string

a|Error message

|target

|string

a|The target parameter that caused the error.

|===

```
//end collapsible .Definitions block
====

[[IDbc1b0fc3f7ff7a3b5c0ed12a0e359c9c]]
= Retrieve the software or firmware download status

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/software/download`#

Retrieves the software download status.

== Related ONTAP commands

* `cluster image package check-download-progress`

== Learn more

* xref:{relative_path}cluster_software_endpoint_overview.html[DOC
/cluster/software]

== Parameters

[cols=5*,options=header]
|===

|Name
|Type
|In
|Required
|Description

|max_records
|integer
|query
|False
a|Limit the number of records returned.

|return_records
|boolean
|query
```

```
|False
a|The default is true for GET calls.  When set to false, only the number
of records is returned.

|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|fields
|array[string]
|query
|False
a|Specify the fields to return.

|return_timeout
|integer
|query
|False
a|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.

|===

== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|integer
a|Code corresponds to download message

|message
|string
a|Download progress details

|state
|string
a|Download status of the package

|===
```

```
.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "code": 10551496,
  "message": "Package download in progress",
  "state": "success"
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```



```

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

```

```

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
=====

```

```
[[IDf9e6c3aad47c57d3be647d79362a3c69]]
```

= Download a software or firmware package

```
[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-block]#`/cluster/software/download`#
```

Downloads a software 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

* [xref:{relative_path}cluster_software_endpoint_overview.html](#) [DOC /cluster/software]

== Parameters

```
[cols=5*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|return_records
```

```
|boolean
```

```
|query
```

```
|False
```

a|The default is false. If set to true, the records are returned.

```
|return_timeout
```

```
|integer
```

```
|query
```

```
|False
```

a|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.

```
|===
```

== Request Body

```
[cols=3*,options=header]
```

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|password
```

```
|string
```

a|Password for download

```
|url
```

```
|string
```

a|HTTP or FTP URL of the package through a server

```
|username
```

```
|string
```

a|Username for download

```
|===
```

```
.Example request
```

```
[%collapsible%closed]
```

```
====
```

```
[source,json,subs=+macros]
```

```
{
```

```

"password": "admin_password",
"url": "http://server/package",
"username": "admin"
}
====

== Response

```

Status: 202, Accepted

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|job
|link:#job_link[job_link]
a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "job": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "uuid": "string"
  }
}
====

== Error

```

Status: Default, Error

```

[cols=3*,options=header]
|===

```

```

|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#software_package_download]
[.api-collapsible-fifth-title]
software_package_download

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```

|password
|string
a|Password for download

|url
|string
a|HTTP or FTP URL of the package through a server

|username
|string
a|Username for download

|===

[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]

```

```

a|

|===

[#job_link]
[.api-collapsible-fifth-title]
job_link

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

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

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

```



```

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID6cd827a701523a7262c639a92e13b059]]
= Retrieve the software installation request history details

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/software/history`#

```

Retrieves the history details for software installation requests.

== Related ONTAP commands

* ``cluster image show-update-history``

== Learn more

* `xref:{relative_path}cluster_software_endpoint_overview.html` [DOC
/cluster/software]

== Parameters

[cols=5*,options=header]

|===

|Name

|Type

|In

|Required

|Description

|to_version

|string

|query

|False

a|Filter by to_version

|state

|string

|query

|False

a|Filter by state

|node.uuid

|string

|query

|False

a|Filter by node.uuid

```
|node.name
|string
|query
|False
a|Filter by node.name
```

```
|start_time
|string
|query
|False
a|Filter by start_time
```

```
|end_time
|string
|query
|False
a|Filter by end_time
```

```
|from_version
|string
|query
|False
a|Filter by from_version
```

```
|fields
|array[string]
|query
|False
a|Specify the fields to return.
```

```
|max_records
|integer
|query
|False
a|Limit the number of records returned.
```

```
|return_records
|boolean
|query
|False
a|The default is true for GET calls. When set to false, only the number
```

of records is returned.

```
|return_timeout
|integer
|query
|False
a|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.
```

```
|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.
```

```
|===
```

```
== Response
```

Status: 200, Ok

```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|

|records
|array[link:#software_history[software_history]]
a|

|===
```

```
.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "end_time": "2019-02-02 20:00:00 UTC",
      "from_version": "ONTAP_X1",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-aelc-123478563412"
      },
      "start_time": "2019-02-02 19:00:00 UTC",
      "state": "successful",
      "to_version": "ONTAP_X2"
    }
  ]
}
====

== Error
```

Status: Default, Error

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

```

```

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#node]
[.api-collapsible-fifth-title]
node

[cols=3*,options=header]
|===

```

```

|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|name
|string
a|

|uuid
|string
a|

|===

[#software_history]
[.api-collapsible-fifth-title]
software_history

[cols=3*,options=header]
|===
|Name
|Type
|Description

|end_time
|string
a|Completion time of this installation request.

|from_version
|string
a|Previous version of node

* example: ONTAP_X1
* readOnly: 1

|node
|link:#node[node]
a|

|start_time

```



```
|string
a|Start time of this installation request.
```

```
|state
|string
a|Status of this installation request.
```

```
|to_version
|string
a|Updated version of node
```

```
* example: ONTAP_X2
* readOnly: 1
```

```
|===
```

