



Cluster

ONTAP 9.8 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
minimal_2_node_cluster.txt(body):
{
  "name": "clusCreateExample1",
  "password": "openSesame",
  "nodes": [
    {
      "cluster_interface": {
        "ip": {
          "address": "1.1.1.1"
        }
      }
    },
    {
      "cluster_interface": {
        "ip": {
          "address": "2.2.2.2"
        }
      }
    }
  ]
}

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

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

```

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

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

```

Modifying a cluster-wide configuration

```

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

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

```

Creating a cluster using the cluster "create" operation

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

Preparing for setup

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

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

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

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

Discovering the nodes

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

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

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

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

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

Creating the cluster

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

```

# The API:
/api/cluster

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

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

```

Monitoring the progress of cluster creation

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

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

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

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

Verifying the cluster information

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

```

# The API:
/api/cluster

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster?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"
        }
      }
    },
    {
      "self": {
        "href": "/api/cluster"
      }
    }
  ]
}

```

Retrieve a cluster configuration

GET /cluster

Introduced In: 9.6

Retrieves the cluster configuration.

Parameters

Name	Type	In	Required	Description
max_records	integer	query	False	Limit the number of records returned.

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc
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.
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	Provides the cluster-wide time zone information that localizes time found on messages displayed on each node's: <ul style="list-style-type: none"> • console messages; • logging to internal ONTAP log files; and • localized REST API full ISO-8601 date, time, and time zone format information. Machine-to-machine interfaces, such as file access protocols (NFS, CIFS), block access protocols (SAN), and other protocols such as Manage ONTAP (ONTAPI), use second or subsecond time values that are based on world time or UTC. • Introduced in: 9.7
uuid	string	
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_backup": {
    "password": "yourpassword",
    "url": "http://10.224.65.198/backups",
    "username": "me"
  },
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "dns_domains": [
    "example.com",
    "example2.example3.com"
  ],
  "license": {
    "keys": {
    }
  },
  "location": "building 1",
  "management_interface": {
    "ip": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    }
  },
  "management_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
}
```

```
"ip": {
  "address": "10.10.10.7"
},
"name": "lif1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "latency": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "status": "ok",
  "throughput": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"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": "ok"
  },
  "frus": {
    "id": 0,
    "state": "ok",
    "type": "fan"
  },
  "over_temperature": "over"
},
"date": "2019-04-17T11:49:26-04:00",
"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": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"duration": "PT15S",
"processor_utilization": "13",
"status": "ok",
"timestamp": "2017-01-25T11:20:13Z"
```

```

},
"metrocluster": {
  "type": "fc"
},
"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": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "link_status": "up",
  "mac_address": "string",
  "state": "online"
},
"state": "up",
"statistics": {
  "processor_utilization_base": "12345123",
  "processor_utilization_raw": "13",
  "status": "ok",
  "timestamp": "2017-01-25T11:20:13Z"
},
"system_id": "0537035403",
"system_machine_type": "7Y56-CTOWW1",
"uptime": "300536",
"uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
"vendor_serial_number": "791603000068",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": "9",
  "major": "4",
  "minor": "0"
},
"vm": {
  "provider_type": "GoogleCloud"
}
},
"ntp_servers": [

```



```

    "time.nist.gov",
    "10.98.19.20",
    "2610:20:6F15:15::27"
  ],
  "password": "mypassword",
  "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": "2017-01-25T11:20:13Z"
  },
  "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	
name	string	Certificate name
uuid	string	Certificate UUID

configuration_backup

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

license

License keys or NLF contents.

Name	Type	Description
keys	array[string]	

ip

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, 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	integer	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.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

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

metrocluster

Metrocluster

Name	Type	Description
type	string	The Metrocluster configuration type

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
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	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.

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	

statistics

Raw CPU performance for the nodes.

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

version

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

Name	Type	Description
full	string	The full cluster version string.

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

vm

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

nodes

Complete node information

Name	Type	Description
_links	_links	
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none"> • example: 2019-04-17T11:49:26-04:00 • format: date-time • readOnly: 1
ha	ha	
location	string	

Name	Type	Description
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
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.
statistics	statistics	Raw CPU performance for the nodes.
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 • Introduced in: 9.7

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 a cluster configuration

PATCH /cluster

Introduced In: 9.6

Updates the cluster configuration after the cluster is created.

Related ONTAP commands *cluster identity modify* system node modify* vserver services dns modify* vserver services name-service dns modify* timezone* security ssl modify

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. <ul style="list-style-type: none"> • Default value:

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

Request Body

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
configuration_backup	configuration_backup	
contact	string	

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

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

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_backup": {
    "password": "yourpassword",
    "url": "http://10.224.65.198/backups",
    "username": "me"
  },
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "dns_domains": [
    "example.com",
    "example2.example3.com"
  ],
  "license": {
    "keys": {
    }
  },
  "location": "building 1",
  "management_interface": {
    "ip": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    }
  },
  "management_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
}
```

```
"ip": {
  "address": "10.10.10.7"
},
"name": "lif1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "latency": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "status": "ok",
  "throughput": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"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": "102400000000",
    "firmware_version": "NA05",
    "hardware_revision": "A1",
    "model": "X1970A",
    "part_number": "119-00207",
    "serial_number": "A22P5061550000187",
    "slot": "6-1",
    "state": "ok"
  },
  "frus": {
    "id": 0,
    "state": "ok",
    "type": "fan"
  },
  "over_temperature": "over"
},
"date": "2019-04-17T11:49:26-04:00",
"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": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"duration": "PT15S",
"processor_utilization": "13",
"status": "ok",
"timestamp": "2017-01-25T11:20:13Z"
```

```

},
"metrocluster": {
  "type": "fc"
},
"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": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "link_status": "up",
  "mac_address": "string",
  "state": "online"
},
"state": "up",
"statistics": {
  "processor_utilization_base": "12345123",
  "processor_utilization_raw": "13",
  "status": "ok",
  "timestamp": "2017-01-25T11:20:13Z"
},
"system_id": "0537035403",
"system_machine_type": "7Y56-CTOWW1",
"uptime": "300536",
"uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
"vendor_serial_number": "791603000068",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": "9",
  "major": "4",
  "minor": "0"
},
"vm": {
  "provider_type": "GoogleCloud"
}
},
"ntp_servers": [

```

```

    "time.nist.gov",
    "10.98.19.20",
    "2610:20:6F15:15::27"
  ],
  "password": "mypassword",
  "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": "2017-01-25T11:20:13Z"
  },
  "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.
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	
name	string	Certificate name
uuid	string	Certificate UUID

configuration_backup

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

license

License keys or NLF contents.

Name	Type	Description
keys	array[string]	

ip

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, 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	integer	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.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

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

metrocluster

Metrocluster

Name	Type	Description
type	string	The Metrocluster configuration type

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
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	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.

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	

statistics

Raw CPU performance for the nodes.

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

version

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

Name	Type	Description
full	string	The full cluster version string.

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

vm

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

nodes

Complete node information

Name	Type	Description
_links	_links	
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none"> • example: 2019-04-17T11:49:26-04:00 • format: date-time • readOnly: 1
ha	ha	
location	string	

Name	Type	Description
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
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.
statistics	statistics	Raw CPU performance for the nodes.
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 • Introduced in: 9.7

cluster

Complete cluster information

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
configuration_backup	configuration_backup	
contact	string	
dns_domains	array[string]	<p>A list of DNS domains. Domain names have the following requirements:</p> <ul style="list-style-type: none"> • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names: "all", "local", and "localhost".
license	license	License keys or NLF contents.
location	string	
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]	

Name	Type	Description
metric	metric	Performance numbers, such as IOPS latency and throughput.
name	string	
name_servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
nodes	array[nodes]	
ntp_servers	array[string]	Host name, IPv4 address, or IPv6 address for the external NTP time servers.
password	string	Initial admin password used to create the cluster.
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. <ul style="list-style-type: none"> • Introduced in: 9.7
uuid	string	
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

job_link

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Create a cluster

POST /cluster

Introduced In: 9.6

Creates a cluster.

Required properties

- name
- password

Recommended optional properties

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

Learn more

- [DOC /cluster](#)

Parameters

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

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

Request Body

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.

Name	Type	Description
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. • Introduced in: 9.7
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.

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "certificate": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cert1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_backup": {
    "password": "yourpassword",
    "url": "http://10.224.65.198/backups",
    "username": "me"
  },
  "contact": "<a href="
mailto:support@company.com">support@company.com</a>",
  "dns_domains": [
    "example.com",
    "example2.example3.com"
  ],
  "license": {
    "keys": {
    }
  },
  "location": "building 1",
  "management_interface": {
    "ip": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    }
  },
  "management_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
}
```

```
"ip": {
  "address": "10.10.10.7"
},
"name": "lif1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "latency": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "status": "ok",
  "throughput": {
    "read": "200",
    "total": "1000",
    "write": "100"
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"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": "ok"
  },
  "frus": {
    "id": 0,
    "state": "ok",
    "type": "fan"
  },
  "over_temperature": "over"
},
"date": "2019-04-17T11:49:26-04:00",
"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": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"duration": "PT15S",
"processor_utilization": "13",
"status": "ok",
"timestamp": "2017-01-25T11:20:13Z"
```

```

},
"metrocluster": {
  "type": "fc"
},
"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": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "link_status": "up",
  "mac_address": "string",
  "state": "online"
},
"state": "up",
"statistics": {
  "processor_utilization_base": "12345123",
  "processor_utilization_raw": "13",
  "status": "ok",
  "timestamp": "2017-01-25T11:20:13Z"
},
"system_id": "0537035403",
"system_machine_type": "7Y56-CTOWW1",
"uptime": "300536",
"uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
"vendor_serial_number": "791603000068",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": "9",
  "major": "4",
  "minor": "0"
},
"vm": {
  "provider_type": "GoogleCloud"
}
},
"ntp_servers": [

```

```

    "time.nist.gov",
    "10.98.19.20",
    "2610:20:6F15:15::27"
  ],
  "password": "mypassword",
  "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": "2017-01-25T11:20:13Z"
  },
  "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.

Error Code	Description
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	
name	string	Certificate name
uuid	string	Certificate UUID

configuration_backup

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

license

License keys or NLF contents.

Name	Type	Description
keys	array[string]	

ip

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
gateway	string	The IPv4 or IPv6 address of the default router.
netmask	string	Input as netmask length (16) or IPv4 mask (255.255.0.0). For IPv6, 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	integer	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.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

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

metrocluster

Metrocluster

Name	Type	Description
type	string	The Metrocluster configuration type

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
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	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.

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	

statistics

Raw CPU performance for the nodes.

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

version

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

Name	Type	Description
full	string	The full cluster version string.

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

vm

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

nodes

Complete node information

Name	Type	Description
_links	_links	
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none"> • example: 2019-04-17T11:49:26-04:00 • format: date-time • readOnly: 1
ha	ha	
location	string	

Name	Type	Description
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
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.
statistics	statistics	Raw CPU performance for the nodes.
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 • Introduced in: 9.7

cluster

Complete cluster information

Name	Type	Description
_links	_links	
certificate	certificate	Certificate used by cluster and node management interfaces for TLS connection requests.
configuration_backup	configuration_backup	
contact	string	
dns_domains	array[string]	<p>A list of DNS domains. Domain names have the following requirements:</p> <ul style="list-style-type: none"> • The name must contain only the following characters: A through Z, a through z, 0 through 9, ".", "-" or "_". • The first character of each label, delimited by ".", must be one of the following characters: A through Z or a through z or 0 through 9. • The last character of each label, delimited by ".", must be one of the following characters: A through Z, a through z, or 0 through 9. • The top level domain must contain only the following characters: A through Z, a through z. • The system reserves the following names: "all", "local", and "localhost".
license	license	License keys or NLF contents.
location	string	
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]	

Name	Type	Description
metric	metric	Performance numbers, such as IOPS latency and throughput.
name	string	
name_servers	array[string]	The list of IP addresses of the DNS servers. Addresses can be either IPv4 or IPv6 addresses.
nodes	array[nodes]	
ntp_servers	array[string]	Host name, IPv4 address, or IPv6 address for the external NTP time servers.
password	string	Initial admin password used to create the cluster.
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	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. <ul style="list-style-type: none"> • Introduced in: 9.7
uuid	string	
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

job_link

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Retrieve cluster chassis

Cluster chassis endpoint overview

Overview

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

Examples

Retrieving a list of chassis from the cluster

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

```

# The API:
/api/cluster/chassis

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

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

```

Retrieving a specific chassis from the cluster

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

```

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

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

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

```

```

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

```

```

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

```

Retrieve a collection of chassis

GET /cluster/chassis

Introduced In: 9.6

Retrieves a collection of chassis.

Related ONTAP commands

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

Learn more

- [DOC /cluster/chassis](#)

Parameters

Name	Type	In	Required	Description
frus.state	string	query	False	Filter by frus.state

Name	Type	In	Required	Description
frus.id	string	query	False	Filter by frus.id
frus.type	string	query	False	Filter by frus.type
shelves.uid	string	query	False	Filter by shelves.uid
nodes.name	string	query	False	Filter by nodes.name
nodes.uuid	string	query	False	Filter by nodes.uuid
nodes.position	string	query	False	Filter by nodes.position • Introduced in: 9.8
state	string	query	False	Filter by state
id	string	query	False	Filter by id
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. • Default value: 1

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

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "frus": {
      "state": "ok",
      "type": "fan"
    },
    "id": "021352005981",
    "nodes": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "position": "top",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "shelves": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "uid": "7777841915827391056"
    },
    "state": "ok"
  }
}
```

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	
position	string	The position of the node in the chassis.
uuid	string	

shelf_reference

Shelf

Name	Type	Description
_links	_links	
uid	string	

chassis

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Retrieve a chassis

GET /cluster/chassis/{id}

Introduced In: 9.6

Retrieves a specific chassis.

Related ONTAP commands

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

Learn more

- [DOC /cluster/chassis](#)

Parameters

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

Response

Status: 200, Ok

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

Example response

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

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	
position	string	The position of the node in the chassis.
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

Introduced In: 9.6

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

Parameters

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

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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
num_records	integer	
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": "queued",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

svm

Name	Type	Description
_links	_links	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

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.

Name	Type	Description
start_time	string	The time the job started.
state	string	The state of the job.
svm	svm	
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}

Introduced In: 9.6

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

Parameters

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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
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.
svm	svm	
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": "queued",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

svm

Name	Type	Description
_links	_links	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

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}

Introduced In: 9.6

Updates the state of a specific asynchronous job.

Parameters

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

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
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.

Error Code	Description
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.

Retrieve capacity pool licenses

Cluster licensing capacity-pools endpoint overview

Overview

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

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

Examples

Retrieving a collection of capacity pools associated with the cluster

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

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



```
# Response
200 OK

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

```

    "self":{
      "href":"/api/cluster/licensing/capacity-pools/390000100"
    }
  },
  {
    "serial_number":"390000101",
    "license_manager": {
      "uuid": "4ea7a442-86d1-11e0-ae1c-112233445566",
      "_links": {
        "self": {
          "href": "/api/cluster/licensing/license-managers/4ea7a442-86d1-11e0-ae1c-112233445566"
        }
      }
    },
    "nodes":[
      {
        "node":{
          "name":"node-3",
          "uuid":"4ea7a442-86d1-11e0-ae1c-123478563413"
        },
        "used_size":2199023255552,
        "_links":{
          "self":{
            "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-123478563413"
          }
        }
      },
      {
        "node":{
          "name":"node-4",
          "uuid":"4ea7a442-86d1-11e0-ae1c-123478563414"
        },
        "used_size":2199023255552,
        "_links":{
          "self":{
            "href": "/api/cluster/nodes/4ea7a442-86d1-11e0-ae1c-123478563414"
          }
        }
      }
    ],
    "_links":{
      "self":{

```

```

        "href":"/api/cluster/licensing/capacity-pools/390000101"
    }
}
],
"num_records":2,
"_links":{
    "self":{
        "href":"/api/cluster/licensing/capacity-pools"
    }
}
}
}

```

Retrieving information about nodes associated with a specific capacity pool license

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

```

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

# Response
200 OK

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

```

```

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

```

Retrieve capacity pools

GET /cluster/licensing/capacity-pools

Introduced In: 9.8

Retrieves a collection of capacity pools.

Learn more

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

Related ONTAP commands

- system license show-status
- system license show

Parameters

Name	Type	In	Required	Description
nodes.used_size	integer	query	False	Filter by nodes.used_size

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

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

Response

Status: 200, Ok

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

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

license_manager

License manager instance where this capacity pool license in installed.

Name	Type	Description
_links	self_link	
uuid	string	

_links

Name	Type	Description
self	href	

node_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

nodes

Information on a node from the capacity licensing perspective.

Name	Type	Description
node	node_reference	

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

records

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

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Retrieve capacity pool information

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

Introduced In: 9.8

Retrieves information about the capacity pool.

Learn more

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

Related ONTAP commands

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

Parameters

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

Response

Status: 200, Ok

Name	Type	Description
_links	self_link	

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

Example response

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

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

license_manager

License manager instance where this capacity pool license in installed.

Name	Type	Description
_links	self_link	
uuid	string	

_links

Name	Type	Description
self	href	

node_reference

Name	Type	Description
_links	_links	
name	string	
uuid	string	

nodes

Information on a node from the capacity licensing perspective.

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Manage cluster license managers

Cluster licensing license-managers endpoint overview

Overview

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

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

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

Examples

Retrieving information about the license manager instance associated with the cluster

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

# Response
200 OK

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

Updating an existing license manager instance

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

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

# Response
202 Accepted
```

Retrieve license managers

GET /cluster/licensing/license-managers

Introduced In: 9.8

Retrieves a collection of license managers.

Learn more

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

Related ONTAP commands

- `system license license-manager show`

Parameters

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

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

Response

Status: 200, Ok

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

Example response

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

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

collection_links

Name	Type	Description
next	href	
self	href	

self_link

Name	Type	Description
self	href	

uri

License manager URI.

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

records

Information on a license manager instance associated with the cluster.

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

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 license manager information

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

Introduced In: 9.8

Retrieves information about the license manager.

Learn more

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

Related ONTAP commands

- `system license license-manager show`

Parameters

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

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

Response

Status: 200, Ok

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

Example response

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

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

self_link

Name	Type	Description
self	href	

uri

License manager URI.

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Update the license manager configuration

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

Introduced In: 9.8

Updates the license manager configuration.

Learn more

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

Related ONTAP commands

- `system license license-manager modify`

Parameters

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

Request Body

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

Example request

```

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

```

Response

Status: 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
1115532	The requested update to the license manager information failed.

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	

self_link

Name	Type	Description
self	href	

uri

License manager URI.

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

license_manager

Information on a license manager instance associated with the cluster.

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

_links

Name	Type	Description
self	href	

job_link

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

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:

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

The following is an example of a 28-character key:

```
AMEPOSQIKLKGEEEEEDGNDEKXSJDEEE
```

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
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses/?fields=*&name=fabricpool"

# Response
200 OK

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

```
curl -X GET "https://<mgmt-  
ip>/api/cluster/licensing/licenses/?fields=*&name=!base"  
  
# Response  
200 OK  
  
# JSON Body  
{  
  "records": [  
    {  
      "name": "nfs",  
      "scope": "node",  
      "state": "compliant",  
      "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"
}
}
}
```

Retrieving a collection of unlicensed packages

By default, unlicensed packages are filtered from the collection output. This example shows how to use a query to retrieve unlicensed packages.

```
# API
curl -X GET "https://<mgmt-
ip>/api/cluster/licensing/licenses?name=flexcache&state=unlicensed"

# Response
200 OK

# JSON Body
{
  "records": [
    {
      "name": "flexcache",
      "_links": {
        "self": {
          "href": "/api/cluster/licensing/licenses/flexcache"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href":
"/api/cluster/licensing/licenses?name=flexcache&state=unlicensed"
    }
  }
}
```

Installing 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
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses/"

# JSON Body
{
"keys" : [ "{\"statusResp\":{\"snStatus\": \"Active\", \"licenses\":
{\"package\": \"FabricPool\", \"capacity\": \"1\", \"licenseProtocol\":
\"FABRICPOOL-TB\", \"type\": \"capacity\", \"licenseScope\": \"cluster\"},
\"message\": \"Success\", \"statusCode\": \"S007\", \"version\": \"1\",
\"product\": \"fabricpool\", \"serialNumber\": \"4149027342\"},
\"Signature\": \"SignatureABC\"}" ]
}

# Response
201 Created

```

Installing a 28-character key

This example installs a single 28-character key formatted license.

```

# API
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses/"

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

# Response
201 Created

```

Installing multiple licenses with one API call

This example shows how multiple keys can be provided to install multiple features in a single API call.

```
# API
curl -X POST "https://<mgmt-ip>/api/cluster/licensing/licenses/"

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

# Response
201 Created
```

Retrieving information for a specific license package

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

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

# Response
200 OK

# JSON Body
{
  "name": "fabricpool",
  "scope": "cluster",
  "state": "compliant",
  "licenses": [
    {
      "owner": "testcluster-1",
      "serial_number": "123456789",
      "state": "compliant",
      "capacity": {
        "maximum_size": 109951162777600,
        "used_size": 0
      }
    }
  ],
  "_links": {
    "self": {
      "href": "/api/cluster/licensing/licenses/fabricpool/"
    }
  }
}
```

Deleting a specific license

This example show how to delete a CIFS site license.

```
# API
curl -X DELETE "https://<mgmt-
ip>/api/cluster/licensing/licenses/cifs/?serial_number=1-80-000011"

# JSON Body
{}

# Response
200 OK
```

Deleting with a query

The following example shows how to delete all NFS licenses specified with the '*' query.

