



# Manage cluster nodes

## ONTAP 9.10.1 REST API Documentation

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# Manage cluster nodes

## Cluster nodes endpoint overview

### Overview

You can use this API to add nodes to a cluster, update node-specific configurations, and retrieve the current node configuration details.

### Adding a node to a cluster

You can add a node to a cluster by issuing a POST `/cluster/nodes` request to a node currently in the cluster. All nodes must be running the same version of ONTAP to use this API. Mixed version joins are not supported in this release. You can provide properties as fields in the body of the POST request to configure node-specific settings. On a successful request, POST `/cluster/nodes` returns a status code of 202 and job information in the body of the request. You can use the `/cluster/jobs` APIs to track the status of the node add job.

### Fields used for adding a node

Fields used for the `/cluster/nodes` APIs fall into the following categories:

- Required node fields
- Optional fields
- Network interface fields
- Records field

### Required node fields

The following field is required for any POST `/cluster/nodes` request:

- `cluster_interface.ip.address`

### Optional fields

All of the following fields are used to set up additional cluster-wide configurations:

- `name`
- `location`
- `records`

### Network interface fields

You can set a node-specific configuration for each node by using the POST `/cluster/nodes` API. If you provide a field in the body of a node, provide it for all nodes in the POST body. You can provide the node management interface for each node if all node management interfaces in the cluster use the same subnet mask. If the node management interfaces use different subnet masks, use the `/network/ip/interfaces` API to configure the node management interfaces.

## The records field

To add multiple nodes to the cluster in one request, provide an array named "records" with multiple node entries. Each node entry in "records" must follow the required and optional fields listed previously. When only adding a single node, you do not need a "records" field. See "Examples" for an example of how to use the "records" field.

## Create recommended aggregates parameter

When you set the "create\_recommended\_aggregates" parameter to "true", aggregates based on an optimal layout recommended by the system are created on each of the nodes being added to the cluster. The default setting is "false".

---

## Modifying node configurations

The following fields can be used to modify a node configuration:

- name
  - location
- 

## Modifying service processor configurations

When modifying the "service\_processor" properties, the job returns success immediately if valid network information is passed in. The values remain in their old state until the network information changes have taken effect on the service processor. You can poll the modified properties until the values are updated.

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## Deleting a node from a cluster

You can delete a node from the cluster. Before deleting a node from the cluster, shut down all of the node's shared resources, such as virtual interfaces to clients. If any of the node's shared resources are still active, the command fails. You can use the "force" flag to forcibly remove a node that is down and cannot be brought online to remove its shared resources. This flag is set to "false" by default.

---

## Node state

The node "state" field in the /cluster/nodes API represents the current operational state of individual nodes. Note that the state of a node is a transient value and can change depending on the current condition of the node, especially during reboot, takeover, and giveback. Possible values for the node state are:

- *up* - Node is fully operational and is able to accept and handle management requests. It is connected to a majority of healthy (up) nodes in the cluster through the cluster interconnect and all critical services are online.
  - *booting* - Node is starting up and is not yet fully functional. It might not yet be accessible through the management interface or cluster interconnect. One or more critical services are offline on the node and the node is not taken over. The HA partner reports the node's firmware state as "SF\_BOOTING",
-

"SF\_BOOTED", or "SF\_CLUSTERWAIT".

- *down* - Node is known to be down. It cannot be reached through the management interface or cluster interconnect. The HA partner can be reached and reports that the node is halted/rebooted without takeover. Or, the HA partner cannot be reached (or no SFO configured) but the node shutdown request has been recorded by the quorum change coordinator. The state is reported by the node's HA partner.
- *taken\_over* - Node is taken over by its HA partner. The state is reported by the node's HA partner.
- *waiting\_for\_giveback* - Node is taken over by its HA partner and is now ready and waiting for giveback. To bring the node up, either issue the "giveback" command to the HA partner node or wait for auto-giveback, if enabled. The state is reported by the node's HA partner.
- *degraded* - Node is known to be up but is not yet fully functional. The node can be reached through the cluster interconnect but one or more critical services are offline. Or, the node is not reachable but the node's HA partner can be reached and reports that the node is up with firmware state "SF\_UP".
- *unknown* - Node state cannot be determined.