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Argument code
```

```
|message
|string
a|Message argument
```

```
|===
```

```
[#error]
[.api-collapsible-fifth-title]
error
```

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

[[ID40d62dec0b6e5d2a14df38a7671f178]]
= Retrieve the cluster software packages

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/software/packages`#

Retrieves the software packages for a cluster.

== Related ONTAP commands

* `cluster image package show-repository`

```

== Learn more

* xref:{relative_path}cluster_software_endpoint_overview.html[DOC
/cluster/software]

== Parameters

[cols=5*,options=header]

|===

|Name

|Type

|In

|Required

|Description

|version

|string

|query

|False

a|Filter by version

|create_time

|string

|query

|False

a|Filter by create_time

|fields

|array[string]

|query

|False

a|Specify the fields to return.

|max_records

|integer

|query

|False

a|Limit the number of records returned.

|return_records

```

|boolean
|query
|False
a|The default is true for GET calls. When set to false, only the number
of records is returned.

|return_timeout
|integer
|query
|False
a|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.

|order_by
|array[string]
|query
|False
a|Order results by specified fields and optional [asc|desc] direction.
Default direction is 'asc' for ascending.

|===

== Response

```

Status: 200, Ok

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|num_records
|integer
a|

|records
|array[link:#software_package[software_package]]

```

```

a|

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "create_time": "2019-02-04 19:00:00 UTC",
      "version": "ONTAP_X"
    }
  ]
}
====

== Error

```

Status: Default, Error

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

```

```

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name
|Type
|Description

|href
|string
a|

|===

```

```

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|next
|link:#href[href]
a|

|self
|link:#href[href]
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#software_package]
[.api-collapsible-fifth-title]
software_package

[cols=3*,options=header]
|===
|Name
|Type
|Description

```

```
|_links
|link:#_links[_links]
a|
```

```
|create_time
|string
a|Indicates when this package was loaded
```

```
|version
|string
a|Version of this package
```

```
* example: ONTAP_X
* readOnly: 1
```

```
|===
```

```
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments
```

```
[cols=3*,options=header]
|===
|Name
|Type
|Description
```

```
|code
|string
a|Argument code
```

```
|message
|string
a|Message argument
```

```
|===
```

```
[#error]
[.api-collapsible-fifth-title]
error
```



```
[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments
```

```
|code
|string
a|Error code
```

```
|message
|string
a|Error message
```

```
|target
|string
a|The target parameter that caused the error.
```

```
|===
```

```
//end collapsible .Definitions block
====
```

```
[[ID05d2c23503cf447d2d601145aa09af35]]
= Delete a software package from the cluster
```

```
[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-
block]#`/cluster/software/packages/{version}`#
```

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
```

```
* xref:{relative_path}cluster_software_endpoint_overview.html[DOC  
/cluster/software]
```

```
== Parameters
```

```
[cols=5*,options=header]  
|===
```

```
|Name  
|Type  
|In  
|Required  
|Description
```

```
|return_timeout  
|integer  
|query  
|False
```

a|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.

```
|version  
|string  
|path  
|True  
a|  
|===
```

```
== Response
```

Status: 202, Accepted

```
== Error
```

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

|===

[cols=3*,options=header]

|===

|Name

|Type

|Description

```

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string

```

```

a|Argument code

|message
|string
a|Message argument

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
=====

```

```
[[ID087a2a926171fc4cdc342e9eb893baf8]]
= Retrieve software package information
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/software/packages/{version}`#
```

Retrieves the software package information.

== Related ONTAP commands

* `cluster image package show-repository`

== Learn more

* xref:{relative_path}cluster_software_endpoint_overview.html[DOC
/cluster/software]

== Parameters

```
[cols=5*,options=header]
|===
```

```
|Name
|Type
|In
|Required
|Description
```

```
|version
|string
|path
|True
a|
```

```
|fields
|array[string]
|query
|False
a|Specify the fields to return.
```

```
|===
```

== Response

Status: 200, Ok

```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|_links
|link:#_links[_links]
a|

|create_time
|string
a|Indicates when this package was loaded

|version
|string
a|Version of this package

* example: ONTAP_X
* readOnly: 1

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "create_time": "2019-02-04 19:00:00 UTC",
  "version": "ONTAP_X"
}
====

== Error

```

Status: Default, Error


```

[cols=3*,options=header]
|===
|Name
|Type
|Description

|error
|link:#error[error]
a|

|===

.Example error
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  }
}
====

== Definitions

[.api-def-first-level]
.See Definitions
[%collapsible%closed]
//Start collapsible Definitions block
====
[#href]
[.api-collapsible-fifth-title]
href

[cols=3*,options=header]
|===
|Name

```

```

|Type
|Description

|href
|string
a|

|===

[#_links]
[.api-collapsible-fifth-title]
_links

[cols=3*,options=header]
|===
|Name
|Type
|Description

|self
|link:#href[href]
a|

|===

[#error_arguments]
[.api-collapsible-fifth-title]
error_arguments

[cols=3*,options=header]
|===
|Name
|Type
|Description

|code
|string
a|Argument code

|message
|string
a|Message argument

```

```

|===

[#error]
[.api-collapsible-fifth-title]
error

[cols=3*,options=header]
|===
|Name
|Type
|Description

|arguments
|array[link:#error_arguments[error_arguments]]
a|Message arguments

|code
|string
a|Error code

|message
|string
a|Error message

|target
|string
a|The target parameter that caused the error.

|===

//end collapsible .Definitions block
====

:leveloffset: -1

:leveloffset: -1

```

:leveloffset: -1

<<<

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