```
# API
curl -X DELETE "https://<mgmt-
ip>/api/cluster/licensing/licenses/nfs/?serial_number=*"

# JSON Body
{}

# Response
200 OK
```

Retrieve license packages

GET /cluster/licensing/licenses

Introduced In: 9.6

Retrieves a collection of license packages.



By default, the GET method only returns licensed packages. You must provide the following query "state=unlicensed" to retrieve unlicensed packages.

Related ONTAP commands

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

Parameters

Name	Type	In	Required	Description
state	string	query	False	Filter by state
scope	string	query	False	Filter by scope
name	string	query	False	Filter by name
licenses.serial_number	string	query	False	Filter by licenses.serial_number
licenses.start_time	string	query	False	Filter by licenses.start_time
licenses.expiry_time	string	query	False	Filter by licenses.expiry_time
licenses.capacity.used_size	integer	query	False	Filter by licenses.capacity.used_size
licenses.capacity.maximum_size	integer	query	False	Filter by licenses.capacity.maximum_size
licenses.compliance.state	string	query	False	Filter by licenses.compliance.state
licenses.evaluation	boolean	query	False	Filter by licenses.evaluation
licenses.active	boolean	query	False	Filter by licenses.active
licenses.owner	string	query	False	Filter by licenses.owner
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

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

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "keys": {
    },
    "licenses": {
      "capacity": {
        "maximum_size": 0,
        "used_size": 0
      },
      "compliance": {
        "state": "compliant"
      },
      "expiry_time": "2019-03-02T19:00:00Z",
      "owner": "cluster1",
      "serial_number": "123456789",
      "start_time": "2019-02-02T19:00:00Z"
    },
    "name": "NFS",
    "scope": "not_available",
    "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	
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

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

Install one or more feature licenses

POST `/cluster/licensing/licenses`

Introduced In: 9.6

Installs one or more feature licenses.

Required properties

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

Related ONTAP commands

- `system license add`

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. <ul style="list-style-type: none"> • Default value:

Request Body

Name	Type	Description
<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": {
  },
  "licenses": {
    "capacity": {
      "maximum_size": 0,
      "used_size": 0
    },
    "compliance": {
      "state": "compliant"
    },
    "expiry_time": "2019-03-02T19:00:00Z",
    "owner": "cluster1",
    "serial_number": "123456789",
    "start_time": "2019-02-02T19:00:00Z"
  },
  "name": "NFS",
  "scope": "not_available",
  "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": {
    },
    "licenses": {
      "capacity": {
        "maximum_size": 0,
        "used_size": 0
      },
      "compliance": {
        "state": "compliant"
      },
      "expiry_time": "2019-03-02T19:00:00Z",
      "owner": "cluster1",
      "serial_number": "123456789",
      "start_time": "2019-02-02T19:00:00Z"
    },
    "name": "NFS",
    "scope": "not_available",
    "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
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.

Delete a license

DELETE /cluster/licensing/licenses/{name}

Introduced In: 9.6

Deletes a license.

Related ONTAP commands

- `system license delete`

Parameters

Name	Type	In	Required	Description
name	string	path	True	Name of the license package to delete.
serial_number	string	query	True	Serial number of the license to delete.

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
525028	Error during volume limit check, cannot remove license
525029	Current volume use will exceed limits if license is removed
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}

Introduced In: 9.6

Retrieves a specific license package.



By default, the GET method only returns licensed packages. You must provide the following query "state=unlicensed" to retrieve unlicensed packages.

Related ONTAP commands

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

Parameters

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

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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	

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

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "keys": {
  },
  "licenses": {
    "capacity": {
      "maximum_size": 0,
      "used_size": 0
    },
    "compliance": {
      "state": "compliant"
    },
    "expiry_time": "2019-03-02T19:00:00Z",
    "owner": "cluster1",
    "serial_number": "123456789",
    "start_time": "2019-02-02T19:00:00Z"
  },
  "name": "NFS",
  "scope": "not_available",
  "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.

Manage cluster mediators

Cluster mediators endpoint overview

Overview

You can use this API to connect to a mediator, delete or get the status of the mediator. The GET operation returns the status of the mediator. The DELETE operation deletes the mediator. The POST operation creates the mediator.

Examples

GET - MetroCluster status and configuration

```
[[ID20486f7b0911299613796ed805b114b1]]
= Retrieve ONTAP Mediators configured in the cluster
```

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

Introduced In: 9.8

Retrieves mediators configured in the cluster.

== Parameters

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|ip_address
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by ip_address
```

```
|port
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by port
```

```
|peer_cluster.name
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by peer_cluster.name
```

```
|peer_cluster.uuid
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by peer_cluster.uuid
```

```
|reachable
|boolean
|query
|False
a|Filter by reachable
```

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

```
|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.
```

* Default value: 1

```
|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.
```

```
* Default value: 1
* Max value: 120
* Min value: 0

|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": {
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebebf2"
  },
  "port": "31784",
  "reachable": 1,
  "user": "myusername",
  "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
```

```
|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|
```

```
|===
```

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

The peer cluster that the mediator service is used for.

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

```
|===
```

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

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

```

|name
|string
a|

|uuid
|string
a|

|===

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

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

|ip_address
|string
a|The IP address of the mediator.

|password
|string
a|The password used to connect to the REST server on the mediator.

|peer_cluster
|link:#peer_cluster[peer_cluster]
a|The peer cluster that the mediator service is used for.

|port
|integer
a|The REST server's port number on the mediator.

|reachable
|boolean
a|Indicates the connectivity status of the mediator.

```

```

|user
|string
a|The username used to connect to the REST server on the mediator.

|uuid
|string
a|The unique identifier for the mediator service.

|===

[#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
====

[[IDd3521144f44c31e30c67cd2ccele0051]]
= Create and connect an ONTAP Mediator

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

*Introduced In:* 9.8

Creates and connect a mediator.

== 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

* Max value: 120

* Min value: 0

|return_records

|boolean

|query

|False

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

* Default value:

|===

== Request Body

[cols=3*,options=header]

|===

|Name

|Type

|Description

|ip_address

|string

a|The IP address of the mediator.

|password

|string

a|The password used to connect to the REST server on the mediator.

```
|peer_cluster
|link:#peer_cluster[peer_cluster]
a|The peer cluster that the mediator service is used for.
```

```
|port
|integer
a|The REST server's port number on the mediator.
```

```
|reachable
|boolean
a|Indicates the connectivity status of the mediator.
```

```
|user
|string
a|The username used to connect to the REST server on the mediator.
```

```
|uuid
|string
a|The unique identifier for the mediator service.
```

```
|===
```

.Example request

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

```
====
```

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

```
{
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebef2"
  },
  "port": "31784",
```

```
"reachable": 1,  
"user": "myusername",  
"uuid": "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

| 13369351
| Update to mediator failed. Reason: does not authorized for that command.
Check that the peer cluster and mediator are reachable.
|===

```

```
[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|
```

```
|===
```

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

The peer cluster that the mediator service is used for.

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

```

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

|name
|string
a|

|uuid
|string
a|

|===

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

Mediator information

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

|ip_address
|string
a|The IP address of the mediator.

|password
|string
a|The password used to connect to the REST server on the mediator.

|peer_cluster
|link:#peer_cluster[peer_cluster]
a|The peer cluster that the mediator service is used for.

|port
|integer
a|The REST server's port number on the mediator.

```

```
|reachable
|boolean
a|Indicates the connectivity status of the mediator.
```

```
|user
|string
a|The username used to connect to the REST server on the mediator.
```

```
|uuid
|string
a|The unique identifier for the mediator service.
```

```
|===
```

```
[#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
=====

[[IDef0eeb4a552636865cdbfebc91d7126f]]
= Delete an ONTAP Mediator

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

*Introduced In:* 9.8

Deletes the mediator.

== Parameters

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

|Name
|Type
|In
|Required
|Description

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

|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

* Max value: 120

* Min value: 0

|===

== Request Body

[cols=3*,options=header]

|===

|Name

|Type

|Description

|ip_address

|string

a|The IP address of the mediator.

|password

|string

a|The password used to connect to the REST server on the mediator.

|peer_cluster

|link:#peer_cluster[peer_cluster]

a|The peer cluster that the mediator service is used for.

|port

|integer

a|The REST server's port number on the mediator.

|reachable

|boolean

a|Indicates the connectivity status of the mediator.

|user

|string

a|The username used to connect to the REST server on the mediator.

```
|uuid
|string
a|The unique identifier for the mediator service.
```

```
|===
```

```
.Example request
```

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

```
=====
```

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

```
{
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebbf2"
  },
  "port": "31784",
  "reachable": 1,
  "user": "myusername",
  "uuid": "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

| 13369377
| Mediator field "mediator.id" does not exist.
|===

[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|
```

```
|===
```

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

The peer cluster that the mediator service is used for.

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

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

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

```
|uuid
|string
```

```

a|

|===

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

Mediator information

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

|ip_address
|string
a|The IP address of the mediator.

|password
|string
a|The password used to connect to the REST server on the mediator.

|peer_cluster
|link:#peer_cluster[peer_cluster]
a|The peer cluster that the mediator service is used for.

|port
|integer
a|The REST server's port number on the mediator.

|reachable
|boolean
a|Indicates the connectivity status of the mediator.

|user
|string
a|The username used to connect to the REST server on the mediator.

```

```
|uuid
|string
a|The unique identifier for the mediator service.
```

```
|===
```

```
[#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
====

[[ID493246a0ee709d1a8363be466bcb8dd4]]

```

= Retrieve ONTAP Mediator state and configuration

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

Introduced In: 9.8

Retrieves the mediator state and configuration.

== 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
```

```

|ip_address
|string
a|The IP address of the mediator.

|password
|string
a|The password used to connect to the REST server on the mediator.

|peer_cluster
|link:#peer_cluster[peer_cluster]
a|The peer cluster that the mediator service is used for.

|port
|integer
a|The REST server's port number on the mediator.

|reachable
|boolean
a|Indicates the connectivity status of the mediator.

|user
|string
a|The username used to connect to the REST server on the mediator.

|uuid
|string
a|The unique identifier for the mediator service.

```

```
|===
```

```
.Example response
```

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

```
====
```

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

```
{
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
```



```

    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "cluster2",
  "uuid": "ebe27c49-1adf-4496-8335-ab862aebef2"
},
"port": "31784",
"reachable": 1,
"user": "myusername",
"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|

|===

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

```

The peer cluster that the mediator service is used for.

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

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

|name
|string
a|

|uuid
|string
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
====

[[ID3cf10bf4ac152d054308065e0b650e10]]
= Retrieve historical performance metrics for the cluster

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

*Introduced In:* 9.6

```

Retrieves historical performance metrics for the cluster.

== Parameters

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|latency.total
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by latency.total
```

```
|latency.read
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by latency.read
```

```
|latency.other
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by latency.other
```

```
|latency.write
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by latency.write
```

```
|iops.total
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by iops.total
```

```
|iops.read
|integer
|query
|False
a|Filter by iops.read
```

```
|iops.other
|integer
|query
|False
a|Filter by iops.other
```

```
|iops.write
|integer
|query
|False
a|Filter by iops.write
```

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

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

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

```
|throughput.total
|integer
|query
```

```

|False
a|Filter by throughput.total

|throughput.read
|integer
|query
|False
a|Filter by throughput.read

|throughput.other
|integer
|query
|False
a|Filter by throughput.other

|throughput.write
|integer
|query
|False
a|Filter by throughput.write

|interval
|string
|query
|False
a|The time range for the data. Examples can be 1h, 1d, 1m, 1w, or 1y.
The period for each time range is specified as follows:

* 1h: Metrics over the most recent hour sampled over 15 seconds.
* 1d: Metrics over the most recent day sampled over 5 minutes.
* 1w: Metrics over the most recent week sampled over 30 minutes.
* 1m: Metrics over the most recent month sampled over 2 hours.
* 1y: Metrics over the most recent year sampled over a day.
* Default value: 1
* enum: ["1h", "1d", "1w", "1m", "1y"]

|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.

* Default value: 1

* Max value: 120

* Min value: 0

|fields

|array[string]

|query

|False

a|Specify the fields to return.

|max_records

|integer

|query

|False

a|Limit the number of records returned.

|order_by

|array[string]

|query

|False

a|Order results by specified fields and optional [asc|desc] direction. Default direction is 'asc' for ascending.

|return_records

|boolean

|query

|False

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

* Default value: 1

|===

== 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:#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"
      }
    },
    "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": "2017-01-25T11:20:13Z"
  }
}
====

== 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|
```

```
|===
```

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

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

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

```
|===
```

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

```
|other  
|integer
```

a|Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

```
|read  
|integer  
a|Performance metric for read I/O operations.
```

```
|total  
|integer  
a|Performance metric aggregated over all types of I/O operations.
```

```
|write
|integer
a|Performance metric for write I/O operations.
```

```
|===
```

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

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

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

```
|===
```

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

```
|other
|integer
a|Performance metric for other I/O operations. Other I/O operations can be
metadata operations, such as directory lookups and so on.
```

```
|read
|integer
a|Performance metric for read I/O operations.
```

```
|total
|integer
a|Performance metric aggregated over all types of I/O operations.
```

```
|write
|integer
a|Performance metric for write I/O operations.
```

```
|===
```

```
[#throughput]
```

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

```
throughput
```

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

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

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|other
```

```
|integer
```

a|Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

```
|read
```

```
|integer
```

a|Performance metric for read I/O operations.

```
|total
```

```
|integer
```

a|Performance metric aggregated over all types of I/O operations.

```
|write
```

```
|integer
```

a|Performance metric for write I/O operations.

```
|===
```

```
[#records]
```

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

```
records
```

Performance numbers, such as IOPS latency and throughput.

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

```
|===
```

```
|Name
```

```

|Type
|Description

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

|duration
|string
a|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
|link:#iops[iops]
a|The rate of I/O operations observed at the storage object.

|latency
|link:#latency[latency]
a|The round trip latency in microseconds observed at the storage object.

|status
|string
a|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
|link:#throughput[throughput]
a|The rate of throughput bytes per second observed at the storage object.

|timestamp
|string
a|The timestamp of the performance 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
```

```
= View and manage MetroCluster configurations
```

```
:leveloffset: +1
```

```
[[ID9e4290ed1dad254725e4d32fdc25cbd1]]
= Cluster MetroCluster endpoint overview
```

```
= Overview
```

You can use this API to create, perform operations, and retrieve relevant information pertaining to MetroCluster. The GET operation fetches MetroCluster status and configuration parameters for the local and partner cluster. The PATCH operation executes a switchover or switchback operation. The POST request can be used to setup a MetroCluster.

```
== Creating a MetroCluster
```

A new MetroCluster can be set up by issuing a POST to /cluster/metrocluster. Parameters are provided in the body of the POST request.

```
=== Fields used for setting up a MetroCluster configuration
```

The fields used for MetroCluster APIs are either required or optional and are described as follows:

=== Required configuration fields

These fields are always required for any POST /cluster/metrocluster request.

* `partner_cluster.name` - Specifies the partner cluster name to which cluster peering has been established.

* `dr_pairs` - Specifies local and DR partner node pairs. Each pair uniquely identifies a DR group.

=== Optional configuration fields

This field is used to set up additional components in a MetroCluster configuration.

* `mediator.+++` - Specifies mediator parameters. If Mediator Assisted Unplanned Switchover (MAUSO) functionality is required, then a mediator should be configured.

=== Polling the setup job

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

...

== Examples

== Setting up a 4-node MetroCluster

This example shows the POST body when setting up a 4-node MetroCluster along with a mediator. It is required that cluster peering be established between two clusters, in this example, site "mcc_siteA" and "mcc_siteB" before issuing the POST request. Nodes "node-a" and "node-b" are HA partners and part of the local cluster "mcc_siteA", whereas nodes "node-c" and "node-d" are HA partners in the partner cluster "mcc_siteB". Specifying a single DR pairing of "node-a" and "node-c" is sufficient to

identify a DR group -- "node-a" and "node-c" will be designated primary DR partners ("node-b" and "node-d" too). "node-d" will then be designated auxiliary partner of "node-a". Once the MetroCluster configuration has been completed, and since mediator parameters have been provided, the mediator will be setup and MAUSO enabled.

```
# API
/api/cluster/metrocluster
-----

=== POST body included from file

-----
mcc_post_body.txt:
{
  "partner_cluster" : {
    "name": "mcc_siteB"
  },
  "dr_pairs" : [
    {
      "node" : {
        "name" : "node-a"
      },
      "partner" : {
        "name" : "node-c"
      }
    }
  ],
  "mediator" : {
    "ip_address" : "1.2.3.4",
    "user" : "mcc_mediator",
    "password" : "openMediator"
  }
}
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster -d
"@mcc_post_body.txt"
-----
```

=== Inline POST body

```
-----
curl -X POST https://<mgmt-ip>/api/cluster/metrocluster -d
'{"partner_cluster" : {"name": "mcc_siteB" }, "dr_pairs" : [{"node" :
{"name" : "node-a" }, "partner" : {"name" : "node-c" } }], "mediator" :
{"ip_address" : "1.2.3.4", "user" : "mcc_mediator" , "password" :
"openMediator" } }'
```

=== POST Response

HTTP/1.1 202 Accepted
Date: Thu, 09 Jan 2020 20:38:05 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Location: /api/cluster/metrocluster
Content-Length: 189
Content-Type: application/hal+json
{
 "job": {
 "uuid": "f23abddb-331f-11ea-acd3-005056a708b2",
 "_links": {
 "self": {
 "href": "/api/cluster/jobs/f23abddb-331f-11ea-acd3-005056a708b2"
 }
 }
 }
}

=== Monitoring the job progress

Use the link provided in the response to the POST request to fetch information for the setup job.

==== Request

curl -X GET https://<mgmt-ip>/api/cluster/jobs/f23abddb-331f-11ea-acd3-005056a708b2

==== Job status response

The following is an example of the job status response returned by the running MetroCluster setup job:

HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:40:20 GMT
Server: libzapid-httpd

```
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 373
Content-Type: application/hal+json
{
  "uuid": "f23abdb-331f-11ea-acd3-005056a708b2",
  "description": "POST /api/cluster/metrocluster",
  "state": "running",
  "message": "Checking remote storage pool",
  "code": 2432844,
  "start_time": "2020-01-09T15:38:08-05:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f23abdb-331f-11ea-acd3-005056a708b2"
    }
  }
}
----

=== Completion message

This is the final update message from the setup job indicating completion.

----
{
  "uuid": "f23abdb-331f-11ea-acd3-005056a708b2",
  "description": "POST /api/cluster/metrocluster",
  "state": "running",
  "message": "MetroCluster setup is complete",
  "code": 2432849,
  "start_time": "2020-01-09T15:38:08-05:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f23abdb-331f-11ea-acd3-005056a708b2"
    }
  }
}
----

=== Final status of a successful MetroCluster setup workflow

When the setup job completes, the 'end_time' field is populated, and the
'state' and 'message' fields report the final status.

----
HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:43:54 GMT
```

```
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 360
Content-Type: application/hal+json
{
  "uuid": "f23abdb-331f-11ea-acd3-005056a708b2",
  "description": "POST /api/cluster/metrocluster",
  "state": "success",
  "message": "success",
  "code": 0,
  "start_time": "2020-01-09T15:38:08-05:00",
  "end_time": "2020-01-09T15:43:50-05:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f23abdb-331f-11ea-acd3-005056a708b2"
    }
  }
}
```

==== Retrieving the MetroCluster configuration after completion of the POST request

==== Request

```
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster
```

==== Response

```
HTTP/1.1 200 OK
Date: Thu, 09 Jan 2020 20:49:40 GMT
Server: libzapid-httpd
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Length: 849
Content-Type: application/hal+json
{
  "local": {
    "configuration_state": "configured",
    "periodic_check_enabled": true,
    "mode": "normal",
    "partner_cluster_reachable": true,
```

```

"cluster": {
  "name": "mcc_siteA",
  "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
  "_links": {
    "self": {
      "href": "/api/cluster/4294c4f2-30e2-11ea-8cac-005056a708b2"
    }
  }
},
"remote": {
  "configuration_state": "configured",
  "periodic_check_enabled": true,
  "mode": "normal",
  "cluster": {
    "name": "mcc_siteB",
    "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
    "_links": {
      "self": {
        "href": "/api/cluster/4207c6a5-30e2-11ea-be25-005056a7dc84"
      }
    }
  }
},
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster"
  }
}
}
}
-----

```

=== Retrieving information about the nodes in a MetroCluster configuration

==== Request

```

-----
curl -X GET https://<mgmt-ip>/api/cluster/metrocluster/nodes
-----

```

==== Response

```

-----
HTTP/1.1 200 OK
Date: Fri, 10 Jan 2020 02:26:20 GMT
Server: libzapid-httpd

```

```
X-Content-Type-Options: nosniff
Cache-Control: no-cache,no-store,must-revalidate
Content-Type: application/hal+json
Transfer-Encoding: chunked
{
"records": [
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "mcc_siteA",
      "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
      "_links": {
        "self": {
          "href": "/api/cluster/4294c4f2-30e2-11ea-8cac-005056a708b2"
        }
      }
    },
    "node": {
      "name": "node-a",
      "uuid": "1e6b0137-30dd-11ea-82ba-005056a7c78a",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/1e6b0137-30dd-11ea-82ba-005056a7c78a"
        }
      }
    },
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/1e6b0137-30dd-11ea-82ba-005056a7c78a"
      }
    }
  },
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "mcc_siteA",
      "uuid": "4294c4f2-30e2-11ea-8cac-005056a708b2",
      "_links": {
        "self": {
          "href": "/api/cluster/4294c4f2-30e2-11ea-8cac-005056a708b2"
        }
      }
    },
    "node": {
```



```

    "name": "node-b",
    "uuid": "1e57ba22-30dd-11ea-8b19-005056a708b2",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/1e57ba22-30dd-11ea-8b19-
005056a708b2"
      }
    }
  },
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/nodes/1e57ba22-30dd-11ea-8b19-
005056a708b2"
    }
  }
},
{
  "dr_group_id": 1,
  "cluster": {
    "name": "mcc_siteB",
    "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
    "_links": {
      "self": {
        "href": "/api/cluster/4207c6a5-30e2-11ea-be25-005056a7dc84"
      }
    }
  },
  "node": {
    "name": "node-c",
    "uuid": "1e563efc-30dd-11ea-a9d3-005056a71573",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/1e563efc-30dd-11ea-a9d3-
005056a71573"
      }
    }
  },
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/nodes/1e563efc-30dd-11ea-a9d3-
005056a71573"
    }
  }
},
{
  "dr_group_id": 1,

```

```

"cluster": {
  "name": "mcc_siteB",
  "uuid": "4207c6a5-30e2-11ea-be25-005056a7dc84",
  "_links": {
    "self": {
      "href": "/api/cluster/4207c6a5-30e2-11ea-be25-005056a7dc84"
    }
  }
},
"node": {
  "name": "node-d",
  "uuid": "1e400aa4-30dd-11ea-aded-005056a7dc84",
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/1e400aa4-30dd-11ea-aded-
005056a7dc84"
    }
  }
},
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/nodes/1e400aa4-30dd-11ea-aded-
005056a7dc84"
  }
}
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/nodes"
  }
}
}
}
----

'''

=== Retrieving MetroCluster status and configuration information

----
GET https://<mgmt-ip>/api/cluster/metrocluster
{
  "local": {
    "configuration_state": "configured",
    "periodic_check_enabled": true,

```

```

    "mode": "normal",
    "cluster": {
      "name": "cluster1",
      "uuid": "bbc00ca3-8d81-11e9-b5a9-005056826931",
      "_links": {
        "self": {
          "href": "/api/cluster/bbc00ca3-8d81-11e9-b5a9-
005056826931"
        }
      }
    }
  },
  "remote": {
    "configuration_state": "configured",
    "periodic_check_enabled": true,
    "mode": "normal",
    "cluster": {
      "name": "cluster3",
      "uuid": "ce2cf803-8d81-11e9-87db-00505682cecf",
      "_links": {
        "self": {
          "href": "/api/cluster/ce2cf803-8d81-11e9-87db-
00505682cecf"
        }
      }
    }
  },
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster"
    }
  }
}

```

'''

=== Initiating a switchover or switchback command using PATCH

PATCH is used to initiate a variety of operations by specifying one of the following values in the "action" parameter:

- * `switchover` - Initiates an Unplanned Switchover (USO).
- * `negotiated_switchover` - Indicates that an Negotiated switchover (NSO) is to be performed.
- * `negotiated_switchover_simulate` - Provides validation in preparation

for NSO but does not perform the operation.