---

## HA

The "ha" field in the /cluster/nodes API shows the takeover and giveback states of the node along with the current values of the HA fields "enabled" and "auto\_giveback". You can modify the HA fields "enabled" and "auto\_giveback", which will change the HA states of the node.

### Takeover

The takeover "state" field shows the different takeover states of the node. When the state is "failed", the "code" and "message" fields display. Possible values for takeover states are:

- *not\_attempted* - Takeover operation is not started and takeover is possible.
- *not\_possible* - Takeover operation is not possible. Check the failure message.
- *in\_progress* - Takeover operation is in progress. The node is taking over its partner.
- *in\_takeover* - Takeover operation is complete.
- *failed* - Takeover operation failed. Check the failure message.

Possible values for takeover failure code and messages are:

- *code: 852130 message: Failed to initiate takeover. Run the "storage failover show-takeover" command for more information.*
- *code: 852131 message: Takeover cannot be completed. Reason: disabled.*

### Giveback

The giveback "state" field shows the different giveback states of the node. When the state is "failed", the "code" and "message" fields display. Possible values for giveback states are:

- *nothing\_to\_giveback* - Node does not have partner aggregates to giveback.
- *not\_attempted* - Giveback operation is not started.
- *in\_progress* - Giveback operation is in progress.
- *failed* - Giveback operation failed. Check the failure message.

Possible values for giveback failure codes and messages are:

- *code*: 852126 *message*: Failed to initiate giveback. Run the "storage failover show-giveback" command for more information.

---

## Performance monitoring

Performance of a node can be monitored by observing the `metric.*` and `statistics.*` properties. These properties show the performance of a node in terms of cpu utilization. The `metric.*` properties denote an average whereas `statistics.*` properties denote a real-time monotonically increasing value aggregated across all nodes.

---

## Examples

The following examples show how to add nodes to a cluster, update node properties, shutdown and reboot a node, and remove a node from the cluster.

### Adding a single node with a minimal configuration

```
# Body
add_single_node.txt (body) :
{
  "cluster_interface": {
    "ip": {
      "address": "1.1.1.1"
    }
  }
}

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

---

### Adding multiple nodes in the same request and creating recommended aggregates

```
# Body
add_multiple_nodes.txt(body):
{
  "records": [
    {
      "name": "node1",
      "cluster_interface": {
        "ip": {
          "address": "1.1.1.1"
        }
      }
    },
    {
      "name": "node2",
      "cluster_interface": {
        "ip": {
          "address": "2.2.2.2"
        }
      }
    }
  ]
}

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

---

## Modifying a cluster-wide configuration

```
# Body
modify_name_and_location.txt(body):
{
  "name": "renamedNode",
  "location": "newLocation"
}

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

## Shutting down a node

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

## Powering off a node using SP assistance

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

## Deleting a node from a cluster

```
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}"
```

## Force a node deletion from a cluster

```
curl -X DELETE "https://<mgmt-ip>/api/cluster/nodes/{uuid}?force=true"
```

## Retrieving the state of all nodes in a cluster



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

#Response
{
  "records": [
    {
      "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
      "name": "node2",
      "state": "up",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
        }
      }
    },
    {
      "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
      "name": "node1",
      "state": "up",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/nodes?fields=state"
    }
  }
}
```

---

**Retrieving nodes that are in the spare low condition in a cluster**

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

#Response
{
  "records": [
    {
      "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
      "name": "node2",
      "spares_low": true,
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
        }
      }
    },
    {
      "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
      "name": "node1",
      "spares_low": false,
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/cluster/nodes?fields=state"
    }
  }
}
```

---

### Retrieving statistics and metric for a node

In this example, the API returns the "statistics" and "metric" properties.