* `switchback` - Indicates that a switchback is to be performed.

* `switchback_simulate` - Provides validation for switchback but does not commit the operation.

==== PATCH Switchover example

PATCH https://<mgmt-ip>/api/cluster/metrocluster?action=switchover

```
{
  "job": {
    "uuid": "70e54274-57ee-11e9-aa33-005056820b99",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/70e54274-57ee-11e9-aa33-005056820b99"
      }
    }
  }
}
```

This returns a job UUID. A subsequent GET for this job should return the following:

GET https://<mgmt-ip>/api/cluster/jobs/70e54274-57ee-11e9-aa33-005056820b99

```
{
  "uuid": "70e54274-57ee-11e9-aa33-005056820b99",
  "description": "MetroCluster Switchover Job",
  "state": "success",
  "message": "Complete: Switchover is successful.",
  "code": 0,
  "start_time": "2019-04-05T15:02:02-07:00",
  "end_time": "2019-04-05T15:02:30-07:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/70e54274-57ee-11e9-aa33-005056820b99"
    }
  }
}
```

==== PATCH Switchback example:

```
-----
PATCH https://<mgmt-ip>/api/cluster/metrocluster?action=switchback
{
  "job": {
    "uuid": "a62714cc-57ec-11e9-aa33-005056820b99",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/a62714cc-57ec-11e9-aa33-
005056820b99"
      }
    }
  }
}
-----
```

This returns a job UUID with a link to the job. A subsequent GET for this job UUID can be used to retrieve the completion status of the operation:

```
-----
GET https://<mgmt-ip>/api/cluster/jobs/a62714cc-57ec-11e9-aa33-
005056820b99
{
  "uuid": "a62714cc-57ec-11e9-aa33-005056820b99",
  "description": "MetroCluster Switchback Job",
  "state": "success",
  "message": "Complete: Switchback is successful.",
  "code": 0,
  "start_time": "2019-04-05T14:49:12-07:00",
  "end_time": "2019-04-05T14:50:12-07:00",
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/a62714cc-57ec-11e9-aa33-005056820b99"
    }
  }
}
-----
```

```
[[IDb7a408548b68fdc2aaf21edaa2e05987]]
```

```
= Retrieve MetroCluster status and configuration details
```

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

Introduced In: 9.8

Retrieves MetroCluster status and configuration details.

== Related ONTAP commands * `metrocluster show` * `metrocluster node show`

== 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.

* Default value: 1

|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.

* Default value: 1

* Max value: 120

* Min value: 0

```
|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.
```

```
|===
```

```
== Response
```

Status: 200, Ok

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

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

|dr_pairs
|array[link:#dr_pairs[dr_pairs]]
a|DR Pairs to create as part of a MetroCluster configure.

|enabled
|boolean
a|

|local
|link:#local[local]
a|

|mediator
```

```
|link:#mediator[mediator]
```

```
a|Mediator information
```

```
|partner_cluster
```

```
|link:#partner_cluster[partner_cluster]
```

```
a|Partner cluster information.
```

```
|remote
```

```
|link:#remote[remote]
```

```
a|
```

```
|===
```

```
.Example response
```

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

```
=====
```

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

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dr_pairs": {
    "node": {
      "name": "nodeA"
    },
    "partner": {
      "name": "nodeB"
    }
  },
  "local": {
    "cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "configuration_state": "configuration_error",
    "mode": "normal"
  }
}
```



```

},
"mediator": {
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebef2"
  },
  "port": "31784",
  "reachable": 1,
  "user": "myusername",
  "uuid": "string"
},
"partner_cluster": {
  "name": "cluster2"
},
"remote": {
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "configuration_error",
  "mode": "normal"
}
}
====

== Error

```

Status: Default

ONTAP Error Response Codes

|===

| Error Code | Description

```

| 2425734
| An internal error occurred. Wait a few minutes, and try the operation
again. For further assistance, contact technical support.
|===

[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|

|===

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

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

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

|===

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

Local node of the DR Group.

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

|name
|string

```

```
a|Name of the node.
```

```
|===
```

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

```
Partner node of the DR Group.
```

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

```
|===
```

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

```
|name  
|string  
a|Name of the node.
```

```
|===
```

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

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

```
|===
```

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

```
|node  
|link:#node[node]  
a|Local node of the DR Group.
```

```
|partner  
|link:#partner[partner]  
a|Partner node of the DR Group.
```

```

|===

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

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

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

|===

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

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

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

|name
|string
a|

|uuid
|string
a|

|===

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

```

```

local

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

|cluster
|link:#cluster[cluster]
a|

|configuration_state
|string
a|Indicates the state of the local cluster configuration.

|mode
|string
a|Specifies the mode of operation of the local cluster.

|partner_cluster_reachable
|boolean
a|Specifies whether the partner cluster is reachable from the local
cluster.

|periodic_check_enabled
|boolean
a|Indicates whether or not a periodic check is enabled on the local
cluster.

|===

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

The peer cluster that the mediator service is used for.

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

```

```

|Type
|Description

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

|name
|string
a|

|uuid
|string
a|

|===

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

Mediator information

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

|ip_address
|string
a|The IP address of the mediator.

|password
|string
a|The password used to connect to the REST server on the mediator.

|peer_cluster
|link:#peer_cluster[peer_cluster]
a|The peer cluster that the mediator service is used for.

|port

```

```

|integer
a|The REST server's port number on the mediator.

|reachable
|boolean
a|Indicates the connectivity status of the mediator.

|user
|string
a|The username used to connect to the REST server on the mediator.

|uuid
|string
a|The unique identifier for the mediator service.

|===

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

Partner cluster information.

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

|name
|string
a|Name of the partner cluster.

|===

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

```



```

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

|cluster
|link:#cluster[cluster]
a|

|configuration_state
|string
a|Indicates the state of the remote cluster configuration.

|mode
|string
a|Specifies the mode of operation of the remote cluster.

|===

[#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
====

[[ID6820070d0f1a6127fb2fd9a2bec2d559]]
= Initiate a switchover, heal, or switchback operation

[.api-doc-operation .api-doc-operation-patch]#PATCH# [.api-doc-code-
block]#`/cluster/metrocluster`#

*Introduced In:* 9.8

Initiates a switchover or switchback operation.

```

```
== Related ONTAP commands * `metrocluster switchover` * `metrocluster  
switchback`
```

```
== Parameters
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|action
```

```
|string
```

```
|query
```

```
|False
```

```
a|Action to perform on the MetroCluster.
```

```
* enum: ["switchover", "negotiated_switchover",  
"negotiated_switchover_simulate", "switchback", "switchback_simulate"]
```

```
|return_timeout
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Timeout in seconds for the call.
```

```
|return_records
```

```
|boolean
```

```
|query
```

```
|False
```

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

```
* Default value:
```

```
|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

* Max value: 120

* Min value: 0

|===

== 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
| 2425734
| An internal error occurred. Wait a few minutes, and try the operation
| again. For further assistance, contact technical support.
|===

```

```

[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
=====

[[ID80b3de28fca4c9e182d6c3083e3b5532]]
= Set up a MetroCluster configuration

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

*Introduced In:* 9.8

Sets up a MetroCluster.

== Required properties

* `partner_cluster.name`
* `dr_pairs`

== Recommended optional properties

* `mediator.+++`

== Learn more

* xref:{relative_path}cluster_metrocluster_endpoint_overview.html[DOC
/c/cluster/metrocluster]

== Related ONTAP commands

* `metrocluster configuration-settings dr-group create`
* `metrocluster configuration-settings interface create`
* `metrocluster configuration-settings connection connect`
* `metrocluster configuration-settings mediator add`
* `storage aggregate create`
* `storage aggregate mirror`
* `metrocluster configure`

```

== Parameters

[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

* Max value: 120

* Min value: 0

|return_records

|boolean

|query

|False

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

* Default value:

|===

== Request Body

[cols=3*,options=header]

|===

|Name

```

|Type
|Description

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

|dr_pairs
|array[link:#dr_pairs[dr_pairs]]
a|DR Pairs to create as part of a MetroCluster configure.

|enabled
|boolean
a|

|local
|link:#local[local]
a|

|mediator
|link:#mediator[mediator]
a|Mediator information

|partner_cluster
|link:#partner_cluster[partner_cluster]
a|Partner cluster information.

|remote
|link:#remote[remote]
a|

|===

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

```

```

"dr_pairs": {
  "node": {
    "name": "nodeA"
  },
  "partner": {
    "name": "nodeB"
  }
},
"local": {
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "configuration_error",
  "mode": "normal"
},
"mediator": {
  "ip_address": "10.10.10.7",
  "password": "mypassword",
  "peer_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster2",
    "uuid": "ebe27c49-1adf-4496-8335-ab862aebbf2"
  },
  "port": "31784",
  "reachable": 1,
  "user": "myusername",
  "uuid": "string"
},
"partner_cluster": {
  "name": "cluster2"
},
"remote": {
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  }
}

```

```

    }
  },
  "name": "cluster1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"configuration_state": "configuration_error",
"mode": "normal"
}
}
====

== 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

```

ONTAP Error Response Codes

|===

| Error Code | Description

| 2425734

| An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

|===

[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|

|===

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

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

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

|===

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

Local node of the DR Group.

[cols=3*,options=header]

```

```

|===
|Name
|Type
|Description

|name
|string
a|Name of the node.

|===

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

Partner node of the DR Group.

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

|name
|string
a|Name of the node.

|===

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

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

|node
|link:#node[node]
a|Local node of the DR Group.

```



```
|partner
|link:#partner[partner]
a|Partner node of the DR Group.
```

```
|===
```

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

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

```
|===
```

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

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

```
|===
```

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

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

```
|===
```

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

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

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

```
|uuid
|string
```

```

a|

|===

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

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

|cluster
|link:#cluster[cluster]
a|

|configuration_state
|string
a|Indicates the state of the local cluster configuration.

|mode
|string
a|Specifies the mode of operation of the local cluster.

|partner_cluster_reachable
|boolean
a|Specifies whether the partner cluster is reachable from the local
cluster.

|periodic_check_enabled
|boolean
a|Indicates whether or not a periodic check is enabled on the local
cluster.

|===

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

```

The peer cluster that the mediator service is used for.

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

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

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

```
a|
```

```
|name
```

```
|string
```

```
a|
```

```
|uuid
```

```
|string
```

```
a|
```

```
|===
```

```
[#mediator]
```

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

```
mediator
```

Mediator information

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

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|ip_address
```

```
|string
```

```
a|The IP address of the mediator.
```

```
|password
```

```
|string
```

```
a|The password used to connect to the REST server on the mediator.
```

```
|peer_cluster
|link:#peer_cluster[peer_cluster]
a|The peer cluster that the mediator service is used for.
```

```
|port
|integer
a|The REST server's port number on the mediator.
```

```
|reachable
|boolean
a|Indicates the connectivity status of the mediator.
```

```
|user
|string
a|The username used to connect to the REST server on the mediator.
```

```
|uuid
|string
a|The unique identifier for the mediator service.
```

```
|===
```

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

Partner cluster information.

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

```
|===
```

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

```
|name
|string
a|Name of the partner cluster.
```

```

|===

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

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

|cluster
|link:#cluster[cluster]
a|

|configuration_state
|string
a|Indicates the state of the remote cluster configuration.

|mode
|string
a|Specifies the mode of operation of the remote cluster.

|===

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

Holds MetroCluster status and configuration parameters for the local and
remote clusters. REST: /api/cluster/metrocluster

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

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

```

```
|dr_pairs
|array[link:#dr_pairs[dr_pairs]]
a|DR Pairs to create as part of a MetroCluster configure.
```

```
|enabled
|boolean
a|
```

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

```
|mediator
|link:#mediator[mediator]
a|Mediator information
```

```
|partner_cluster
|link:#partner_cluster[partner_cluster]
a|Partner cluster information.
```

```
|remote
|link:#remote[remote]
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

= Display MetroCluster diagnostics

:leveloffset: +1

[[ID5b52ca3173872fa5a85de729afd84017]]
= Cluster MetroCluster diagnostics endpoint overview

== Overview

You can use this API to initiate diagnostics and fetch the results of a
completed diagnostic operation on a MetroCluster configuration.

=== Related ONTAP Commands

* `metrocluster check run`

```



```
[[IDfbfaa8bd749f91bd13453fb8f68fb3c6]]
```

```
= Retrieve diagnostic operation results for a MetroCluster configuration
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-block]#`/cluster/metrocluster/diagnostics`#
```

```
*Introduced In:* 9.8
```

```
Retrieves the results of a completed diagnostic operation for the MetroCluster configuration.
```

```
== Parameters
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|component
```

```
|string
```

```
|query
```

```
|False
```

```
a|MetroCluster diagnostic component name
```

```
|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.

* Default value: 1

|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.

* Default value: 1
* Max value: 120
* Min value: 0

|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

|components
|array[link:#metrocluster_diag_component[metrocluster_diag_component]]
a|

|===

```

.Example response

[%collapsible%closed]

====

[source,json,subs=+macros]

```
{
  "components": {
    "aggregates": {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "check": "mirroring_status",
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "details": "string",
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "state": "ok"
    },
    "clusters": {
      "check": "none",
      "cluster": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      }
    }
  }
}
```

```

    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "state": "ok",
  "timestamp": "2016-03-10T14:35:16-08:00"
},
"connections": {
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "config_error_info": "string",
  "config_state": "string",
  "destination_address": "10.10.10.7",
  "dr_group": {
    "id": 0
  },
  "home_port": "string",
  "mtu_error_details": "string",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "partner_node": {
    "_links": {
      "self": {

```

```

        "href": "/api/resourcelink"
    },
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"partner_type": "self",
"ping_error_details": "string",
"relationship_type": "self",
"source_address": "10.10.10.7",
"state": "ok",
"storage_error_details": "string"
},
"details": "string",
"lifs": {
    "check": "lif_place_on_dr_node",
    "cluster": {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "name": "cluster1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "details": "string",
    "lif": {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "ip": {
            "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "state": "ok",
    "vserver": {
        "_links": {
            "self": {
                "href": "/api/resourcelink"
            }
        },
        "name": "svml",

```

```

    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
},
"nodes": {
  "check": "node_reachable",
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "details": "string",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "state": "ok"
},
"state": "ok",
"timestamp": "2016-03-10T14:35:16-08:00",
"type": "nodes",
"volumes": {
  "check": "unmirrored_flexgroups",
  "details": "string",
  "state": "ok",
  "volume": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "volume1",
    "uuid": "028baa66-41bd-11e9-81d5-00a0986138f7"
  },
  "vserver": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  }
}

```

```

    }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  }
}
}
}
====
== Error

```

Status: Default

ONTAP Error Response Codes

```

|====
| Error Code | Description
|
| 2427132
| MetroCluster is not configured on this cluster.
|====

```

== 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|
```

```
|===
```

```
[#aggregate]
```

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

```
aggregate
```

Aggregate

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

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|_links
```

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

```
a|
```

```
|name
```

```
|string
```

```
a|
```

```
|uuid
```

```
|string
```

```
a|
```

```
|===
```



```

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

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

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

|name
|string
a|

|uuid
|string
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|

```

```

|===

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

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

|aggregate
|link:#aggregate[aggregate]
a|Aggregate

|check
|string
a|Type of check run on the component.

|cluster
|link:#cluster[cluster]
a|

|details
|string
a|Additional information or recovery steps to take.

|node
|link:#node[node]
a|

|state
|string
a|Status of the diagnostic operation on this component.

|===

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

```

```

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

|check
|string
a|Type of check run on the component.

|cluster
|link:#cluster[cluster]
a|

|details
|string
a|Additional information or recovery steps to take.

|state
|string
a|Status of the diagnostic operation on this component.

|timestamp
|string
a|Time of the most recent check.

|===

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

DR group reference.

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

```

```
|id
|integer
a|DR Group ID
```

```
|===
```

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

Partner Cluster information

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

```
|===
```

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

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

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

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

```
|===
```

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

Partner Node information

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

```
|===
```

```
|Name
|Type
```

```

|Description

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

|name
|string
a|

|uuid
|string
a|

|===

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

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

|cluster
|link:#cluster[cluster]
a|

|config_error_info
|string
a|Configuration error information.

|config_state
|string
a|Configuration state of the connection.

|destination_address
|string
a|Destination IP Address

|dr_group

```

```
|link:#dr_group[dr_group]
a|DR group reference.

|home_port
|string
a|Home port

|mtu_error_details
|string
a|Additional information or recovery steps associated with mtu size
errors.

|node
|link:#node[node]
a|

|partner_cluster
|link:#partner_cluster[partner_cluster]
a|Partner Cluster information

|partner_node
|link:#partner_node[partner_node]
a|Partner Node information

|partner_type
|string
a|Partner's assigned role in a DR group.

|ping_error_details
|string
a|Additional information or recovery steps associated with ping errors.

|relationship_type
|string
a|This node's assigned role in a DR group.

|source_address
|string
a|Source IP Address
```

```
|state
|string
a|Status of diagnostic operation on this component.
```

```
|storage_error_details
|string
a|Additional information or recovery steps associated with storage errors.
```

```
|===
```

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

IP information

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

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|address
```

```
|string
```

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

```
|===
```

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

```
[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.

|===

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

[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.

|===

```



```

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

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

|check
|string
a|Type of check run on the component.

|cluster
|link:#cluster[cluster]
a|

|details
|string
a|Additional information or recovery steps to take.

|lif
|link:#lif[lif]
a|

|state
|string
a|Status of the diagnostic operation on this component.

|vserver
|link:#vserver[vserver]
a|

|===

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

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

```

```

|Name
|Type
|Description

|check
|string
a|Type of check run on the component.

|cluster
|link:#cluster[cluster]
a|

|details
|string
a|Additional information or recovery steps to take.

|node
|link:#node[node]
a|

|state
|string
a|Status of the diagnostic operation on this component.

|===

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

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

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

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

```

```
|uuid
|string
a|Unique identifier for the volume. This corresponds to the instance-uuid
that is exposed in the CLI and ONTAPI. It does not change due to a volume
move.
```

```
* example: 028baa66-41bd-11e9-81d5-00a0986138f7
```

```
* Introduced in: 9.6
```

```
|===
```

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

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

```
|===
```

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

```
|check
|string
a|Type of check run on the component.
```

```
|details
|string
a|Additional information or recovery steps to take.
```

```
|state
|string
a|Status of diagnostic operation on this component.
```

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

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

```
|===
```

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

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

```
|===
```

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

```
|aggregates
```

```
|array[link:#metrocluster_diag_component_aggr[metrocluster_diag_component_  
aggr]]
```

```
a|This object contains details of the aggregate checks when the state  
associated with the check is "warning".
```

```
|clusters
```

```
|array[link:#metrocluster_diag_component_cluster[metrocluster_diag_compone  
nt_cluster]]
```

```
a|This object contains details of the cluster checks when the state  
associated with the check is "warning".
```

```
|connections
```

```
|array[link:#metrocluster_diag_component_connection[metrocluster_diag_comp  
onent_connection]]
```

```
a|This object contains details of the connections checks the state  
associated with the check is "warning".
```

```
|details
```

```
|string
```

```
a|Additional information or recovery steps to take.
```

```
|lifs
```

```
|array[link:#metrocluster_diag_component_lif[metrocluster_diag_component_l  
if]]
```

```
a|This object contains details of the interface checks when the state  
associated with the check is "warning".
```

```

|nodes
|array[link:#metrocluster_diag_component_node[metrocluster_diag_component_
node]]
a|This object contains details of the node checks when the state
associated with the check is "warning".

|state
|string
a|Status of diagnostic operation for this component.

|timestamp
|string
a|Time of the most recent diagnostic operation for this component

|type
|string
a|MetroCluster diagnostic component name

|volumes
|array[link:#metrocluster_diag_component_volume[metrocluster_diag_componen
t_volume]]
a|This object contains details of the volume checks when the state
associated with the check is "warning".

|===

//end collapsible .Definitions block
====

[[IDe012ff0252bff76c4d5702a69c5bc1f4]]
= Start MetroCluster diagnostics or set up a periodic diagnostic schedule

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

*Introduced In:* 9.8

Start a MetroCluster diagnostic operation or set up a schedule for the
diagnostics to be run periodically.

```

```
== Parameters
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|schedule
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Shows the minutes of every hour when a job runs. Setting this parameter schedules the periodic job to be run to perform MetroCluster diagnostic.
```

```
|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
```

```
* Max value: 120
```

```
* Min value: 0
```

```
|return_records
```

```
|boolean
```

```
|query
```

```
|False
```

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

```
* 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

| 2427132
| MetroCluster is not configured on this cluster.
```

```

|===

== 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.

|===

//end collapsible .Definitions block
=====

```

```
:leveloffset: -1
```

```
= Manage MetroCluster DR groups
```

```
:leveloffset: +1
```

```
[[ID4a988c4b5fe8801a0289d3af3b26209c]]
= Cluster MetroCluster dr-groups endpoint overview
```

```
== Overview
```

You can use this API to retrieve and display relevant information pertaining to MetroCluster DR groups. The ``/cluster/metrocluster/dr_groups`` endpoint returns a list of all the `dr_groups` configured in MetroCluster and their status. Each individual `dr_group` can be queried individually using the ``/cluster/metrocluster/dr_groups/{dr_group.id}`` endpoint.

```
[[ID6d8fa135ea92946827b4a21bf03d5c1a]]
```

```
= Retrieve all DR groups in a MetroCluster IP configuration
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-  
block]#`/cluster/metrocluster/dr-groups`#
```

```
*Introduced In:* 9.8
```

```
Retrieves all the DR group in the MetroCluster over IP configuration.
```

```
== Parameters
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|partner_cluster.name
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by partner_cluster.name
```

```
|partner_cluster.uuid
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by partner_cluster.uuid
```

```
|id
```

```
|integer
```

```
|query
```

```
|False
```

```
a|Filter by id
```

```
|dr_pairs.partner.name
|string
|query
|False
a|Filter by dr_pairs.partner.name
```

```
|dr_pairs.node.name
|string
|query
|False
a|Filter by dr_pairs.node.name
```

```
|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.
```

* Default value: 1

```
|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.
```

```
* Default value: 1
```

```
* Max value: 120
```

```
* Min value: 0
```

```
|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:#metrocluster_dr_group[metrocluster_dr_group]]
```

```
a|
```

```
|===
```

```
.Example response
```

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

```
=====
```

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

```
{
```

```
  "_links": {
```

```

    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "dr_pairs": {
      "node": {
        "name": "nodeA"
      },
      "partner": {
        "name": "nodeB"
      }
    },
    "id": 0,
    "partner_cluster": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  }
}
====

== Error

```

Status: Default

ONTAP Error Response Codes

```

|===
| Error Code | Description

| 2425734
| An internal error occurred. Wait a few minutes, and try the operation
again. For further assistance, contact technical support.

| 2427132
| MetroCluster is not configured on this 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

|next
|link:href[href]
a|

|self
|link:href[href]
a|

|===

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

Local node of the DR Group.

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

|name
|string

```

```
a|Name of the node.
```

```
|===
```

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

```
Partner node of the DR Group.
```

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

```
|===
```

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

```
|name  
|string  
a|Name of the node.
```

```
|===
```

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

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

```
|===
```

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

```
|node  
|link:#node[node]  
a|Local node of the DR Group.
```

```
|partner  
|link:#partner[partner]  
a|Partner node of the DR Group.
```



```

|===

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

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

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

|===

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

Partner cluster information.

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

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

|name
|string
a|

|uuid
|string
a|

|===

```

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

DR group information.

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

|dr_pairs
|array[link:#dr_pair[dr_pair]]
a|

|id
|integer
a|DR Group ID

|partner_cluster
|link:#partner_cluster[partner_cluster]
a|Partner cluster information.
```

|===

```
[#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
====

[[IDfbec33fdb17c310ff7196c9c70e990e0]]
= Create a new DR group in a MetroCluster IP configuration

```

```
[.api-doc-operation .api-doc-operation-post]#POST# [.api-doc-code-block]#`/cluster/metrocluster/dr-groups`#
```

Introduced In: 9.8

Creates a new DR group in the MetroCluster over IP configuration.

== 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

* Max value: 120

* Min value: 0

```
|return_records
```

```
|boolean
```

```
|query
```

```
|False
```

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

* Default value:

```
|===
```

== Request Body

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

|dr_pairs
|array[link:#dr_pair[dr_pair]]
a|

|id
|integer
a|DR Group ID

|partner_cluster
|link:#partner_cluster[partner_cluster]
a|Partner cluster information.
```

|===

.Example request

[%collapsible%closed]

====

```
[source,json,subs=+macros]
{
  "dr_pairs": {
    "node": {
      "name": "nodeA"
    },
    "partner": {
      "name": "nodeB"
    }
  },
  "id": 0,
  "partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
}
```

```
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
====

== 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

| 2425734
| An internal error occurred. Wait a few minutes, and try the operation
again. For further assistance, contact technical support.
|===
```

```
[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
```

```
=====
```

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

Local node of the DR Group.

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

```
|name
|string
a|Name of the node.
```

```
|===
```

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

Partner node of the DR Group.

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

```
|name
|string
a|Name of the node.
```

```
|===
```

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

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



```

|===
|Name
|Type
|Description

|node
|link:#node[node]
a|Local node of the DR Group.

|partner
|link:#partner[partner]
a|Partner node of the DR Group.

|===

[#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|

|===

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

Partner cluster information.

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

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

|name
|string
a|

|uuid
|string
a|

|===

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

DR group information.

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

|dr_pairs

```

```

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

|id
|integer
a|DR Group ID

|partner_cluster
|link:#partner_cluster[partner_cluster]
a|Partner cluster information.

|===

[#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
```

```
====
```

```
[[ID6e703b53e23a55d3ddd47541bb1a4b5d]]
```

```
= Remove a DR group from a MetroCluster IP configuration
```

```
[.api-doc-operation .api-doc-operation-delete]#DELETE# [.api-doc-code-  
block]#`/cluster/metrocluster/dr-groups/{id}`#
```

```
*Introduced In:* 9.8
```

Remove the DR group from the current MetroCluster over IP configuration specified by the DR group id.

```
== Parameters
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|id
```

```
|string
```

```
|path
```

```
|True
```

```
a|
```

```
|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
```

```
* Max value: 120
```

```
* Min value: 0
```

```
|fields
```

```
|array[string]
```

```
|query
```

```
|False
```

```
a|Specify the fields to return.
```

```
|===
```

```
== 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
=====

```

```
[[ID845146d3a539f21370ba7625cfb288af]]
```

= Retrieve DR group information using the DR group ID

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-block]#`/cluster/metrocluster/dr-groups/{id}`#
```

Introduced In: 9.8

Retrieves the DR group information specified by the DR group id.

== Parameters

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|id
```

```
|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

|dr_pairs
|array[link:#dr_pair[dr_pair]]
a|

|id
|integer
a|DR Group ID

|partner_cluster
|link:#partner_cluster[partner_cluster]
a|Partner cluster information.
```

```
|===
```

```
.Example response
```

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

```
=====
```

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

```
{
  "dr_pairs": {
    "node": {
      "name": "nodeA"
    },
    "partner": {
      "name": "nodeB"
    }
  },
  "id": 0,
  "partner_cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

```
=====
```

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

Local node of the DR Group.

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

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|name
```

```
|string
```

```
a|Name of the node.
```

```
|===
```

```
[#partner]
```

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

```
partner
```

Partner node of the DR Group.

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

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|name
```

```
|string
```

```
a|Name of the node.
```

```
|===
```

```
[#dr_pair]
```

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

```
dr_pair
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|Description
```

```
|node
|link:#node[node]
a|Local node of the DR Group.
```

```
|partner
|link:#partner[partner]
a|Partner node of the DR Group.
```

```
|===
```

```
[#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|
```

```
|===
```

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

Partner cluster information.

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

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

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

```
|uuid
|string
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

= View and update MetroCluster interconnects

```

```
:leveloffset: +1
```

```
[[ID48bb613273cd8c148c6b8330143b035a]]  
= Cluster MetroCluster interconnects endpoint overview
```

```
== Overview
```

You can use this API to retrieve and display relevant information pertaining to MetroCluster interconnect status. The `/cluster/metrocluster/interconnects` endpoint returns a list of all the interconnects in MetroCluster and their status. Each individual interconnect can be queried individually using the `+/cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{adapter}` endpoint.

```
'''
```

```
=== Examples
```

```
=== Retrieving MetroCluster interconnects
```

```
----
```

```
GET https://<mgmt-ip>/api/cluster/metrocluster/interconnects
```

```
{  
  "records": [  
    {  
      "node": {  
        "name": "cluster1_01",  
        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",  
        "_links": {  
          "self": {  
            "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-  
005056826931"  
          }  
        }  
      },  
      "partner_type": "ha",  
      "adapter": "e0f",  
      "_links": {  
        "self": {  
          "href":  
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-  
005056826931/ha/e0f"  
        }  
      }  
    }  
  ]  
}
```

```

    }
  },
  {
    "node": {
      "name": "cluster1_01",
      "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-005056826931"
        }
      }
    },
    "partner_type": "ha",
    "adapter": "e0g",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-005056826931/ha/e0g"
      }
    }
  },
  {
    "node": {
      "name": "cluster1_01",
      "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-005056826931"
        }
      }
    },
    "partner_type": "dr",
    "adapter": "e0f",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-005056826931/dr/e0f"
      }
    }
  },
  {
    "node": {

```

```

        "name": "cluster1_01",
        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
            }
        }
    },
    "partner_type": "dr",
    "adapter": "e0g",
    "_links": {
        "self": {
            "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/dr/e0g"
        }
    }
},
{
    "node": {
        "name": "cluster1_01",
        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-
005056826931"
            }
        }
    },
    "partner_type": "aux",
    "adapter": "e0f",
    "_links": {
        "self": {
            "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-
005056826931/aux/e0f"
        }
    }
},
{
    "node": {
        "name": "cluster1_01",
        "uuid": "6fead8fe-8d81-11e9-b5a9-005056826931",
        "_links": {
            "self": {

```

```

        "href": "/api/cluster/nodes/6fead8fe-8d81-11e9-b5a9-005056826931"
      }
    },
    "partner_type": "aux",
    "adapter": "e0g",
    "_links": {
      "self": {
        "href":
"/api/cluster/metrocluster/interconnects/6fead8fe-8d81-11e9-b5a9-005056826931/aux/e0g"
      }
    }
  },
  {
    "node": {
      "name": "cluster1_02",
      "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-00505682dc8b"
        }
      }
    },
    "partner_type": "ha",
    "adapter": "e0f",
    "_links": {
      "self": {
        "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-00505682dc8b/ha/e0f"
      }
    }
  },
  {
    "node": {
      "name": "cluster1_02",
      "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-00505682dc8b"
        }
      }
    }
  }
}

```

```

    },
    "partner_type": "ha",
    "adapter": "e0g",
    "_links": {
      "self": {
        "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/ha/e0g"
      }
    }
  },
  {
    "node": {
      "name": "cluster1_02",
      "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
        }
      }
    },
    "partner_type": "dr",
    "adapter": "e0f",
    "_links": {
      "self": {
        "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/dr/e0f"
      }
    }
  },
  {
    "node": {
      "name": "cluster1_02",
      "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
        }
      }
    },
    "partner_type": "dr",
    "adapter": "e0g",
    "_links": {

```

```

        "self": {
            "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/dr/e0g"
        }
    },
    {
        "node": {
            "name": "cluster1_02",
            "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
            "_links": {
                "self": {
                    "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
                }
            }
        },
        "partner_type": "aux",
        "adapter": "e0f",
        "_links": {
            "self": {
                "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/aux/e0f"
            }
        }
    },
    {
        "node": {
            "name": "cluster1_02",
            "uuid": "f5435191-8d81-11e9-9d4b-00505682dc8b",
            "_links": {
                "self": {
                    "href": "/api/cluster/nodes/f5435191-8d81-11e9-9d4b-
00505682dc8b"
                }
            }
        },
        "partner_type": "aux",
        "adapter": "e0g",
        "_links": {
            "self": {
                "href":
"/api/cluster/metrocluster/interconnects/f5435191-8d81-11e9-9d4b-
00505682dc8b/aux/e0g"
            }
        }
    }
}

```

```

    }
  }
}
],
"num_records": 12,
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/interconnects"
  }
}
}
}
-----

```

=== Retrieves information about a specific MetroCluster interconnect

```

-----
https://<mgmt-ip>/api/cluster/metrocluster/interconnects/774b4fbc-86f9-
11e9-9051-005056825c71/aux/e0f
{
  "node": {
    "name": "cluster1_01",
    "uuid": "46147363-9857-11e9-9a55-005056828eb9",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/46147363-9857-11e9-9a55-
005056828eb9"
      }
    }
  },
  "partner_type": "ha",
  "adapter": "e0f",
  "state": "up",
  "type": "iwarp",
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/interconnects/46147363-9857-
11e9-9a55-005056828eb9/ha/e0f"
    }
  }
}
}
-----

```



```
[[IDd785fa8c2c6a4fd34d721333225f5bc6]]
```

```
= Retrieve interconnect adapter information for nodes in MetroCluster
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-block]#`/cluster/metrocluster/interconnects`#
```

```
*Introduced In:* 9.8
```

```
Retrieves a list of interconnect adapter information for nodes in the MetroCluster.
```

```
== Related ONTAP Commands
```

```
* `metrocluster interconnect show`
```

```
== Learn more
```

```
*
```

```
xref:{relative_path}cluster_metrocluster_interconnects_endpoint_overview.html[DOC /cluster/metrocluster/interconnects]
```

```
== Parameters
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|node.name
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by node.name
```

```
|node.uuid
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by node.uuid
```

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

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

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

```
|type
|string
|query
|False
a|Filter by 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.

* Default value: 1

|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.

* Default value: 1

* Max value: 120

* Min value: 0

|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:#collection_links[collection_links]
a|

|num_records
|integer
a|Number of Records

```
|records
|array[link:#metrocluster_interconnect[metrocluster_interconnect]]
a|
```

```
|===
```

.Example response

[%collapsible%closed]

```
=====
```

[source,json,subs=+macros]

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "adapter": "string",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "partner_type": "aux",
    "state": "down",
    "type": "roce"
  }
}
=====
```

```
== Error
```

ONTAP Error Response Codes

|===

| Error Code | Description

| 2425734

| An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

| 2427132

| MetroCluster is not configured on this cluster.

|===

[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|

|===

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

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

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

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

|===

[#self_link]

```

```

[.api-collapsible-fifth-title]
self_link

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

|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|

|===

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

Data for a MetroCluster interconnect. REST:
/api/cluster/metrocluster/interconnects

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

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

|adapter
|string
a|Adapter

|node
|link:#node[node]
a|

|partner_type
|string
a|Partner type

|state
|string
a|Adapter status

```



```
|type  
|string  
a|Adapter type
```

```
|===
```

```
[#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
=====

[[IDebd658ae1266088de96ba9793be8f1fc]]
= Retrieve information about a MetroCluster interconnect for a partner
type and adapter

[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-
block]#`/cluster/metrocluster/interconnects/{node.uuid}/{partner_type}/{ad
apter}`#

*Introduced In:* 9.8

Retrieves information about a MetroCluster Interconnect for a specific
partner type and adapter.

== Related ONTAP Commands

* `metrocluster interconnect show`

== Parameters

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

|Name

```

```
|Type
|In
|Required
|Description

|node.uuid
|string
|path
|True
a|Node UUID

|partner_type
|string
|path
|True
a|DR Partner type

|adapter
|string
|path
|True
a|Interconnect adapter.

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

|===

== Response
```

Status: 200, Ok

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

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

```

a|

|adapter
|string
a|Adapter

|node
|link:#node[node]
a|

|partner_type
|string
a|Partner type

|state
|string
a|Adapter status

|type
|string
a|Adapter type

|===

.Example response
[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "adapter": "string",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",

```

```

    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "partner_type": "aux",
  "state": "down",
  "type": "roce"
}
====

== Error

```

Status: Default

ONTAP Error Response Codes

```

|====
| Error Code | Description
|
| 2425734
| An internal error occurred. Wait a few minutes, and try the operation
| again. For further assistance, contact technical support.
|
| 2427132
| MetroCluster is not configured on this cluster.
|====

```

```
[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|

```

```

|===

```

```

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

```

```

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

```

```

|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|

|===

```

```
[#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
```

```
= Retrieve MetroCluster node configurations
```

```
:leveloffset: +1
```

```
[[ID136410128a78b3778431b474abe3bf49]]
= Cluster MetroCluster nodes endpoint overview
```

```
== Overview
```

Retrieves the configuration information for the nodes in the MetroCluster configuration.

```
'''
```

```
=== Example
```

```
----
```

```
GET https://<mgmt-ip>/api/cluster/metrocluster/nodes
```

```
{
  "records": [
    {
      "dr_group_id": 1,
      "cluster": {
        "name": "cluster1",
        "uuid": "8f77de32-9857-11e9-9a55-005056828eb9",
        "_links": {
```

```

        "self": {
            "href": "/api/cluster/8f77de32-9857-11e9-9a55-
005056828eb9"
        }
    },
    "node": {
        "name": "cluster1_01",
        "uuid": "46147363-9857-11e9-9a55-005056828eb9",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/46147363-9857-11e9-9a55-
005056828eb9"
            }
        }
    },
    "dr_mirroring_state": "enabled",
    "configuration_state": "configured",
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/nodes/46147363-9857-
11e9-9a55-005056828eb9"
        }
    }
},
{
    "dr_group_id": 1,
    "cluster": {
        "name": "cluster1",
        "uuid": "8f77de32-9857-11e9-9a55-005056828eb9",
        "_links": {
            "self": {
                "href": "/api/cluster/8f77de32-9857-11e9-9a55-
005056828eb9"
            }
        }
    },
    "node": {
        "name": "cluster1_02",
        "uuid": "cf1dc67f-9857-11e9-bf80-005056829db6",
        "_links": {
            "self": {
                "href": "/api/cluster/nodes/cf1dc67f-9857-11e9-bf80-
005056829db6"
            }
        }
    }
}

```

```

    },
    "dr_mirroring_state": "enabled",
    "configuration_state": "configured",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/cf1dc67f-9857-
11e9-bf80-005056829db6"
      }
    }
  },
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "cluster3",
      "uuid": "aa8aa15a-9857-11e9-80c9-00505682e684",
      "_links": {
        "self": {
          "href": "/api/cluster/aa8aa15a-9857-11e9-80c9-
00505682e684"
        }
      }
    },
    "node": {
      "name": "cluster3_01",
      "uuid": "5b3b983b-9857-11e9-80c9-00505682e684",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/5b3b983b-9857-11e9-80c9-
00505682e684"
        }
      }
    },
    "dr_mirroring_state": "enabled",
    "configuration_state": "configured",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/5b3b983b-9857-
11e9-80c9-00505682e684"
      }
    }
  },
  {
    "dr_group_id": 1,
    "cluster": {
      "name": "cluster3",
      "uuid": "aa8aa15a-9857-11e9-80c9-00505682e684",

```

```

    "_links": {
      "self": {
        "href": "/api/cluster/aa8aa15a-9857-11e9-80c9-
00505682e684"
      }
    },
    "node": {
      "name": "cluster3_02",
      "uuid": "45bff538-9858-11e9-a624-005056820377",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/45bff538-9858-11e9-a624-
005056820377"
        }
      }
    },
    "dr_mirroring_state": "enabled",
    "configuration_state": "configured",
    "_links": {
      "self": {
        "href": "/api/cluster/metrocluster/nodes/45bff538-9858-
11e9-a624-005056820377"
      }
    }
  ],
  "num_records": 4,
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/nodes?fields=%2A"
    }
  }
}
-----
'''

```

[[IDbd364ac84d182fed279ed283b2f23759]]

= Retrieve MetroCluster nodes and configurations

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

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

```
*Introduced In:* 9.8
```

```
Retrieves MetroCluster nodes and their configurations.
```

```
== Related ONTAP Commands
```

```
* `metrocluster node show`
```

```
== Learn more
```

```
*
```

```
xref:{relative_path}cluster_metrocluster_nodes_endpoint_overview.html[DOC  
/cluster/metrocluster/nodes]
```

```
== Parameters
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|node.name
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by node.name
```

```
|node.uuid
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by node.uuid
```

```
|cluster.name
```

```
|string
```

```
|query
```

```
|False
```

```
a|Filter by cluster.name
```

```
|cluster.uuid  
|string  
|query  
|False  
a|Filter by cluster.uuid
```

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

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

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

```
|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.

* Default value: 1

|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.

* Default value: 1
* Max value: 120
* Min value: 0

|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:#collection_links[collection_links]
a|

|num_records
|integer
```

```
a|Number of Records
```

```
|records  
|array[link:#metrocluster_node[metrocluster_node]]  
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": {  
      "_links": {  
        "self": {  
          "href": "/api/resourcelink"  
        }  
      },  
      "name": "cluster1",  
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"  
    },  
    "configuration_state": "unreachable",  
    "dr_group_id": 0,  
    "dr_mirroring_state": "enabled",  
    "node": {  
      "_links": {  
        "self": {  
          "href": "/api/resourcelink"  
        }  
      }  
    }  
  }  
}
```



```

    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
}
====

== Error

```

Status: Default

ONTAP Error Response Codes

```

|====
| Error Code | Description
|
| 2425734
| An internal error occurred. Wait a few minutes, and try the operation
| again. For further assistance, contact technical support.
|====

```

```
[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|

```

```

|===

```

```

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

```

```

[cols=3*,options=header]

```

```

|===
|Name
|Type
|Description

```

```

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

```

```

|self

```

```

|link:#href[href]
a|

|===

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

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

|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

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

```

```

|Type
|Description

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

|name
|string
a|

|uuid
|string
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|

|===

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

```

Data for a node in a MetroCluster. REST: /api/cluster/metrocluster/nodes

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

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

|cluster
|link:#cluster[cluster]
a|

|configuration_state
|string
a|Configuration state of the node.

|dr_group_id
|integer
a|DR Group ID.

|dr_mirroring_state
|string
a|State of the DR mirroring configuration.

|node
|link:#node[node]
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
```

```
====
```

```
[[ID17b83e859649460739b66dac820c3230]]
```

```
= Retrieve a node configuration in MetroCluster
```

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

```
*Introduced In:* 9.8
```

```
Retrieves the node configuration in the MetroCluster.
```

```
== Related ONTAP Commands
```

```
* `metrocluster node show`
```

```
== Parameters
```

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

```
|===
```

```
|Name
```

```
|Type
```

```
|In
```

```
|Required
```

```
|Description
```

```
|node.uuid
```

```
|string
```

```
|path
```

```
|True
```

```
a|Node 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:#self_link[self_link]
a|

|cluster
|link:#cluster[cluster]
a|

|configuration_state
|string
a|Configuration state of the node.

|dr_group_id
|integer
a|DR Group ID.

|dr_mirroring_state
|string
a|State of the DR mirroring configuration.

|node
|link:#node[node]
a|

|===

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



```

    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "configuration_state": "unreachable",
  "dr_group_id": 0,
  "dr_mirroring_state": "enabled",
  "node": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
====

== Error

```

Status: Default

ONTAP Error Response Codes

```

|===
| Error Code | Description
| 2425734
| An internal error occurred. Wait a few minutes, and try the operation
again. For further assistance, contact technical support.
|===

```

[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|

|===

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

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

|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

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

```

```

|Type
|Description

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

|name
|string
a|

|uuid
|string
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|

|===

[#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

= Retrieve MetroCluster operations

:leveloffset: +1

[[ID2c02aa43472c4541f195b6a2cae72591]]
= Cluster MetroCluster operations endpoint overview

= Overview

Retrieves a list of recent MetroCluster operations. To view more
information about a specific operation, use the
`+/cluster/metrocluster/operations/{uuid}+` API endpoint.

'''

== Examples

=== Retrieves all MetroCluster operations

----
GET https://<mgmt-ip>/api/cluster/metrocluster/operations?fields=*
{
  "records": [
    {
      "uuid": "a14ae39f-8d85-11e9-b4a7-00505682dc8b",
      "type": "check",
      "state": "successful",
      "start_time": "2019-06-14T11:15:00-07:00",
      "end_time": "2019-06-14T11:16:08-07:00",
      "_links": {
        "self": {

```

```

        "href": "/api/cluster/metrocluster/operations/a14ae39f-
8d85-11e9-b4a7-00505682dc8b"
    }
}
},
{
    "uuid": "7058df27-8d85-11e9-bbc9-005056826931",
    "type": "configure",
    "state": "successful",
    "start_time": "2019-06-12T19:46:27-07:00",
    "end_time": "2019-06-12T19:48:17-07:00",
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/operations/7058df27-
8d85-11e9-bbc9-005056826931"
        }
    }
},
{
    "uuid": "7849515d-8d84-11e9-bbc9-005056826931",
    "type": "connect",
    "state": "successful",
    "start_time": "2019-06-12T19:39:30-07:00",
    "end_time": "2019-06-12T19:42:02-07:00",
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/operations/7849515d-
8d84-11e9-bbc9-005056826931"
        }
    }
},
{
    "uuid": "331c79ad-8d84-11e9-b4a7-00505682dc8b",
    "type": "interface_create",
    "state": "successful",
    "start_time": "2019-06-12T19:37:35-07:00",
    "end_time": "2019-06-12T19:37:41-07:00",
    "_links": {
        "self": {
            "href": "/api/cluster/metrocluster/operations/331c79ad-
8d84-11e9-b4a7-00505682dc8b"
        }
    }
}
],
"num_records": 4,

```

```
"_links": {
  "self": {
    "href": "/api/cluster/metrocluster/operations?fields=%2A"
  }
}
}
```

=== Retrieves Information about a specific MetroCluster operation

```
GET https://<mgmt-ip>/api/cluster/metrocluster/operations/0db12274-86fd-11e9-8053-00505682c342
```

```
{
  "uuid": "0db12274-86fd-11e9-8053-00505682c342",
  "name": "check",
  "state": "successful",
  "start_time": "2019-06-06T16:15:01-07:00",
  "end_time": "2019-06-06T16:16:05-07:00",
  "_links": {
    "self": {
      "href": "/api/cluster/metrocluster/operations/0db12274-86fd-11e9-8053-00505682c342"
    }
  }
}
```

'''

```
[[ID7e57dd5ec3a81879fd807da15d7c91e1]]
= Retrieve MetroCluster operations on the local cluster
```

```
[.api-doc-operation .api-doc-operation-get]#GET# [.api-doc-code-block]#`/cluster/metrocluster/operations`#
```

Introduced In: 9.8

Retrieves the list of MetroCluster operations on the local cluster.