```

#Request
curl -siku admin -X GET "https://<mgmt-
ip>/api/cluster/nodes?fields=statistics,metric"

#Response
{
  "records": [
    {
      "uuid": "6b29327b-21ca-11ea-99aa-005056bb420b",
      "name": "prij-vsml1",
      "metric": {
        "timestamp": "2019-12-19T15:50:45Z",
        "duration": "PT15S",
        "status": "ok",
        "processor_utilization": 3
      },
      "statistics": {
        "timestamp": "2019-12-19T15:50:48Z",
        "status": "ok",
        "processor_utilization_raw": 6409411622,
        "processor_utilization_base": 74330229886
      }
    }
  ],
  "num_records": 1
}

```

## Retrieving takeover and giveback failure codes and messages

```

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

#Response
{
  "records": [
    {
      "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
      "name": "node2",
      "ha": {
        "enabled": false,
        "auto_giveback": false,
        "partners": [
          {

```

```

        "uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
        "name": "node1"
    }
],
"giveback": {
    "state": "nothing_to_giveback"
},
"takeover": {
    "state": "not_possible",
    "failure": {
        "message": "Takeover cannot be completed. Reason: disabled.",
        "code": 852131
    }
},
"ports": [
    {
        "name": "e0h"
    },
    {
        "name": "N/A"
    }
]
},
"_links": {
    "self": {
        "href": "/api/cluster/nodes/54440ec3-6127-11e9-a959-005056bb76f9"
    }
}
},
{
"uuid": "e02dbef1-6126-11e9-b8fb-005056bb9ce4",
"name": "node1",
"ha": {
    "enabled": false,
    "auto_giveback": false,
    "partners": [
        {
            "uuid": "54440ec3-6127-11e9-a959-005056bb76f9",
            "name": "node2"
        }
    ]
},
"giveback": {
    "state": "nothing_to_giveback"
},
"takeover": {
    "state": "not_possible",

```

```

    "failure": {
      "message": "Takeover cannot be completed. Reason: disabled.",
      "code": 852131
    }
  },
  "ports": [
    {
      "name": "e0h"
    },
    {
      "name": "N/A"
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/cluster/nodes/e02dbef1-6126-11e9-b8fb-005056bb9ce4"
  }
}
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=state"
  }
}
}
}

```

## Retrieving external cache information for a node

In this example, the API returns the `external_cache` property.

```

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

#Response
{
  "records": [
    {
      "uuid": "71af8235-bea9-11eb-874a-005056bbab13",
      "name": "node2",
      "external_cache": {

```