== Related ONTAP Commands

* `metrocluster operation history show`

== Learn more

*

xref:{relative_path}cluster_metrocluster_operations_endpoint_overview.html
[DOC /cluster/metrocluster/operations]

== Parameters

[cols=5*,options=header]

|===

|Name

|Type

|In

|Required

|Description

|errors

|string

|query

|False

a|Filter by errors

|uuid

|string

|query

|False

a|Filter by uuid

|type

|string

|query

|False

a|Filter by type

|additional_info

|string

|query

|False

a|Filter by additional_info

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

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

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

```
|start_time
|string
|query
|False
a|Filter by start_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.

* Default value: 1

|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.

* Default value: 1

* Max value: 120

* Min value: 0

|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:#collection_links[collection_links]
a|

|num_records
|integer
a|Number of Records

```

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

|===

.Example response
[%collapsible%closed]
=====
[source,json,subs=+macros]
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "additional_info": "MetroCluster switchover with auto heal completed
successfully.",
    "command_line": "metrocluster switchover",
    "end_time": "2016-03-10T14:35:16-08:00",
    "errors": [
      "siteB (warning): Unable to prepare the partner cluster for a
pending switchback operation. Reason: entry doesn't exist. Reboot the
nodes in the partner cluster before using the \"metrocluster switchback\"
command."
    ],
    "start_time": "2016-03-10T14:33:16-08:00",
    "state": "completed_with_warnings",
    "type": "switchover",
    "uuid": "11111111-2222-3333-4444-abcdefabcdef"
  }
}
=====

== Error

```

ONTAP Error Response Codes

|===

| Error Code | Description

| 2425734

| An internal error occurred. Wait a few minutes, and try the operation again. For further assistance, contact technical support.

|===

[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|

|===

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

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

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

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

|===

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

```

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

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

|===

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

Data for a MetroCluster operation. REST:
/api/cluster/metrocluster/operations
```

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

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

|additional_info
|string
a|Additional information for the auto heal.

|command_line
|string
a|Command line executed with the options specified.

|end_time
|string
a|End Time

|errors
```

```

|array[string]
a|List of errors in the operation.

|start_time
|string
a|Start Time

|state
|string
a|Indicates the state of the operation.

|type
|string
a|Name of the operation.

|uuid
|string
a|Identifier for the 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
====

[[ID416f01c076289f6f55f5b5b21046fa18]]
= Retrieve information about a MetroCluster operation

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

```

Introduced In: 9.8

Retrieves information about a specific MetroCluster operation.

== Related ONTAP Commands

* `metrocluster operation show`

== Parameters

[cols=5*,options=header]

|===

|Name

|Type

|In

|Required

|Description

|uuid

|string

|path

|True

a|Unique identifier for the operation.

|fields

|array[string]

|query

|False

a|Specify the fields to return.

|===

== Response

Status: 200, Ok

[cols=3*,options=header]

|===

|Name

|Type

|Description

|_links

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

|additional_info
|string
a|Additional information for the auto heal.

|command_line
|string
a|Command line executed with the options specified.

|end_time
|string
a|End Time

|errors
|array[string]
a|List of errors in the operation.

|start_time
|string
a|Start Time

|state
|string
a|Indicates the state of the operation.

|type
|string
a|Name of the operation.

|uuid
|string
a|Identifier for the operation.

|===
```

.Example response

```

[%collapsible%closed]
====
[source,json,subs=+macros]
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "additional_info": "MetroCluster switchover with auto heal completed
successfully.",
  "command_line": "metrocluster switchover",
  "end_time": "2016-03-10T14:35:16-08:00",
  "errors": [
    "siteB (warning): Unable to prepare the partner cluster for a pending
switchback operation. Reason: entry doesn't exist. Reboot the nodes in the
partner cluster before using the \"metrocluster switchback\" command."
  ],
  "start_time": "2016-03-10T14:33:16-08:00",
  "state": "completed_with_warnings",
  "type": "switchover",
  "uuid": "11111111-2222-3333-4444-abcdefabcdef"
}
====

== Error

```

Status: Default

ONTAP Error Response Codes

```

|===
| Error Code | Description
| 2425734
| An internal error occurred. Wait a few minutes, and try the operation
again. For further assistance, contact technical support.
|===

```

```
[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|
```

```

|===

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

[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

= Manage cluster nodes

:leveloffset: +1

[[ID6aa34e0e8f6c7d5f00d766bae4931029]]
= 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.

== Performance monitoring

Performance of a node can be monitored by observing the `metric.+++` and `statistics.+++` properties. These properties show the performance of a node in terms of cpu utilization. The `metric.+++` properties denote an average whereas `statistics.+++` properties denote a real-time monotonically increasing value aggregated across all nodes.

=== 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
```

```
add_single_node.txt(body):
```

```
{  
  "cluster_interface": {  
    "ip": {  
      "address": "1.1.1.1"  
    }  
  }  
}
```

```
# Request
```

```
curl -X POST "https://<mgmt-ip>/api/cluster/nodes" -d  
"@add_single_node.txt"
```

```
----
```

```
'''
```

```
=== Adding multiple nodes in the same request and creating recommended aggregates
```

```
----
```

```
# Body
```

```
add_multiple_nodes.txt(body):
```

```
{  
  "records": [  
    {
```

```

    "name": "node1",
    "cluster_interface": {
      "ip": {
        "address": "1.1.1.1"
      }
    }
  },
  {
    "name": "node2",
    "cluster_interface": {
      "ip": {
        "address": "2.2.2.2"
      }
    }
  }
]
}

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

'''

=== Modifying a cluster-wide configuration

----

# Body
modify_name_and_location.txt(body):
{
  "name": "renamedNode",
  "location": "newLocation"
}

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

'''

=== Shutting down a node

```

```

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

'''

=== Deleting a node from a cluster

-----
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}"
-----

=== Force a node deletion from a cluster

-----
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}?force=true"
-----

'''

=== Retrieving the state of all nodes in a cluster

-----

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

#Response
{
"records": [
  {
    "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
    "name": "node2",
    "state": "up",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
      }
    }
  },
  {
    "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
    "name": "node1",
    "state": "up",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
      }
    }
  }
]
}

```

```

    }
  }
},
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=state"
  }
}
}
}
-----

```

```
'''
```

=== Retrieving statistics and metric for a node

In this example, the API returns the "statistics" and "metric" properties.

```
-----
```

#Request

```
curl -siku admin -X GET "https://<mgmt-
ip>/api/cluster/nodes?fields=statistics,metric"
```

#Response

```

{
  "records": [
    {
      "uuid": "6b29327b-21ca-11ea-99aa-005056bb420b",
      "name": "prij-vs1m1",
      "metric": {
        "timestamp": "2019-12-19T15:50:45Z",
        "duration": "PT15S",
        "status": "ok",
        "processor_utilization": 3
      },
      "statistics": {
        "timestamp": "2019-12-19T15:50:48Z",
        "status": "ok",
        "processor_utilization_raw": 6409411622,
        "processor_utilization_base": 74330229886
      }
    }
  ],
  "num_records": 1
}

```

```
}
----
'''
```

=== Retrieving takeover and giveback failure codes and messages

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

Retrieve nodes in a cluster

GET /cluster/nodes

Introduced In: 9.6

Retrieves the nodes in the cluster.

Expensive properties

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

- `statistics.*`
- `metric.*`

Related ONTAP commands

- `system node show`

Parameters

Name	Type	In	Required	Description
<code>service_processor.link_status</code>	string	query	False	Filter by <code>service_processor.link_status</code>

Name	Type	In	Required	Description
service_processor.state	string	query	False	Filter by service_processor.state
service_processor.firmware_version	string	query	False	Filter by service_processor.firmware_version
service_processor.mac_address	string	query	False	Filter by service_processor.mac_address
service_processor.dhcp_enabled	boolean	query	False	Filter by service_processor.dhcp_enabled
service_processor.ipv4_interface.address	string	query	False	Filter by service_processor.ipv4_interface.address
service_processor.ipv4_interface.gateway	string	query	False	Filter by service_processor.ipv4_interface.gateway
service_processor.ipv4_interface.netmask	string	query	False	Filter by service_processor.ipv4_interface.netmask
service_processor.ipv6_interface.address	string	query	False	Filter by service_processor.ipv6_interface.address
service_processor.ipv6_interface.gateway	string	query	False	Filter by service_processor.ipv6_interface.gateway
service_processor.ipv6_interface.netmask	string	query	False	Filter by service_processor.ipv6_interface.netmask

Name	Type	In	Required	Description
serial_number	string	query	False	Filter by serial_number
statistics.timestamp	string	query	False	Filter by statistics.timestamp • Introduced in: 9.8
statistics.processor_utilization_base	integer	query	False	Filter by statistics.processor_utilization_base • Introduced in: 9.8
statistics.processor_utilization_raw	integer	query	False	Filter by statistics.processor_utilization_raw • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status • Introduced in: 9.8
state	string	query	False	Filter by state • Introduced in: 9.7
vendor_serial_number	string	query	False	Filter by vendor_serial_number • Introduced in: 9.7
location	string	query	False	Filter by location
vm.provider_type	string	query	False	Filter by vm.provider_type • Introduced in: 9.7

Name	Type	In	Required	Description
uptime	integer	query	False	Filter by uptime
metrocluster.type	string	query	False	Filter by metrocluster.type • Introduced in: 9.8
cluster_interfaces.name	string	query	False	Filter by cluster_interfaces.name
cluster_interfaces.uuid	string	query	False	Filter by cluster_interfaces.uuid
cluster_interfaces.ip.address	string	query	False	Filter by cluster_interfaces.ip.address
system_machine_type	string	query	False	Filter by system_machine_type • Introduced in: 9.7
management_interfaces.name	string	query	False	Filter by management_interfaces.name
management_interfaces.uuid	string	query	False	Filter by management_interfaces.uuid
management_interfaces.ip.address	string	query	False	Filter by management_interfaces.ip.address
system_id	string	query	False	Filter by system_id • Introduced in: 9.7
controller.frus.state	string	query	False	Filter by controller.frus.state

Name	Type	In	Required	Description
controller.frus.id	integer	query	False	Filter by controller.frus.id
controller.frus.type	string	query	False	Filter by controller.frus.type
controller.over_temperature	string	query	False	Filter by controller.over_temperature
controller.flash_cache.serial_number	string	query	False	Filter by controller.flash_cache.serial_number
controller.flash_cache.slot	string	query	False	Filter by controller.flash_cache.slot
controller.flash_cache.state	string	query	False	Filter by controller.flash_cache.state
controller.flash_cache.hardware_revision	string	query	False	Filter by controller.flash_cache.hardware_revision
controller.flash_cache.part_number	string	query	False	Filter by controller.flash_cache.part_number
controller.flash_cache.capacity	integer	query	False	Filter by controller.flash_cache.capacity
controller.flash_cache.firmware_version	string	query	False	Filter by controller.flash_cache.firmware_version
controller.flash_cache.model	string	query	False	Filter by controller.flash_cache.model
date	string	query	False	Filter by date
uuid	string	query	False	Filter by uuid

Name	Type	In	Required	Description
ha.partners.name	string	query	False	Filter by ha.partners.name
ha.partners.uuid	string	query	False	Filter by ha.partners.uuid
ha.ports.number	integer	query	False	Filter by ha.ports.number • Introduced in: 9.7
ha.ports.state	string	query	False	Filter by ha.ports.state • Introduced in: 9.7
ha.giveback.failure.code	integer	query	False	Filter by ha.giveback.failure.code • Introduced in: 9.7
ha.giveback.failure.message	string	query	False	Filter by ha.giveback.failure.message • Introduced in: 9.7
ha.giveback.state	string	query	False	Filter by ha.giveback.state • Introduced in: 9.7
ha.enabled	boolean	query	False	Filter by ha.enabled
ha.takeover.failure.message	string	query	False	Filter by ha.takeover.failure.message • Introduced in: 9.7

Name	Type	In	Required	Description
ha.takeover.failure.code	integer	query	False	Filter by ha.takeover.failure.code • Introduced in: 9.7
ha.takeover.state	string	query	False	Filter by ha.takeover.state • Introduced in: 9.7
ha.auto_giveback	boolean	query	False	Filter by ha.auto_giveback
metric.duration	string	query	False	Filter by metric.duration • Introduced in: 9.8
metric.processor_utilization	integer	query	False	Filter by metric.processor_utilization • Introduced in: 9.8
metric.timestamp	string	query	False	Filter by metric.timestamp • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status • Introduced in: 9.8
model	string	query	False	Filter by model
name	string	query	False	Filter by name
version.full	string	query	False	Filter by version.full

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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
num_records	integer	
records	array[records]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "cluster_interface": {
      "ip": {
        "address": "10.10.10.7"
      }
    },
    "cluster_interfaces": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "controller": {
      "flash_cache": {
        "capacity": "102400000000",
        "firmware_version": "NA05",
        "hardware_revision": "A1",
        "model": "X1970A",
        "part_number": "119-00207",
        "serial_number": "A22P5061550000187",
        "slot": "6-1",
        "state": "ok"
      },
      "frus": {
```

```

    "id": 0,
    "state": "ok",
    "type": "fan"
  },
  "over_temperature": "over"
},
"date": "2019-04-17T11:49:26-04:00",
"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": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "processor_utilization": "13",
  "status": "ok",
  "timestamp": "2017-01-25T11:20:13Z"
},
"metrocluster": {
  "type": "fc"
},
"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": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "link_status": "up",
  "mac_address": "string",
  "state": "online"
},
"state": "up",
"statistics": {
```

```

    "processor_utilization_base": "12345123",
    "processor_utilization_raw": "13",
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "system_id": "0537035403",
  "system_machine_type": "7Y56-CTOWW1",
  "uptime": "300536",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",
  "vendor_serial_number": "791603000068",
  "version": {
    "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
    "generation": "9",
    "major": "4",
    "minor": "0"
  },
  "vm": {
    "provider_type": "GoogleCloud"
  }
}

```

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

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

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

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interfaces

Network interface

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

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

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

metrocluster

Metrocluster

Name	Type	Description
type	string	The Metrocluster configuration type

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
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	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.

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	

statistics

Raw CPU performance for the nodes.

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

version

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

Name	Type	Description
full	string	The full cluster version string.

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

vm

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

records

Complete node information

Name	Type	Description
_links	_links	
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none"> • example: 2019-04-17T11:49:26-04:00 • format: date-time • readOnly: 1
ha	ha	
location	string	

Name	Type	Description
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
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.
statistics	statistics	Raw CPU performance for the nodes.
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

error_arguments

Name	Type	Description
code	string	Argument code
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.

Add a node or nodes to a cluster

POST `/cluster/nodes`

Introduced In: 9.6

Adds a node or nodes to the cluster.

Required properties

- `cluster_interface.ip.address`

Related ONTAP commands

- `cluster add-node`
- `network interface create`
- `storage aggregate auto-provision`
- `system node modify`
- `system service-processor network modify`

Parameters

Name	Type	In	Required	Description
create_recommended_aggregates	boolean	query	False	<p>Creates aggregates based on an optimal layout recommended by the system.</p> <ul style="list-style-type: none"> • Default value: • Introduced in: 9.7
return_timeout	integer	query	False	<p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0
return_records	boolean	query	False	<p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value:

Request Body

Name	Type	Description
_links	_links	
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	<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: 2019-04-17T11:49:26-04:00• format: date-time• readOnly: 1• Introduced in: 9.6• x-nullable: true
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.
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
serial_number	string	
service_processor	service_processor	

Name	Type	Description
state	string	State of the node: <ul style="list-style-type: none"> • <i>up</i> - Node is up and operational. • <i>booting</i> - Node is booting up. • <i>down</i> - Node has stopped or is dumping core. • <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback. • <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks. • <i>degraded</i> - Node has one or more critical services offline. • <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state.
statistics	statistics	Raw CPU performance for the nodes.
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "flash_cache": {
      "capacity": "102400000000",
      "firmware_version": "NA05",
      "hardware_revision": "A1",
      "model": "X1970A",
      "part_number": "119-00207",
      "serial_number": "A22P5061550000187",
      "slot": "6-1",
      "state": "ok"
    },
    "frus": {
      "id": 0,
      "state": "ok",
      "type": "fan"
    },
    "over_temperature": "over"
  },
  "date": "2019-04-17T11:49:26-04:00",
  "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": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
},
"duration": "PT15S",
"processor_utilization": "13",
"status": "ok",
"timestamp": "2017-01-25T11:20:13Z"
},
"metrocluster": {
  "type": "fc"
},
"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": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
},
"link_status": "up",
"mac_address": "string",
"state": "online"
},
"state": "up",
"statistics": {
  "processor_utilization_base": "12345123",
  "processor_utilization_raw": "13",
  "status": "ok",
  "timestamp": "2017-01-25T11:20:13Z"
},
"system_id": "0537035403",
"system_machine_type": "7Y56-CTOWW1",
"uptime": "300536",
"uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",

```



```

"vendor_serial_number": "791603000068",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": "9",
  "major": "4",
  "minor": "0"
},
"vm": {
  "provider_type": "GoogleCloud"
}
}

```

Response

Status: 202, Accepted

Name	Type	Description
job	job_link	

Example response

```

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

```

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
262245	The value provided was invalid.

Error Code	Description
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.

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	

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

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

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

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interfaces

Network interface

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

Name	Type	Description
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.
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	integer	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.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

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

metrocluster

Metrocluster

Name	Type	Description
type	string	The Metrocluster configuration type

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
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	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.

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	

statistics

Raw CPU performance for the nodes.

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

version

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

Name	Type	Description
full	string	The full cluster version string.

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

vm

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

node

Complete node information

Name	Type	Description
_links	_links	
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting. <ul style="list-style-type: none"> • example: 2019-04-17T11:49:26-04:00 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
ha	ha	
location	string	

Name	Type	Description
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
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.
statistics	statistics	Raw CPU performance for the nodes.
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

job_link

Name	Type	Description
_links	_links	
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.

Delete a node from a cluster

```
DELETE /cluster/nodes/{uuid}
```

Introduced In: 9.7

Deletes a node from the cluster. Note that before deleting a node from the cluster, you must shut down all of the node's shared resources, such as virtual interfaces to clients. If any of the node's shared resources are still active, the command fails.

Optional parameters:

- `force` - Forcibly removes a node that is down and cannot be brought online to remove its shared resources. This flag is set to "false" by default.

Related ONTAP commands

- `cluster remove-node`

Learn more

- [DOC /cluster/nodes](#)

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	
force	boolean	query	False	<p>Set the force flag to "true" to forcibly remove a node that is down and cannot be brought online to remove its shared resources.</p> <ul style="list-style-type: none">• Default value:
return_timeout	integer	query	False	<p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0

Response

Status: 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
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.

Error Code	Description
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.

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	

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 node information

GET /cluster/nodes/{uuid}

Introduced In: 9.6

Retrieves information for the node.

Related ONTAP commands

- `cluster add-node-status`
- `cluster date show`
- `cluster ha show`
- `network interface show`
- `network port show`
- `storage failover show`
- `system controller show`
- `system node show`
- `system node show-discovered`
- `system service-processor network show`
- `system service-processor show`
- `version`

Parameters

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

Response

Status: 200, Ok

Name	Type	Description
<code>_links</code>	<code>_links</code>	
<code>cluster_interface</code>	<code>cluster_interface</code>	The cluster network IP address of the node to be added.
<code>cluster_interfaces</code>	array[<code>cluster_interfaces</code>]	
<code>controller</code>	<code>controller</code>	Controller information

Name	Type	Description
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: 2019-04-17T11:49:26-04:00 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
ha	ha	
location	string	
management_interface	management_interface	<p>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.</p>
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
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.
statistics	statistics	Raw CPU performance for the nodes.
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "flash_cache": {
      "capacity": "102400000000",
      "firmware_version": "NA05",
      "hardware_revision": "A1",
      "model": "X1970A",
      "part_number": "119-00207",
      "serial_number": "A22P5061550000187",
      "slot": "6-1",
      "state": "ok"
    },
    "frus": {
      "id": 0,
      "state": "ok",
      "type": "fan"
    },
    "over_temperature": "over"
  },
  "date": "2019-04-17T11:49:26-04:00",
  "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": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
},
"duration": "PT15S",
"processor_utilization": "13",
"status": "ok",
"timestamp": "2017-01-25T11:20:13Z"
},
"metrocluster": {
  "type": "fc"
},
"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": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
},
"link_status": "up",
"mac_address": "string",
"state": "online"
},
"state": "up",
"statistics": {
  "processor_utilization_base": "12345123",
  "processor_utilization_raw": "13",
  "status": "ok",
  "timestamp": "2017-01-25T11:20:13Z"
},
"system_id": "0537035403",
"system_machine_type": "7Y56-CTOWW1",
"uptime": "300536",
"uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",

```

```
"vendor_serial_number": "791603000068",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": "9",
  "major": "4",
  "minor": "0"
},
"vm": {
  "provider_type": "GoogleCloud"
}
}
```

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

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

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

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interfaces

Network interface

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

Name	Type	Description
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.
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	integer	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.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

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

metrocluster

Metrocluster

Name	Type	Description
type	string	The Metrocluster configuration type

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
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	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.

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	

statistics

Raw CPU performance for the nodes.

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

version

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

Name	Type	Description
full	string	The full cluster version string.

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

vm

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

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 node information

PATCH /cluster/nodes/{uuid}

Introduced In: 9.6

Updates the node information or performs shutdown/reboot actions on a node.

Related ONTAP commands

- `cluster ha modify`
- `storage failover modify`
- `system node modify`
- `system node reboot`
- `system service-processor network modify`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	<ul style="list-style-type: none">• format: uuid
action	string	query	False	<p>The shutdown action shuts the node down and transfers storage control to its HA group if storage failover is enabled. The reboot action reboots the node and transfers storage control to its HA group if storage failover is enabled. The giveback action transfers storage control back to the owner from its HA group.</p> <ul style="list-style-type: none">• enum: ["shutdown", "reboot", "giveback"]
shutdown_reboot_reason	string	query	False	Indicates the reason for the reboot or shutdown. This only applies when an action of reboot or shutdown is provided.

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

Request Body

Name	Type	Description
_links	_links	
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: 2019-04-17T11:49:26-04:00 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
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.
management_interfaces	array[management_interfaces]	

Name	Type	Description
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
model	string	
name	string	
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.
statistics	statistics	Raw CPU performance for the nodes.
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "flash_cache": {
      "capacity": "102400000000",
      "firmware_version": "NA05",
      "hardware_revision": "A1",
      "model": "X1970A",
      "part_number": "119-00207",
      "serial_number": "A22P5061550000187",
      "slot": "6-1",
      "state": "ok"
    },
    "frus": {
      "id": 0,
      "state": "ok",
      "type": "fan"
    },
    "over_temperature": "over"
  },
  "date": "2019-04-17T11:49:26-04:00",
  "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": "available",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
},
"duration": "PT15S",
"processor_utilization": "13",
"status": "ok",
"timestamp": "2017-01-25T11:20:13Z"
},
"metrocluster": {
  "type": "fc"
},
"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": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
},
"link_status": "up",
"mac_address": "string",
"state": "online"
},
"state": "up",
"statistics": {
  "processor_utilization_base": "12345123",
  "processor_utilization_raw": "13",
  "status": "ok",
  "timestamp": "2017-01-25T11:20:13Z"
},
"system_id": "0537035403",
"system_machine_type": "7Y56-CTOWW1",
"uptime": "300536",
"uuid": "4ea7a442-86d1-11e0-ae1c-123478563412",

```

```

"vendor_serial_number": "791603000068",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": "9",
  "major": "4",
  "minor": "0"
},
"vm": {
  "provider_type": "GoogleCloud"
}
}

```

Response

Status: 202, Accepted

Name	Type	Description
job	job_link	

Example response

```

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

```

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
852046	HA partner node

Error Code	Description
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.

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	

node_setup_ip

The IP configuration for cluster setup.

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interface

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

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

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

cluster_interfaces

Network interface

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

Name	Type	Description
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.
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	integer	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.

metric

CPU performance for the nodes.

Name	Type	Description
_links	_links	
duration	string	The duration over which this sample is calculated. The time durations are represented in the ISO-8601 standard format. Samples can be calculated over the following durations:

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

metrocluster

Metrocluster

Name	Type	Description
type	string	The Metrocluster configuration type

ipv4_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
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	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.

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	

statistics

Raw CPU performance for the nodes.

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

version

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

Name	Type	Description
full	string	The full cluster version string.

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

vm

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

node

Complete node information

Name	Type	Description
_links	_links	
cluster_interface	cluster_interface	The cluster network IP address of the node to be added.
cluster_interfaces	array[cluster_interfaces]	
controller	controller	Controller information
date	string	<p>The current or "wall clock" time of the node in ISO-8601 date, time, and time zone format. The ISO-8601 date and time are localized based on the ONTAP cluster's timezone setting.</p> <ul style="list-style-type: none"> • example: 2019-04-17T11:49:26-04:00 • format: date-time • readOnly: 1 • Introduced in: 9.6 • x-nullable: true
ha	ha	
location	string	

Name	Type	Description
management_interface	management_interface	The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.
management_interfaces	array[management_interfaces]	
membership	string	<p>Possible values:</p> <ul style="list-style-type: none"> • <i>available</i> - A node is detected on the internal cluster network and can be added to the cluster. Nodes that have a membership of "available" are not returned when a GET request is called when the cluster exists. Provide a query on the "membership" property for <i>available</i> to scan for nodes on the cluster network. Nodes that have a membership of "available" are returned automatically before a cluster is created. • <i>joining</i> - Joining nodes are in the process of being added to the cluster. The node might be progressing through the steps to become a member or might have failed. The job to add the node or create the cluster provides details on the current progress of the node. • <i>member</i> - Nodes that are members have successfully joined the cluster.
metric	metric	CPU performance for the nodes.
metrocluster	metrocluster	Metrocluster
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.
statistics	statistics	Raw CPU performance for the nodes.
system_id	string	
system_machine_type	string	OEM system machine type.
uptime	integer	The total time, in seconds, that the node has been up.
uuid	string	
vendor_serial_number	string	OEM vendor serial number.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.
vm	vm	

job_link

Name	Type	Description
_links	_links	
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 node historical performance metrics

GET /cluster/nodes/{uuid}/metrics

Introduced In: 9.8

Retrieves historical performance metrics for a node.

Parameters

Name	Type	In	Required	Description
duration	string	query	False	Filter by duration
processor_utilization	integer	query	False	Filter by processor_utilization
timestamp	string	query	False	Filter by timestamp

Name	Type	In	Required	Description
status	string	query	False	Filter by status
uuid	string	path	True	Unique identifier of the node.
interval	string	query	False	<p>The time range for the data. Examples can be 1h, 1d, 1m, 1w, 1y. The period for each time range is as follows:</p> <ul style="list-style-type: none"> • 1h: Metrics over the most recent hour sampled over 15 seconds. • 1d: Metrics over the most recent day sampled over 5 minutes. • 1w: Metrics over the most recent week sampled over 30 minutes. • 1m: Metrics over the most recent month sampled over 2 hours. • 1y: Metrics over the most recent year sampled over a day. • Default value: 1 • enum: ["1h", "1d", "1w", "1m", "1y"]

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

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "processor_utilization": "13",
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  }
}
```

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	

records

CPU performance for the nodes.

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

Name	Type	Description
status	string	<p>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".</p> <p>"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.</p> <p>"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.</p>
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

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

Cluster NTP

Cluster NTP endpoint overview

Overview

ONTAP uses the Network Time Protocol (NTP) for world clock time synchronization of the cluster. Some functional services require the time to be correct to within one second for all the nodes in the cluster.

The success and speed of this synchronization depends on the number, alignment, and consistent network latency of external time servers. It is a best practice to configure ONTAP with four independent external time servers.

To aid set up, the Pre-Cluster API of POST `/cluster` supports a list of NTP time servers using either the host name, IPv4 address, or IPv6 address.

You can enhance time security by acquiring private keys from external time servers, recording those keys and configuring the entries that match the external time servers to use those keys.

To use NTP symmetric authentication keys (keys), the shared private key must be recorded first using the `/cluster/ntp/keys` API associated with the server and enabled to be used.

APIs

There are three sets of APIs. The most basic set is part of the `/api/cluster` APIs, in which a set of NTP servers are provided. The next two sets are used to manage the NTP servers in more detail and optionally record keys to enable NTP symmetric authentication.

[/api/cluster](#)

More details can be found under the documentation for [/api/cluster](#). This API supports a list of NTP servers to start with. It does not take any individual configuration values for the NTP servers themselves.

[/api/cluster/ntp/servers](#)

You can use this API for a more detailed configuration of NTP servers. You must use this API to set and enable NTP symmetric authentication keys.

[/api/cluster/ntp/keys](#)

You can use this API to manage shared NTP symmetric keys that are provided by the remote NTP time server by using the key identifier (ID), type of key, and the private shared key.

Manage cluster NTP keys

Cluster NTP keys endpoint overview

Overview

You can configure NTP to use shared private keys between ONTAP and trusted external NTP time servers.

You acquire the keys from the external NTP time servers and individual entries created for each unique key. You can use the `/cluster/ntp/servers` API to associate a key with an external NTP time server used by ONTAP and enable authentication.

Fields used for adding an NTP shared key

The required fields are:

- `id`
- `digest_type`
- `secret_key`

Example

```
# Body
create_ntp_key.txt (body) :
{
  "id": 10,
  "digest_type": "sha1",
  "value": "da39a3ee5e6b4b0d3255bfe95601890afd80709"
}

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

Retrieve NTP symmetric authentication keys

GET `/cluster/ntp/keys`

Introduced In: 9.7

Retrieves the collection of NTP symmetric authentication keys known by ONTAP that are uniquely indexed by an identifier.

Related ONTAP commands

- `cluster time-service ntp key show`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

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

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": "1",
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "digest_type": "sha1",
    "id": "10",
    "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
  }
}
```

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

_links

Name	Type	Description
self	href	

ntp_key

Name	Type	Description
_links	_links	
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	<p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p>

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Create an NTP symmetric authentication key entry

POST `/cluster/ntp/keys`

Introduced In: 9.7

Creates an NTP symmetric authentication key entry including the type of key using an unused identifier or index number (ID).

Required properties

- `id` - Shared symmetric key number (ID).
- `digest_type` - Shared private key cryptographic hash type.
- `value` - Value of shared private key.

Related ONTAP commands

- `cluster time-service ntp key create`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	<p>The default is false. If set to true, the records are returned.</p> <ul style="list-style-type: none"> • Default value:

Request Body

Name	Type	Description
_links	_links	
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	<p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p>

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",
  "id": "10",
  "value": "da39a3ee5e6b4b0d3255bfeef95601890afd80709"
}
```

Response

Status: 201, Created

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.

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	

ntp_key

Name	Type	Description
_links	_links	
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	<p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p>

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Delete an NTP key

```
DELETE /cluster/ntp/keys/{id}
```

Introduced In: 9.7

Deletes an NTP key.

Related ONTAP commands

- `cluster time-service ntp key delete`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Key identifier

Response

```
Status: 200, Ok
```

Error

```
Status: Default
```

ONTAP Error Response Codes

Error Code	Description
2097186	The key cannot be deleted because it is being used by an NTP server.

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 the NTP symmetric authentication key details

GET /cluster/ntp/keys/{id}

Introduced In: 9.7

Retrieves the details of a specific NTP symmetric authentication key by numeric identifier or index (ID).

Related ONTAP commands

- `cluster time-service ntp key show`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Key identifier
fields	array[string]	query	False	Specify the fields to return.

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	<p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p>

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",
  "id": "10",
  "value": "da39a3ee5e6b4b0d3255bfef95601890afd80709"
}
```

Error

Status: Default, Error

Name	Type	Description
error	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 NTP symmetric authentication key details

PATCH `/cluster/ntp/keys/{id}`

Introduced In: 9.7

Updates the details of a specific NTP symmetric authentication key by numeric identifier or index (ID).

Required properties

- `digest_type` - Shared private key cryptographic hash type.
- `value` - Value of shared private key.

Related ONTAP commands

- `cluster time-service ntp key modify`

Learn more

- [DOC /cluster/ntp/keys](#)

Parameters

Name	Type	In	Required	Description
id	integer	path	True	Key identifier

Request Body

Name	Type	Description
_links	_links	
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	<p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p>

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "digest_type": "sha1",
  "id": "10",
  "value": "da39a3ee5e6b4b0d3255bfe95601890afd80709"
}
```

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
2097187	An invalid SHA1 key was provided.

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	

ntp_key

Name	Type	Description
_links	_links	
digest_type	string	The type of cryptographic hash used to create and verify the NTP's message authentication code appended to each NTP packet header.
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID is included in the NTP cryptographic hash encoded header.
value	string	<p>A hexadecimal digit string that represents the cryptographic key that is shared with the remote NTP server. The current expected length is 40 characters.</p> <p>Use the cryptographic key and key ID to create a unique hash value used to authenticate the rest of the NTP data.</p>

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Manage cluster NTP servers

Cluster NTP servers endpoint overview

Overview

You can use this API to add external NTP servers to a cluster, update the configuration, use NTP keys, and retrieve the current NTP server configuration.

Adding an NTP server to a cluster

To add an NTP server to a cluster, issue a POST `/cluster/ntp/servers` request.

Fields used for adding an NTP server

Except for the name of the NTP server (host name or IP address), which is specified by the server, all fields are optional:

- `version`
- `key`

If the key is provided in POST, `authentication_enabled` is set to `true` by default.

Examples

Adding an NTP server

```
# Body
add_ntp_server.txt(body):
{
  "server": "time.nist.gov"
}

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

Adding an NTP server with an authentication key

```
# Body
add_authenticated_ntp_server.txt(body):
{
  "server": "time.nist.gov",
  "key": { "id": 10 }
}

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

Enabling a previously configured shared key (ID, type, and value) for an NTP server

A combination of key number or identifier (ID), type of key, and shared key value is created with `/api/cluster/ntp/keys`. This operation will validate the NTP authentication works.

```
# Body
enable_shared_key.txt(body):
{
  "key": { "id": 10 },
  "authentication_enabled": true
}

# Request
curl -X PATCH "https://<mgmt-ip>/api/cluster/ntp/servers/time.nist.gov" -d
"@enable_shared_key.txt"
```

Retrieve external NTP time servers

GET /cluster/ntp/servers

Introduced In: 9.7

Retrieves the collection of external NTP time servers ONTAP uses for time adjustment and correction.

Related ONTAP commands

- `cluster time-service ntp server show`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

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

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

Response

Status: 200, Ok

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

Example response

```
{
  "_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

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	

ntp_key_reference

Name	Type	Description
_links	_links	
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Validate an external NTP time server

POST `/cluster/ntp/servers`

Introduced In: 9.7

Validates the provided external NTP time server for usage and configures ONTAP so that all nodes in the cluster use it. The required fields are:

- `server`

Default property values

If not specified in POST, the following default property values are assigned:

- `version - auto`
- `key - not set`

If the key is provided in POST, `authentication_enabled` is set to `true` by default.

Related ONTAP commands

- `cluster time-service ntp server create`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

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

Request Body

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).

Name	Type	Description
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_enabled": 1,
  "key": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "id": "10"
  },
  "server": "time.nist.gov",
  "version": "auto"
}
```

Response

Status: 202, Accepted

Name	Type	Description
job	job_link	

Example response

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

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.

Error Code	Description
2097193	An unknown NTP key was provided.

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	

ntp_key_reference

Name	Type	Description
_links	_links	
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

job_link

Name	Type	Description
_links	_links	

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Delete an external NTP server

```
DELETE /cluster/ntp/servers/{server}
```

Introduced In: 9.7

Deletes an external NTP server used by ONTAP.

Related ONTAP commands

- `cluster time-service ntp server delete`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

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

Response

Status: 202, Accepted

Name	Type	Description
job	job_link	

Example response

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

job_link

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Retrieve an external NTP server configuration

GET /cluster/ntp/servers/{server}

Introduced In: 9.7

Retrieves the configuration of an external NTP server used by ONTAP.

Related ONTAP commands

- `cluster time-service ntp server show`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

Name	Type	In	Required	Description
server	string	path	True	NTP server host name, IPv4, or IPv6 address.
fields	array[string]	query	False	Specify the fields to return.

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_enabled": 1,
  "key": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "id": "10"
},
"server": "time.nist.gov",
"version": "auto"
}
```

Error

Status: Default, Error

Name	Type	Description
error	error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

ntp_key_reference

Name	Type	Description
_links	_links	
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Update an NTP server configuration after validation

PATCH /cluster/ntp/servers/{server}

Introduced In: 9.7

Updates the configuration of an NTP server used by the ONTAP cluster after validation. Patchable fields are:

- version
- key.id
- authentication_enabled

If `authentication_enabled` is modified to `false`, the associated NTP key is removed from the server instance. If `authentication_enabled` is modified to `true`, you must provide an NTP key ID in the PATCH body.

Related ONTAP commands

- `cluster time-service ntp server modify`

Learn more

- [DOC /cluster/ntp/servers](#)

Parameters

Name	Type	In	Required	Description
server	string	path	True	Server address or host name

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

Request Body

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication_enabled": 1,
  "key": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "id": "10"
},
"server": "time.nist.gov",
"version": "auto"
}
```

Response

Status: 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
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.

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	

ntp_key_reference

Name	Type	Description
_links	_links	
id	integer	NTP symmetric authentication key identifier or index number (ID). This ID, the type of cryptographic hash, and the cryptographic hash value are all provided by the remote NTP server.

ntp_server

Name	Type	Description
_links	_links	
authentication_enabled	boolean	Set NTP symmetric authentication on (true) or off (false).
key	ntp_key_reference	
server	string	NTP server host name, IPv4, or IPv6 address.
version	string	NTP protocol version for server. Valid versions are 3, 4, or auto.

job_link

Name	Type	Description
_links	_links	

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

Manage cluster peers

Cluster peers endpoint overview

Overview

Cluster peering allows administrators of ONTAP systems to establish relationships between two or more independent clusters. When a relationship exists between two clusters, the clusters can exchange user data and configuration information, and coordinate operations. The `/cluster/peers` endpoint supports create, get, modify, and delete operations using GET, PATCH, POST and DELETE HTTP requests.

Create a cluster peer

You can set up a new cluster peer relationship by issuing a POST request to `/cluster/peers`. Parameters in the POST body define the settings of the peering relationship. A successful POST request that succeeds in creating a peer returns HTTP status code "201", along with the details of the created peer, such as peer UUID, name, and authentication information. A failed POST request returns an HTTP error code along with a message indicating the reason for the error. This can include malformed requests and invalid operations.

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

This example shows the POST body when creating four intercluster LIFs on a 4-node cluster before creating a cluster peer relationship.

`cluster_peer_4_node.txt`:

```
{
  "local_network":
  {
    "interfaces": [
      {"ip_address": "1.2.3.4"},
      {"ip_address": "1.2.3.5"},
      {"ip_address": "1.2.3.6"}
    ],
    "netmask": "255.255.0.0",
    "broadcast_domain": "Default",
    "gateway": "1.2.0.1"
  },
  "remote.ip_addresses": ["1.2.9.9"],
  "authentication.passphrase": "xyz12345"
}
curl -X POST "https://<mgmt-ip>/api/cluster/peers" -d
"@cluster_peer_4_node.txt"
```

Note that "`<mgmt-ip>`" is replaced by the IP address of the cluster management interface, and the body is read from the specified text file containing the fields for the new peering relationship and local interfaces. `</mgmt-ip>`

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>/api/cluster/peers/{uuid}"</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"
```

Retrieve cluster peers

```
GET /cluster/peers
```

Introduced In: 9.6

Retrieves the collection of cluster peers.

Parameters

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

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "interfaces": {
        "href": "/api/resourcelink"
      },
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "authentication": {
      "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
      "in_use": "ok",
      "state": "ok"
    },
    "encryption": {
      "proposed": "none",
      "state": "none"
    },
    "initial_allowed_svms": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "ipspace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "exchange",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  }
}
```



```

},
"local_network": {
  "broadcast_domain": "bd1",
  "gateway": "10.1.1.1",
  "interfaces": {
    "ip_address": "10.10.10.7"
  },
  "netmask": "255.255.0.0"
},
"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": {
  },
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25T11:20:13Z"
},
"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
next	href	
self	href	

_links

Name	Type	Description
interfaces	href	
self	href	

authentication

Name	Type	Description
expiry_time	string	The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour.
generate_passphrase	boolean	Auto generate a passphrase when true.
in_use	string	
passphrase	string	A password to authenticate the cluster peer relationship.
state	string	

encryption

Name	Type	Description
proposed	string	
state	string	

_links

Name	Type	Description
self	href	

initial_allowed_svms

Name	Type	Description
_links	_links	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ipspace

The IPspace of the local intercluster LIFs.

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

interfaces

Name	Type	Description
ip_address	string	IPv4 or IPv6 address

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
broadcast_domain	string	Broadcast domain that is in use within the IPspace.
gateway	string	The IPv4 or IPv6 address of the default router.
interfaces	array[interfaces]	
netmask	string	IPv4 mask or netmask length.

remote

Name	Type	Description
ip_addresses	array[string]	The IPv4 addresses, IPv6 addresses, or hostnames of the peers.
name	string	The name of the remote cluster.
serial_number	string	The serial number of the remote cluster.

status

Name	Type	Description
state	string	
update_time	string	The last time the state was updated.

version

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

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

cluster_peer

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.

Name	Type	Description
ipospace	ipospace	The IPspace of the local intercluster LIFs.
local_network	local_network	Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

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

Create a peering relationship

POST /cluster/peers

Introduced In: 9.6

Creates a peering relationship and, optionally, the IP interfaces it will use. There are two methods used to create a peering relationship:

- Provide a remote IP address - Used when creating a new cluster peer relationship with a specific remote cluster. This requires at least one remote intercluster IP address from the remote cluster.
- Do not provide a remote IP address - Used when the remote IP address is not provided and when the storage system is ready to accept peering requests from foreign clusters.

Required properties

- `remote_ip_addresses` - Addresses of the remote peers. The local peer must be able to reach and connect to these addresses for the request to succeed in creating a peer. Only required when creating a peering relationship by providing a remote IP address.
- Either set `generate_passphrase` to "true" or provide a passphrase in the body of the request. Only one of these options is required.