```

    "node": "node2",
    "is_enabled": false,
    "is_hya_enabled": true,
    "is_rewarm_enabled": false,
    "pcs_size": 256
  },
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/71af8235-bea9-11eb-874a-005056bbab13"
    }
  }
},
{
  "uuid": "8c4cbf08-bea9-11eb-b8ae-005056bb16aa",
  "name": "node1",
  "external_cache": {
    "node": "node1",
    "is_enabled": false,
    "is_hya_enabled": true,
    "is_rewarm_enabled": false,
    "pcs_size": 256
  },
  "_links": {
    "self": {
      "href": "/api/cluster/nodes/8c4cbf08-bea9-11eb-b8ae-005056bb16aa"
    }
  }
}
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/cluster/nodes?fields=external_cache"
  }
}
}

```

## Retrieve 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>vm.provider_type</code>            | string  | query | False    | Filter by <code>vm.provider_type</code> <ul style="list-style-type: none"><li>• Introduced in: 9.7</li></ul>            |
| <code>ha.giveback.failure.code</code>    | integer | query | False    | Filter by <code>ha.giveback.failure.code</code> <ul style="list-style-type: none"><li>• Introduced in: 9.7</li></ul>    |
| <code>ha.giveback.failure.message</code> | string  | query | False    | Filter by <code>ha.giveback.failure.message</code> <ul style="list-style-type: none"><li>• Introduced in: 9.7</li></ul> |
| <code>ha.giveback.state</code>           | string  | query | False    | Filter by <code>ha.giveback.state</code> <ul style="list-style-type: none"><li>• Introduced in: 9.7</li></ul>           |
| <code>ha.takeover.state</code>           | string  | query | False    | Filter by <code>ha.takeover.state</code> <ul style="list-style-type: none"><li>• Introduced in: 9.7</li></ul>           |

| Name                        | Type    | In    | Required | Description   |
|-----------------------------|---------|-------|----------|---|
| ha.takeover.failure.message | string  | query | False    | Filter by ha.takeover.failure.message<br><br>• Introduced in: 9.7 |
| ha.takeover.failure.code    | integer | query | False    | Filter by ha.takeover.failure.code<br><br>• Introduced in: 9.7    |
| ha.enabled                  | boolean | query | False    | Filter by ha.enabled  |
| ha.partners.uuid            | string  | query | False    | Filter by ha.partners.uuid  |
| ha.partners.name            | string  | query | False    | Filter by ha.partners.name  |
| ha.auto_giveback            | boolean | query | False    | Filter by ha.auto_giveback  |
| ha.ports.state              | string  | query | False    | Filter by ha.ports.state<br><br>• Introduced in: 9.7              |
| ha.ports.number             | integer | query | False    | Filter by ha.ports.number<br><br>• Introduced in: 9.7             |
| membership                  | string  | query | False    | Filter by membership  |
| state                       | string  | query | False    | Filter by state<br><br>• Introduced in: 9.7                       |



| Name  | Type    | In    | Required | Description  |
|---|---------|-------|----------|--|
| service_processor.sh_info.allowed_addresses | string  | query | False    | Filter by service_processor.sh_info.allowed_addresses<br><br>• Introduced in: 9.10 |
| service_processor.backup.state              | string  | query | False    | Filter by service_processor.backup.state<br><br>• Introduced in: 9.10              |
| service_processor.backup.is_current         | boolean | query | False    | Filter by service_processor.backup.is_current<br><br>• Introduced in: 9.10         |
| service_processor.backup.version            | string  | query | False    | Filter by service_processor.backup.version<br><br>• Introduced in: 9.10            |
| 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.primary.is_current        | boolean | query | False    | Filter by service_processor.primary.is_current<br><br>• Introduced in: 9.10        |

| Name                                     | Type    | In    | Required | Description   |
|--|---------|-------|----------|---|
| service_processor.primary.version        | string  | query | False    | Filter by service_processor.primary.version<br><br>• Introduced in: 9.10    |
| service_processor.primary.state          | string  | query | False    | Filter by service_processor.primary.state<br><br>• Introduced in: 9.10      |
| service_processor.mac_address            | string  | query | False    | Filter by service_processor.mac_address                                     |
| service_processor.ipv6_interface.netmask | integer | query | False    | Filter by service_processor.ipv6_interface.netmask                          |
| service_processor.ipv6_interface.gateway | string  | query | False    | Filter by service_processor.ipv6_interface.gateway                          |
| service_processor.ipv6_interface.address | string  | query | False    | Filter by service_processor.ipv6_interface.address                          |
| service_processor.last_update_state      | string  | query | False    | Filter by service_processor.last_update_state<br><br>• Introduced in: 9.10  |
| service_processor.autoupdate_enabled     | boolean | query | False    | Filter by service_processor.autoupdate_enabled<br><br>• Introduced in: 9.10 |

| Name                                     | Type    | In    | Required | Description   |
|--|---------|-------|----------|---|