Recommended optional properties

- `name` - Name of the peering relationship or name of the remote peer.
- `passphrase` - User generated passphrase for use in authentication.
- `generate_passphrase` (true/false) - When "true", ONTAP automatically generates a passphrase to authenticate cluster peers.
- `ipspace` - IPspace of the local intercluster LIFs. Assumes Default IPspace if not provided.
- `initial_allowed_svms` - Local SVMs allowed to peer with the peer cluster's SVMs. Can be modified until the remote cluster accepts this cluster peering relationship.
- `local_network` - Fields to create a local intercluster LIF.
- `expiry_time` - Duration in ISO 8601 format for which the user-supplied or auto-generated passphrase is valid. Expiration time must not be greater than seven days into the future. ISO 8601 duration format is "PnDTnHnMnS" or "PnW" where n is a positive integer. The "nD", "nH", "nM" and "nS" fields can be dropped if zero. "P" must always be present and "T" must be present if there are any hours, minutes, or seconds fields.

- `encryption_proposed` (none/tls-psk) - Encryption mechanism of the communication channel between the two peers.
- `peer_applications` - SVM peering applications (SnapMirror, FlexCache or both) for which the SVM peering relationship is set up.

Additional information

As with creating a cluster peer through the CLI, the combinations of options must be valid in order for the create operation to succeed. The following list shows the combinations that will succeed and those that will fail:

- A passphrase only (fail)
- A peer IP address (fail)
- A passphrase with an expiration time > 7 days into the future (fail)
- A peer IP address and a passphrase (OK)
- `generate_passphrase=true` (OK)
- Any proposed encryption protocol (OK)
- An IPspace name or UUID (OK)
- A passphrase, peer IP address, and any proposed encryption protocol (OK)
- A non empty list of initial allowed SVM peer names or UUIDs. (OK)

Parameters

Name	Type	In	Required	Description
<code>return_records</code>	boolean	query	False	The default is false. If set to true, the records are returned. • Default value:

Request Body

Name	Type	Description
<code>_links</code>	_links	
<code>authentication</code>	authentication	
<code>encryption</code>	encryption	
<code>initial_allowed_svms</code>	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
<code>ipspace</code>	ipspace	The IPspace of the local intercluster LIFs.

Name	Type	Description
local_network	local_network	Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Example request

```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "ok",
    "state": "ok"
  },
  "encryption": {
    "proposed": "none",
    "state": "none"
  },
  "initial_allowed_svms": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  },
}
```

```

"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": {
  },
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25T11:20:13Z"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": "9",
  "major": "4",
  "minor": "0"
}
}

```

Response

Status: 201, Created

Name	Type	Description
_links	_links	
authentication	authentication	
ip_address	string	IPv4 or IPv6 address
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "2017-01-25T11:20:13Z"
  },
  "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.

Error Code	Description
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.

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
interfaces	href	
self	href	

authentication

Name	Type	Description
expiry_time	string	The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour.
generate_passphrase	boolean	Auto generate a passphrase when true.
in_use	string	
passphrase	string	A password to authenticate the cluster peer relationship.
state	string	

encryption

Name	Type	Description
proposed	string	
state	string	

_links

Name	Type	Description
self	href	

initial_allowed_svms

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ipspace

The IPspace of the local intercluster LIFs.

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

interfaces

Name	Type	Description
ip_address	string	IPv4 or IPv6 address

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
broadcast_domain	string	Broadcast domain that is in use within the IPspace.
gateway	string	The IPv4 or IPv6 address of the default router.
interfaces	array[interfaces]	
netmask	string	IPv4 mask or netmask length.

remote

Name	Type	Description
ip_addresses	array[string]	The IPv4 addresses, IPv6 addresses, or hostnames of the peers.

Name	Type	Description
name	string	The name of the remote cluster.
serial_number	string	The serial number of the remote cluster.

status

Name	Type	Description
state	string	
update_time	string	The last time the state was updated.

version

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

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

cluster_peer

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ipspace	ipspace	The IPspace of the local intercluster LIFs.

Name	Type	Description
local_network	local_network	Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

authentication

Name	Type	Description
expiry_time	string	The date and time the passphrase will expire. The default expiry time is one hour.
passphrase	string	A password to authenticate the cluster peer relationship.

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.

Delete a cluster peer

DELETE /cluster/peers/{uuid}

Introduced In: 9.6

Deletes a cluster peer.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Cluster peer relationship UUID

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
4663070	Unable to delete cluster peer relationship due to an ongoing Vserver migration.

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 cluster peer instance

GET /cluster/peers/{uuid}

Introduced In: 9.6

Retrieves a specific cluster peer instance.

Parameters

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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ipspace	ipspace	The IPspace of the local intercluster LIFs.
local_network	local_network	Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Example response

```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "ok",
    "state": "ok"
  },
  "encryption": {
    "proposed": "none",
    "state": "none"
  },
  "initial_allowed_svms": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  },
}
```

```

"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": {
  },
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25T11:20:13Z"
},
"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
interfaces	href	
self	href	

authentication

Name	Type	Description
expiry_time	string	The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour.
generate_passphrase	boolean	Auto generate a passphrase when true.
in_use	string	
passphrase	string	A password to authenticate the cluster peer relationship.
state	string	

encryption

Name	Type	Description
proposed	string	
state	string	

_links

Name	Type	Description
self	href	

initial_allowed_svms

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ipspace

The IPspace of the local intercluster LIFs.

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

interfaces

Name	Type	Description
ip_address	string	IPv4 or IPv6 address

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
broadcast_domain	string	Broadcast domain that is in use within the IPspace.
gateway	string	The IPv4 or IPv6 address of the default router.
interfaces	array[interfaces]	
netmask	string	IPv4 mask or netmask length.

remote

Name	Type	Description
ip_addresses	array[string]	The IPv4 addresses, IPv6 addresses, or hostnames of the peers.

Name	Type	Description
name	string	The name of the remote cluster.
serial_number	string	The serial number of the remote cluster.

status

Name	Type	Description
state	string	
update_time	string	The last time the state was updated.

version

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

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

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

Update a cluster peer instance

PATCH /cluster/peers/{uuid}

Introduced In: 9.6

Updates a cluster peer instance.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Cluster peer relationship UUID

Request Body

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ipspace	ipspace	The IPspace of the local intercluster LIFs.
local_network	local_network	Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster.

Name	Type	Description
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

Example request

```
{
  "_links": {
    "interfaces": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "P1DT2H3M4S or '2017-01-25T11:20:13Z'",
    "in_use": "ok",
    "state": "ok"
  },
  "encryption": {
    "proposed": "none",
    "state": "none"
  },
  "initial_allowed_svms": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local_network": {
    "broadcast_domain": "bd1",
    "gateway": "10.1.1.1",
    "interfaces": {
      "ip_address": "10.10.10.7"
    },
    "netmask": "255.255.0.0"
  },
}
```

```

"name": "cluster2",
"peer_applications": [
  "snapmirror",
  "flexcache"
],
"remote": {
  "ip_addresses": {
  },
  "name": "cluster2",
  "serial_number": "4048820-60-9"
},
"status": {
  "state": "available",
  "update_time": "2017-01-25T11:20:13Z"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"version": {
  "full": "NetApp Release 9.4.0: Sun Nov 05 18:20:57 UTC 2017",
  "generation": "9",
  "major": "4",
  "minor": "0"
}
}

```

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
authentication	authentication	
ip_address	string	IPv4 or IPv6 address
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster, or a temporary name might be autogenerated for anonymous cluster peer offers.

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "authentication": {
    "expiry_time": "2017-01-25T11:20:13Z"
  },
  "ip_address": "10.10.10.7",
  "name": "cluster2"
}
```

Error

Status: Default

ONTAP Error Response Codes

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".

Error Code	Description
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.

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
interfaces	href	
self	href	

authentication

Name	Type	Description
expiry_time	string	The time when the passphrase will expire, in ISO 8601 duration format or date and time format. The default is 1 hour.
generate_passphrase	boolean	Auto generate a passphrase when true.
in_use	string	
passphrase	string	A password to authenticate the cluster peer relationship.
state	string	

encryption

Name	Type	Description
proposed	string	
state	string	

_links

Name	Type	Description
self	href	

initial_allowed_svms

Name	Type	Description
_links	_links	

Name	Type	Description
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ipospace

The IPspace of the local intercluster LIFs.

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

interfaces

Name	Type	Description
ip_address	string	IPv4 or IPv6 address

local_network

Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.

Name	Type	Description
broadcast_domain	string	Broadcast domain that is in use within the IPspace.
gateway	string	The IPv4 or IPv6 address of the default router.
interfaces	array[interfaces]	
netmask	string	IPv4 mask or netmask length.

remote

Name	Type	Description
ip_addresses	array[string]	The IPv4 addresses, IPv6 addresses, or hostnames of the peers.

Name	Type	Description
name	string	The name of the remote cluster.
serial_number	string	The serial number of the remote cluster.

status

Name	Type	Description
state	string	
update_time	string	The last time the state was updated.

version

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

Name	Type	Description
full	string	The full cluster version string.
generation	integer	The generation portion of the version.
major	integer	The major portion of the version.
minor	integer	The minor portion of the version.

cluster_peer

Name	Type	Description
_links	_links	
authentication	authentication	
encryption	encryption	
initial_allowed_svms	array[initial_allowed_svms]	The local SVMs allowed to peer with the peer cluster's SVMs. This list can be modified until the remote cluster accepts this cluster peering relationship.
ipspace	ipspace	The IPspace of the local intercluster LIFs.

Name	Type	Description
local_network	local_network	Cluster peering requires an intercluster LIF on each local node. These can be optionally created by specifying a list of IP addresses corresponding to each node.
name	string	Optional name for the cluster peer relationship. By default, it is the name of the remote cluster.
peer_applications	array[string]	Peering applications against which allowed SVMs are configured.
remote	remote	
status	status	
uuid	string	UUID of the cluster peer relationship. For anonymous cluster peer offers, the UUID will change when the remote cluster accepts the relationship.
version	version	This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes.

authentication

Name	Type	Description
expiry_time	string	The date and time the passphrase will expire. The default expiry time is one hour.
passphrase	string	A password to authenticate the cluster peer relationship.

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.

Manage cluster schedules

Cluster schedules endpoint overview

Overview

You can use the `/cluster/schedules` API to view, create, and modify job schedules in a cluster.

Retrieving a job schedule

You can retrieve job schedules by issuing a GET request to `/cluster/schedules`. It is also possible to retrieve a specific schedule when qualified by its UUID to `/cluster/schedules/{uuid}`. You can apply queries on fields to retrieve all schedules that match the combined query.

Example

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

# The call:
curl -X GET 'https://<mgmt-ip>/api/cluster/schedules?type=interval'

# The response:
{
  "records": [
    {
      "uuid": "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.

Examples

Create an interval schedule with a 1-week interval

```
# The API:
/api/cluster/schedules
one_week_interval.txt:
{
  "name": "test_interval_1",
  "interval": "P1W"
}

# The call:
curl -X POST "https://<mgmt-ip>/api/cluster/schedules" -d
"@one_week_interval.txt"

# The response of a successful POST is empty.
```

Create a cron schedule that runs daily at 12:05

```
# The API:
/api/cluster/schedules
daily_noon_job.txt:
{
  "name": "test_cron_1",
  "cron":
  {
    "minutes": [ 5 ],
    "hours": [ 12 ]
  }
}

# The call:
curl -X POST "https://<mgmt-ip>/api/cluster/schedules" -d
"@daily_noon_job.txt"

# The response of a successful POST is empty.
```

Optional fields

By default, the schedule is owned by the local cluster. In a MetroCluster configuration, you can specify the partner cluster if the local cluster is in the switchover state.

- `cluster.name` - Name of the cluster owning the schedule.
- `cluster.uuid` - UUID of the cluster owning the schedule.

Records field

You can create multiple schedules in one request by providing an array of named records with schedule entries. Each entry must follow the required and optional fields listed above.

Updating a job schedule

The following fields of an existing schedule can be modified:

- `cron.minutes`
- `cron.hours`
- `cron.weekdays`
- `cron.days`
- `cron.months`
- `interval` Note that you cannot modify the name, cluster, and type of schedule. Also, you cannot modify a cron field of an interval schedule, or the interval field of a cron schedule. You can apply queries on fields to modify all schedules that match the combined query.

Examples

Modify an interval schedule with a 2-day and 5-minute interval

```
# The API:
/api/cluster/schedules/{uuid}
every_two_days_five_minutes.txt:
{
  "interval": "P2DT5M"
}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/cluster/schedules/{uuid}" -d
"@every_two_days_five_minutes.txt"

# The response of a successful PATCH is empty.
```

Modify a cron schedule to run Mondays at 2

```
# The API:
/api/cluster/schedules/{uuid}
monday_at_two.txt:
{
  "cron":
  {
    "hours": [ 2 ],
    "weekdays": [ 1 ]
  }
}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/cluster/schedules/{uuid}" -d
"@monday_at_two.txt"

# The response of a successful PATCH is empty.
```

Deleting a job schedule

You can delete job schedules based on their UUID. You can apply queries on fields to delete all schedules that match the combined query.

Example

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

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/schedules/{uuid}"

# The response of a successful DELETE of one schedule is empty.
```

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

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/schedules/?name=test*"

# The response of a successful DELETE indicates the number of schedules
affected:
{
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/schedules?name=test*"
    }
  }
}
```

MetroCluster configurations

In a MetroCluster configuration, user-created schedules owned by the local cluster are replicated to the partner cluster. Likewise, user-created schedules owned by the partner cluster are replicated to the local cluster. The owning cluster for a particular schedule is shown in the "cluster.name" and "cluster.uuid" fields. Normally, only schedules owned by the local cluster can be created, modified, and deleted on the local cluster. However, when a MetroCluster configuration is in switchover, the cluster in switchover state can create, modify, and delete schedules owned by the partner cluster.

Retrieve schedules

GET /cluster/schedules

Introduced In: 9.6

Retrieves a schedule.

Parameters

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

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

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": "1",
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "cluster": {
      "name": "cluster1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "cron": {
      "days": {
      },
      "hours": {
      },
      "minutes": {
      },
      "months": {
      },
      "weekdays": {
      }
    },
    "interval": "P1DT2H3M4S",
    "type": "cron",
    "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
  }
}
```

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
459760	The schedule specified is not a valid schedule.

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	

cluster

The cluster that owns the schedule. Defaults to the local cluster.

Name	Type	Description
name	string	Cluster name
uuid	string	Cluster UUID

cron

Details for schedules of type cron.

Name	Type	Description
days	array[integer]	The days of the month the schedule runs. Leave empty for all.
hours	array[integer]	The hours of the day the schedule runs. Leave empty for all.
minutes	array[integer]	The minutes the schedule runs. Required on POST for a cron schedule.

Name	Type	Description
months	array[integer]	The months of the year the schedule runs. Leave empty for all.
weekdays	array[integer]	The weekdays the schedule runs. Leave empty for all.

schedule

Complete schedule information

Name	Type	Description
_links	_links	
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.
type	string	Schedule type
uuid	string	Job schedule UUID

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

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

Create a schedule

POST /cluster/schedules

Introduced In: 9.6

Creates a schedule.

Required Fields

- name - Name of the job schedule. You must provide a minutes field for a cron schedule and an interval field for an interval schedule. Do not provide both a cron field and an interval field.

Parameters

Name	Type	In	Required	Description
return_records	boolean	query	False	The default is false. If set to true, the records are returned. <ul style="list-style-type: none"> • Default value:

Request Body

Name	Type	Description
_links	_links	
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.

Name	Type	Description
type	string	Schedule type
uuid	string	Job schedule UUID

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": {
    },
    "hours": {
    },
    "minutes": {
    },
    "months": {
    },
    "weekdays": {
    }
  },
  "interval": "P1DT2H3M4S",
  "type": "cron",
  "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.

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	

cluster

The cluster that owns the schedule. Defaults to the local cluster.

Name	Type	Description
name	string	Cluster name
uuid	string	Cluster UUID

cron

Details for schedules of type cron.

Name	Type	Description
days	array[integer]	The days of the month the schedule runs. Leave empty for all.
hours	array[integer]	The hours of the day the schedule runs. Leave empty for all.
minutes	array[integer]	The minutes the schedule runs. Required on POST for a cron schedule.
months	array[integer]	The months of the year the schedule runs. Leave empty for all.
weekdays	array[integer]	The weekdays the schedule runs. Leave empty for all.

schedule

Complete schedule information

Name	Type	Description
_links	_links	
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.
type	string	Schedule type
uuid	string	Job schedule UUID

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.

Delete a schedule

DELETE /cluster/schedules/{uuid}

Introduced In: 9.6

Deletes a schedule.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Schedule UUID

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
459758	Cannot delete a job schedule that is in use. Remove all references to the schedule, and then try to delete again.
459761	Schedule cannot be deleted on this cluster because it is replicated from the remote cluster.
459762	The schedule cannot be deleted because it is a system-level schedule.

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 schedule

GET /cluster/schedules/{uuid}

Introduced In: 9.6

Retrieves a schedule.

Parameters

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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.
type	string	Schedule type
uuid	string	Job schedule UUID

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": {
    },
    "hours": {
    },
    "minutes": {
    },
    "months": {
    },
    "weekdays": {
    }
  },
  "interval": "P1DT2H3M4S",
  "type": "cron",
  "uuid": "4ea7a442-86d1-11e0-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	

cluster

The cluster that owns the schedule. Defaults to the local cluster.

Name	Type	Description
name	string	Cluster name
uuid	string	Cluster UUID

cron

Details for schedules of type cron.

Name	Type	Description
days	array[integer]	The days of the month the schedule runs. Leave empty for all.
hours	array[integer]	The hours of the day the schedule runs. Leave empty for all.
minutes	array[integer]	The minutes the schedule runs. Required on POST for a cron schedule.
months	array[integer]	The months of the year the schedule runs. Leave empty for all.
weekdays	array[integer]	The weekdays the schedule runs. Leave empty for all.

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 a schedule

PATCH `/cluster/schedules/{uuid}`

Introduced In: 9.6

Updates a schedule. Note that you cannot modify a cron field of an interval schedule, or the interval field of a cron schedule.

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Schedule UUID

Request Body

Name	Type	Description
_links	_links	
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.

Name	Type	Description
name	string	Schedule name. Required in the URL or POST body.
type	string	Schedule type
uuid	string	Job schedule UUID

Example request

```

{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster": {
    "name": "cluster1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "cron": {
    "days": {
    },
    "hours": {
    },
    "minutes": {
    },
    "months": {
    },
    "weekdays": {
    }
  },
  "interval": "P1DT2H3M4S",
  "type": "cron",
  "uuid": "4ea7a442-86d1-11e0-ae1c-123478563412"
}

```

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
458788	The schedule specified is not a valid schedule.
459760	The schedule specified is not a valid schedule.
459761	Schedule cannot be modified on this cluster because it is replicated from the remote cluster.
460783	As this is a MetroCluster configuration and the local cluster is waiting for switchback, changes to non-system schedules are not allowed.

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	

cluster

The cluster that owns the schedule. Defaults to the local cluster.

Name	Type	Description
name	string	Cluster name
uuid	string	Cluster UUID

cron

Details for schedules of type cron.

Name	Type	Description
days	array[integer]	The days of the month the schedule runs. Leave empty for all.
hours	array[integer]	The hours of the day the schedule runs. Leave empty for all.
minutes	array[integer]	The minutes the schedule runs. Required on POST for a cron schedule.
months	array[integer]	The months of the year the schedule runs. Leave empty for all.
weekdays	array[integer]	The weekdays the schedule runs. Leave empty for all.

schedule

Complete schedule information

Name	Type	Description
_links	_links	
cluster	cluster	The cluster that owns the schedule. Defaults to the local cluster.
cron	cron	Details for schedules of type cron.
interval	string	An ISO-8601 duration formatted string.
name	string	Schedule name. Required in the URL or POST body.
type	string	Schedule type
uuid	string	Job schedule UUID

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 software

Cluster software endpoint overview

Overview

You can use the ONTAP cluster software API to retrieve and display relevant information about a software profile, software packages collection, 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": {
        "message": "Use NFS hard mounts, if possible.",
      }
    },
    {
      "action": {
        "message": "Use NFS hard mounts, if possible.",
      }
    }
  ],
  "version": "9.5.0",
  "pending_version": "9.6.0",
  "nodes": [
```

```

{
  "node": "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",
      "code": 0
    }
  }
]

```

```
    },
    "start_time": "2018-05-21T09:53:04+05:30",
    "end_time": "2018-05-21T11:53:04+05:30",
    "node": {
      "name": "sti70-vsims-ucs165n"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software/"
  }
}
}
```

Upgrading the software version

The following example shows how to upgrade cluster software. Set the `version` field to trigger the installation of the package. You can select the `validate_only` field to validate the package before the installation starts. Setting `skip_warning` as `true` ignores the validation warning before the installation starts. Setting the `action` field performs a pause, resume, or cancel operation on an ongoing upgrade. An upgrade can only be resumed if it is in the paused state. Setting `stabilize_minutes` allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes.

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. You can specify the `stabilize_minutes` value between 1 to 60 minutes. Setting `stabilize_minutes` allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes.

```
# 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.",
      "code": 10551400
    },
    "start_time": "2019-01-14T23:12:14+05:30",
    "end_time": "2019-01-14T23:12:14+05:30",
    "node": {
      "name": "node1"
    }
  },
  {
    "name": "do-download-job",
    "status": "running",
    "issue": {
      "message": "Installing software image.",
      "code": 10551400
    }
  },

```

```

    "start_time": "2019-01-14T23:12:14+05:30",
    "end_time": "2019-01-14T23:12:14+05:30",
    "node": {
      "name": "node2"
    }
  }
],
"update_details": [
  {
    "phase": "Data ONTAP updates",
    "status": "in-progress",
    "estimated_duration": 4620,
    "elapsed_duration": 10,
    "node": {
      "name": "node1"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "in-progress",
    "estimated_duration": 4620,
    "elapsed_duration": 10,
    "node": {
      "name": "node2"
    }
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}

```

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.",
      "code": 10551400
    },
    "start_time": "2019-01-08T02:54:36+05:30",
    "node": {
      "name": "node1"
    }
  },
  {
    "status": "in-progress",
    "issue": {
      "message": "Installing software image.",
      "code": 10551400
    },
    "start_time": "2019-01-08T02:54:36+05:30",
    "node": {
      "name": "node2"
    }
  }
]

```

```

    }
  }
],
"update_details": [
  {
    "phase": "Pre-update checks",
    "status": "completed",
    "estimated_duration": 600,
    "elapsed_duration": 54,
    "node": {
      "name": "node1"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "pause-pending",
    "estimated_duration": 4620,
    "elapsed_duration": 49,
    "node": {
      "name": "node2"
    }
  },
  {
    "phase": "Data ONTAP updates",
    "status": "pause-pending",
    "estimated_duration": 4620,
    "elapsed_duration": 49
  }
],
"_links": {
  "self": {
    "href": "/api/cluster/software"
  }
}
}
}

```

Downloading the software package

The following example shows how to download the software 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"
    }
  }
}
```

Uploading a software package

The following example shows how to upload a software package.

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

# The call:
curl -ku username:password -F "file=@image.tgz" -X POST "https://<mgmt-
ip>/api/cluster/software/upload?return_timeout=0"

# The response:
{
  "job": {
    "uuid": "12db53fd-8326-11ea-91eb-005056bb16e5",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/12db53fd-8326-11ea-91eb-005056bb16e5"
      }
    }
  }
}
```

HTTPS error codes

The following is a list of possible error codes that can be returned during a package upload operation.

ONTAP Error Response codes

Error codes	Description
10551799	Internal error. Failed to check if file upload is enabled. Contact technical support for assistance.
10551800	File upload is disabled. Enable file upload by setting "ApacheUploadEnabled 1" in the web services configuration file or contact technical support for assistance.
10551802	Internal error. Access permissions restrict file upload. This is likely due to a bad web jail setup. Contact technical support for assistance.
10551803	Internal error. A read/write error occurred when uploading this file. Contact technical support for assistance.
10551804	An invalid argument was supplied to create a file handle. Try uploading the file again or contact technical support for assistance.
10551805	An unknown error occurred. Retry file upload operation again or contact technical support for assistance.
10551806	Internal error. There is not sufficient space in the file upload directory to upload this file. Contact technical support for assistance.
10551807	Internal error in JAIL setup. Contact technical support for assistance.
10551808	Internal error. Failed to write to file in the webjail directory. Contact technical support for assistance.
10551809	The request must only contain a single file. More than one file per request is not supported.

Retrieving cluster software packages information

The following example shows how to retrieve the ONTAP software packages in a cluster.

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

# The call:
curl -X GET "https://<mgmt-
ip>/api/cluster/software/packages?return_records=true&return_timeout=15"
-H "accept: application/hal+json"

# The response:
{
  "records": [
    {
      "version": "9.7.0",
      "_links": {
        "self": {
          "href": "/api/cluster/software/packages/9.7.0"
        }
      }
    },
    {
      "version": "9.5.0",
      "_links": {
        "self": {
          "href": "/api/cluster/software/packages/9.5.0"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/software/packages"
    }
  }
}
```

The following example shows how to retrieve the details of a given cluster software package.

```
# The API:
/api/cluster/software/packages/{version}

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/software/packages/9.7.0" -H
"accept: application/hal+json"

# The response:
{
  "version": "9.7.0",
  "create_time": "2018-05-21T10:06:59+05:30",
  "_links": {
    "self": {
      "href": "/api/cluster/software/packages/9.7.0"
    }
  }
}
```

Deleting a cluster software package

The following example shows how to delete a package from the cluster. You need to provide the package version that you want to delete. The software package delete creates a job to perform the delete operation.

```
# The API:
/api/cluster/software/packages/{version}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/cluster/software/packages/9.6.0" -H
"accept: application/hal+json"

# The response:
{
  "job": {
    "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
    "_links": {
      "self": {
        "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
      }
    }
  }
}
```

The call to delete the package returns the job UUID, including a HAL link to retrieve details about the job. The job object includes a `state` field and a message to indicate the progress of the job. When the job is complete and the application is fully created, the message indicates success and the job `state` field is set to `success`.

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

# The call:
curl -X GET "https://<mgmt-ip>/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc" -H "accept: application/hal+json"

# The response:
{
  "uuid": "f587d316-5feb-11e8-b0e0-005056956dfc",
  "description": "DELETE /api/cluster/software/packages/9.6.0",
  "state": "success",
  "message": "success",
  "code": 0,
  "_links": {
    "self": {
      "href": "/api/cluster/jobs/f587d316-5feb-11e8-b0e0-005056956dfc"
    }
  }
}
```

HTTPS error codes

The following is a list of possible error codes that can be returned during a package delete operation.

ONTAP Error Response codes

Error codes	Description
10551315	Package store is empty
10551322	Error in retrieving package cleanup status
10551323	Error in cleaning up package information on a node
10551324	Error in cleaning up package information on both nodes
10551325	Package does not exist on the system
10551326	Error in deleting older package cleanup tasks
10551346	Package delete failed since a validation is in progress
10551347	Package delete failed since an update is in progress

Error codes	Description
10551367	A package synchronization is in progress
10551388	Package delete operation timed out

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-vsimg-ucs165n",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/58cd3a2b-af63-11e8-8b0d-0050568e7279"
      }
    }
  },
  "start_time": "2018-09-03T16:18:46+05:30",
  "state": "successful",
  "from_version": "9.4.0",
  "to_version": "9.5.0",
  "end_time": "2018-05-21T10:14:51+05:30"
}
```

Retrieve the cluster software profile

GET /cluster/software

Introduced In: 9.6

Retrieves the software profile of a cluster.

Related ONTAP commands

- `cluster image show`
- `cluster image show-update-progress`

Learn more

- [DOC /cluster/software](#)

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. <ul style="list-style-type: none">• Default value: 1
order_by	array[string]	query	False	Order results by specified fields and optional [asc
desc] direction. Default direction is 'asc' for ascending.	fields	array[string]	query	False
Specify the fields to return.	return_timeout	integer	query	False

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
action	string	User triggered action to apply to the install operation

Name	Type	Description
elapsed_duration	integer	Elapsed time during the upgrade or validation operation
estimated_duration	integer	Estimated time remaining until completion of the upgrade or validation operation.
metrocluster	metrocluster	
nodes	array[software_node_reference]	List of nodes and active versions.
pending_version	string	Version being installed on the system. <ul style="list-style-type: none"> • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6
state	string	Operational state of the upgrade
status_details	array[software_status_details_reference]	Display status details.
update_details	array[software_update_details_reference]	Display update progress details.
validation_results	array[software_validation_reference]	List of validation warnings, errors, and advice.
version	string	Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation. <ul style="list-style-type: none"> • example: ONTAP_X • Introduced in: 9.6

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "action": "pause",
  "elapsed_duration": "2140",
  "estimated_duration": "5220",
  "metrocluster": {
    "clusters": {
      "elapsed_duration": "2140",
      "estimated_duration": "3480",
      "name": "cluster_A",
      "state": "in_progress"
    },
    "progress_details": {
      "message": "Switchover in progress"
    },
    "progress_summary": {
      "message": "MetroCluster updated successfully."
    }
  },
  "nodes": {
    "name": "node1",
    "version": "ONTAP_X"
  },
  "pending_version": "ONTAP_X_1",
  "state": "completed",
  "status_details": {
    "end_time": "2019-02-02T19:00:00Z",
    "issue": {
      "code": "10551399",
      "message": "Image update complete"
    },
    "name": "initialize",
    "node": {
      "name": "node1"
    },
    "start_time": "2019-02-02T19:00:00Z",
    "state": "failed"
  },
  "update_details": {
    "elapsed_duration": "2100",
```

```

    "estimated_duration": "4620",
    "node": {
      "name": "node1"
    },
    "phase": "Pre-update checks",
    "state": "failed"
  },
  "validation_results": {
    "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

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	

software_mcc_reference

Name	Type	Description
elapsed_duration	integer	Elapsed duration of update time (in seconds) of MetroCluster.
estimated_duration	integer	Estimated duration of update time (in seconds) of MetroCluster.
name	string	Name of the site in MetroCluster.
state		Upgrade state of MetroCluster.

progress_details

Name	Type	Description
message	string	MetroCluster update progress details.

progress_summary

Name	Type	Description
message	string	MetroCluster update progress summary.

metrocluster

Name	Type	Description
clusters	array[software_mcc_reference]	List of MetroCluster sites, statuses, and active ONTAP versions. <ul style="list-style-type: none"> • readOnly: 1 • Introduced in: 9.6
progress_details	progress_details	
progress_summary	progress_summary	

software_node_reference

Name	Type	Description
name	string	Name of the node.
version	string	ONTAP version of the node. <ul style="list-style-type: none"> • example: ONTAP_X • readOnly: 1 • Introduced in: 9.6

action

Name	Type	Description
code	integer	Error code corresponding the status error
message	string	Corrective action to be taken to resolve the status error.

issue

Name	Type	Description
code	integer	Error code corresponding to update status
message	string	Update status details

node

Name	Type	Description
name	string	Name of the node to be retrieved for status details.

software_status_details_reference

Name	Type	Description
action	action	
end_time	string	End time for each status phase.
issue	issue	
name	string	Name of the phase to be retrieved for status details.
node	node	
start_time	string	Start time for each status phase.
state	string	Status of the phase

node

Name	Type	Description
name	string	Name of the node to be retrieved for update details.

software_update_details_reference

Name	Type	Description
elapsed_duration	integer	Elapsed duration for each update phase
estimated_duration	integer	Estimated duration for each update phase
node	node	
phase	string	Phase details
state	string	State of the update phase

action

Name	Type	Description
message	string	Specifies the corrective action to be taken to resolve a validation error

issue

Name	Type	Description
message	string	Details of the error or warning encountered by the update checks

software_validation_reference

Name	Type	Description
action	action	
issue	issue	
status	string	Status of this update check.
update_check	string	Name of the update check to be validated.

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 cluster software version

PATCH /cluster/software

Introduced In: 9.6

Updates the cluster software version. Important note:

- Setting 'version' triggers the package installation.
- To validate the package for installation but not perform the installation, use the `validate_only` field on the request.

Required properties

- `version` - Software version to be installed on the cluster.

Recommended optional parameters

- `validate_only` - Required to validate a software package before an upgrade.
- `skip_warnings` - Used to skip validation warnings when starting a software upgrade.
- `action` - Used to pause, resume, or cancel an ongoing software upgrade.
- `stabilize_minutes` - Specifies a custom value between 1 to 60 minutes that allows each node a specified amount of time to stabilize after a reboot; the default is 8 minutes.

Related ONTAP commands

- `cluster image validate`
- `cluster image update`
- `cluster image pause-update`
- `cluster image resume-update`
- `cluster image cancel-update`

Learn more

- [DOC /cluster/software](#)

Parameters

Name	Type	In	Required	Description
<code>skip_warnings</code>	boolean	query	False	Ignore warnings and proceed with the install.

Name	Type	In	Required	Description
action	string	query	False	<p>Requests an upgrade to pause, resume, or cancel. Note that not all upgrades support these actions. An upgrade can only be resumed if it is in the paused state. When a request to cancel an upgrade is successful, the upgrade state changes to either success or failure.</p> <ul style="list-style-type: none"> enum: ["pause", "resume", "cancel"]
stabilize_minutes	integer	query	False	<p>Sets a custom value between 1 to 60 minutes for the upgrade, allowing each node a specified amount of time to stabilize after a reboot.</p> <ul style="list-style-type: none"> Introduced in: 9.8
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
return_timeout	integer	query	False	<p>The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202.</p> <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0
validate_only	boolean	query	False	<p>Validate the operation and its parameters, without actually performing the operation.</p>

Request Body

Name	Type	Description
_links	_links	
action	string	User triggered action to apply to the install operation

Name	Type	Description
elapsed_duration	integer	Elapsed time during the upgrade or validation operation
estimated_duration	integer	Estimated time remaining until completion of the upgrade or validation operation.
metrocluster	metrocluster	
nodes	array[software_node_reference]	List of nodes and active versions.
pending_version	string	Version being installed on the system. <ul style="list-style-type: none"> • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6
state	string	Operational state of the upgrade
status_details	array[software_status_details_reference]	Display status details.
update_details	array[software_update_details_reference]	Display update progress details.
validation_results	array[software_validation_reference]	List of validation warnings, errors, and advice.
version	string	Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation. <ul style="list-style-type: none"> • example: ONTAP_X • Introduced in: 9.6

Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "action": "pause",
  "elapsed_duration": "2140",
  "estimated_duration": "5220",
  "metrocluster": {
    "clusters": {
      "elapsed_duration": "2140",
      "estimated_duration": "3480",
      "name": "cluster_A",
      "state": "in_progress"
    },
    "progress_details": {
      "message": "Switchover in progress"
    },
    "progress_summary": {
      "message": "MetroCluster updated successfully."
    }
  },
  "nodes": {
    "name": "node1",
    "version": "ONTAP_X"
  },
  "pending_version": "ONTAP_X_1",
  "state": "completed",
  "status_details": {
    "end_time": "2019-02-02T19:00:00Z",
    "issue": {
      "code": "10551399",
      "message": "Image update complete"
    },
    "name": "initialize",
    "node": {
      "name": "node1"
    },
    "start_time": "2019-02-02T19:00:00Z",
    "state": "failed"
  },
  "update_details": {
    "elapsed_duration": "2100",
```

```

    "estimated_duration": "4620",
    "node": {
      "name": "node1"
    },
    "phase": "Pre-update checks",
    "state": "failed"
  },
  "validation_results": {
    "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

Name	Type	Description
job	job_link	

Example response

```

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

software_mcc_reference

Name	Type	Description
elapsed_duration	integer	Elapsed duration of update time (in seconds) of MetroCluster.
estimated_duration	integer	Estimated duration of update time (in seconds) of MetroCluster.
name	string	Name of the site in MetroCluster.
state		Upgrade state of MetroCluster.

progress_details

Name	Type	Description
message	string	MetroCluster update progress details.

progress_summary

Name	Type	Description
message	string	MetroCluster update progress summary.

metrocluster

Name	Type	Description
clusters	array[software_mcc_reference]	List of MetroCluster sites, statuses, and active ONTAP versions. <ul style="list-style-type: none"> • readOnly: 1 • Introduced in: 9.6
progress_details	progress_details	
progress_summary	progress_summary	

software_node_reference

Name	Type	Description
name	string	Name of the node.
version	string	ONTAP version of the node. <ul style="list-style-type: none"> • example: ONTAP_X • readOnly: 1 • Introduced in: 9.6

action

Name	Type	Description
code	integer	Error code corresponding the status error
message	string	Corrective action to be taken to resolve the status error.

issue

Name	Type	Description
code	integer	Error code corresponding to update status
message	string	Update status details

node

Name	Type	Description
name	string	Name of the node to be retrieved for status details.

software_status_details_reference

Name	Type	Description
action	action	
end_time	string	End time for each status phase.
issue	issue	
name	string	Name of the phase to be retrieved for status details.
node	node	
start_time	string	Start time for each status phase.
state	string	Status of the phase

node

Name	Type	Description
name	string	Name of the node to be retrieved for update details.

software_update_details_reference

Name	Type	Description
elapsed_duration	integer	Elapsed duration for each update phase
estimated_duration	integer	Estimated duration for each update phase
node	node	
phase	string	Phase details
state	string	State of the update phase

action

Name	Type	Description
message	string	Specifies the corrective action to be taken to resolve a validation error

issue

Name	Type	Description
message	string	Details of the error or warning encountered by the update checks

software_validation_reference

Name	Type	Description
action	action	
issue	issue	
status	string	Status of this update check.
update_check	string	Name of the update check to be validated.

software_reference

Name	Type	Description
_links	_links	
action	string	User triggered action to apply to the install operation
elapsed_duration	integer	Elapsed time during the upgrade or validation operation
estimated_duration	integer	Estimated time remaining until completion of the upgrade or validation operation.
metrocluster	metrocluster	
nodes	array[software_node_reference]	List of nodes and active versions.

Name	Type	Description
pending_version	string	Version being installed on the system. <ul style="list-style-type: none"> • example: ONTAP_X_1 • readOnly: 1 • Introduced in: 9.6
state	string	Operational state of the upgrade
status_details	array[software_status_details_reference]	Display status details.
update_details	array[software_update_details_reference]	Display update progress details.
validation_results	array[software_validation_reference]	List of validation warnings, errors, and advice.
version	string	Version of ONTAP installed and currently active on the system. During PATCH, using the 'validate_only' parameter on the request executes pre-checks, but does not perform the full installation. <ul style="list-style-type: none"> • example: ONTAP_X • Introduced in: 9.6

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 the software or firmware download status

GET /cluster/software/download

Introduced In: 9.7

Retrieves the software download status.

Related ONTAP commands

- `cluster image package check-download-progress`

Learn more

- [DOC /cluster/software](#)

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. <ul style="list-style-type: none"> • Default value: 1
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

Name	Type	In	Required	Description
Specify the fields to return.	return_timeout	integer	query	False

Response

Status: 200, Ok

Name	Type	Description
code	integer	Code corresponds to download message
message	string	Download progress details
state	string	Download status of the package

Example response

```
{
  "code": "10551496",
  "message": "Package download in progress",
  "state": "success"
}
```

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

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.

Download a software or firmware package

POST /cluster/software/download

Introduced In: 9.6

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

- [DOC /cluster/software](#)

Parameters

Name	Type	In	Required	Description
<code>return_records</code>	boolean	query	False	The default is false. If set to true, the records are returned. <ul style="list-style-type: none">• Default value:

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

Request Body

Name	Type	Description
password	string	Password for download
url	string	HTTP or FTP URL of the package through a server
username	string	Username for download

Example request

```
{
  "password": "admin_password",
  "url": "http://server/package",
  "username": "admin"
}
```

Response

Status: 202, Accepted

Name	Type	Description
job	job_link	

Example response

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

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

software_package_download

Name	Type	Description
password	string	Password for download
url	string	HTTP or FTP URL of the package through a server
username	string	Username for download

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

job_link

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

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

Retrieve the software installation request history details

GET `/cluster/software/history`

Introduced In: 9.6

Retrieves the history details for software installation requests.

Related ONTAP commands

- `cluster image show-update-history`

Learn more

- [DOC /cluster/software](#)

Parameters

Name	Type	In	Required	Description
end_time	string	query	False	Filter by end_time • Introduced in: 9.7
node.name	string	query	False	Filter by node.name • Introduced in: 9.7
node.uuid	string	query	False	Filter by node.uuid • Introduced in: 9.7
to_version	string	query	False	Filter by to_version • Introduced in: 9.7

Name	Type	In	Required	Description
start_time	string	query	False	Filter by start_time <ul style="list-style-type: none"> Introduced in: 9.7
state	string	query	False	Filter by state <ul style="list-style-type: none"> Introduced in: 9.7
from_version	string	query	False	Filter by from_version <ul style="list-style-type: none"> Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> Default value: 1 Max value: 120 Min value: 0

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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
num_records	integer	
records	array[software_history]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "end_time": "2019-02-02T20:00:00Z",
    "from_version": "ONTAP_X1",
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "start_time": "2019-02-02T19:00:00Z",
    "state": "successful",
    "to_version": "ONTAP_X2"
  }
}
```

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	

node

Name	Type	Description
_links	_links	
name	string	
uuid	string	

software_history

Name	Type	Description
end_time	string	Completion time of this installation request.
from_version	string	Previous version of node <ul style="list-style-type: none">• example: ONTAP_X1• readOnly: 1• Introduced in: 9.7
node	node	
start_time	string	Start time of this installation request.
state	string	Status of this installation request.

Name	Type	Description
to_version	string	Updated version of node <ul style="list-style-type: none"> • example: ONTAP_X2 • readOnly: 1 • Introduced in: 9.7

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 software packages

GET /cluster/software/packages

Introduced In: 9.6

Retrieves the software packages for a cluster.

Related ONTAP commands

- `cluster image package show-repository`

Learn more

- [DOC /cluster/software](#)

Parameters

Name	Type	In	Required	Description
version	string	query	False	Filter by version <ul style="list-style-type: none"> • Introduced in: 9.7
create_time	string	query	False	Filter by create_time <ul style="list-style-type: none"> • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> • Default value: 1
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached. <ul style="list-style-type: none"> • Default value: 1 • Max value: 120 • Min value: 0
order_by	array[string]	query	False	Order results by specified fields and optional [asc

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
num_records	integer	
records	array[software_package]	

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "create_time": "2019-02-04T19:00:00Z",
    "version": "ONTAP_X"
  }
}
```

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	

software_package

Name	Type	Description
_links	_links	
create_time	string	Indicates when this package was loaded
version	string	Version of this package <ul style="list-style-type: none">• example: ONTAP_X• readOnly: 1• Introduced in: 9.6

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments

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

Delete a software package from the cluster

```
DELETE /cluster/software/packages/{version}
```

Introduced In: 9.6

Deletes a software package from the cluster. The delete operation fails if the package is currently installed.

Related ONTAP commands

- `cluster image package delete`

Learn more

- [DOC /cluster/software](#)

Parameters

Name	Type	In	Required	Description
version	string	path	True	

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

Response

Status: 202, Accepted

Error

Status: Default

ONTAP error response codes

Error codes	Description
10551315	Package store is empty

Error codes	Description
10551322	Error in retrieving package cleanup status
10551323	Error in cleaning up package information on a node
10551324	Error in cleaning up package information on multiple nodes
10551325	Package does not exist on the system
10551326	Error in deleting older package cleanup tasks. Clean up images from the store and retry
10551346	Package delete failed since a validation is in progress
10551347	Package delete failed since an update is in progress
10551367	A package synchronization is in progress
10551388	Package delete operation timed out

Name	Type	Description
error	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 the software package information

GET /cluster/software/packages/{version}

Introduced In: 9.6

Retrieves the software package information.

Related ONTAP commands

- `cluster image package show-repository`

Learn more

- [DOC /cluster/software](#)

Parameters

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

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
create_time	string	Indicates when this package was loaded
version	string	Version of this package <ul style="list-style-type: none">• example: ONTAP_X• readOnly: 1• Introduced in: 9.6

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "create_time": "2019-02-04T19:00:00Z",
  "version": "ONTAP_X"
}
```

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.

Upload a software or firmware package located on the local file system

POST /cluster/software/upload

Introduced In: 9.8

Uploads a software package file located on the local filesystem.

Related ONTAP commands

- `cluster image package get`

Learn more

- [DOC /cluster/software](#)

Parameters

Name	Type	In	Required	Description
file	file	formData	False	Info specification
return_records	boolean	query	False	The default is false. If set to true, the records are returned. <ul style="list-style-type: none">• Default value:
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. <ul style="list-style-type: none">• Default value: 1• Max value: 120• Min value: 0

Response

Status: 202, Accepted

Name	Type	Description
job	job_link	

Example response

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

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	

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.

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