| service_processor.link_status            | string  | query | False    | Filter by service_processor.link_status                                   |
| service_processor.type                   | string  | query | False    | Filter by service_processor.type<br><br>• Introduced in: 9.10             |
| 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.is_ip_configured       | boolean | query | False    | Filter by service_processor.is_ip_configured<br><br>• Introduced in: 9.10 |
| service_processor.dhcp_enabled           | boolean | query | False    | Filter by service_processor.dhcp_enabled                                  |
| system_machine_type                      | string  | query | False    | Filter by system_machine_type<br><br>• Introduced in: 9.7                 |

| Name                             | Type    | In    | Required | Description  |
|----------------------------------|---------|-------|----------|--|
| nvr.am.battery_state             | string  | query | False    | Filter by nvr.am.battery_state<br><br>• Introduced in: 9.9 |
| nvr.am.id                        | integer | query | False    | Filter by nvr.am.id<br><br>• Introduced in: 9.9            |
| version.minor                    | integer | query | False    | Filter by version.minor                                    |
| version.generation               | integer | query | False    | Filter by version.generation                               |
| version.full                     | string  | query | False    | Filter by version.full                                     |
| version.major                    | integer | query | False    | Filter by version.major                                    |
| uptime                           | integer | query | False    | Filter by uptime   |
| is_spares_low                    | boolean | query | False    | Filter by is_spares_low<br><br>• Introduced in: 9.10       |
| serial_number                    | string  | query | False    | Filter by serial_number                                    |
| uuid                             | string  | query | False    | Filter by uuid   |
| management_interfaces.ip.address | string  | query | False    | Filter by management_interfaces.ip.address                 |
| management_interfaces.name       | string  | query | False    | Filter by management_interfaces.name                       |
| management_interfaces.uuid       | string  | query | False    | Filter by management_interfaces.uuid                       |

| Name                             | Type    | In    | Required | Description   |
|----------------------------------|---------|-------|----------|---|
| cluster_interfaces.ip_address    | string  | query | False    | Filter by cluster_interfaces.ip_address                                 |
| cluster_interfaces.name          | string  | query | False    | Filter by cluster_interfaces.name                                       |
| cluster_interfaces.uuid          | string  | query | False    | Filter by cluster_interfaces.uuid                                       |
| storage_configuration            | string  | query | False    | Filter by storage_configuration<br><br>• Introduced in: 9.9             |
| external_cache.is_rewarm_enabled | boolean | query | False    | Filter by external_cache.is_rewarm_enabled<br><br>• Introduced in: 9.10 |
| external_cache.is_hya_enabled    | boolean | query | False    | Filter by external_cache.is_hya_enabled<br><br>• Introduced in: 9.10    |
| external_cache.is_enabled        | boolean | query | False    | Filter by external_cache.is_enabled<br><br>• Introduced in: 9.10        |
| external_cache.pcs_size          | integer | query | False    | Filter by external_cache.pcs_size<br><br>• Introduced in: 9.10          |

| Name                                 | Type    | In    | Required | Description  |
|--------------------------------------|---------|-------|----------|--|
| metric.status                        | string  | query | False    | Filter by metric.status<br><br>• Introduced in: 9.8                        |
| metric.processor_utilization         | integer | query | False    | Filter by metric.processor_utilization<br><br>• Introduced in: 9.8         |
| metric.uuid                          | string  | query | False    | Filter by metric.uuid<br><br>• Introduced in: 9.10                         |
| metric.timestamp                     | string  | query | False    | Filter by metric.timestamp<br><br>• Introduced in: 9.8                     |
| metric.duration                      | string  | query | False    | Filter by metric.duration<br><br>• Introduced in: 9.8                      |
| system_id                            | string  | query | False    | Filter by system_id<br><br>• Introduced in: 9.7                            |
| location                             | string  | query | False    | Filter by location   |
| statistics.processor_utilization_raw | integer | query | False    | Filter by statistics.processor_utilization_raw<br><br>• Introduced in: 9.8 |
| statistics.status                    | string  | query | False    | Filter by statistics.status<br><br>• Introduced in: 9.8                    |

| Name  | Type    | In    | Required | Description   |
|---|---------|-------|----------|---|
| statistics.processor_utilization_base       | integer | query | False    | Filter by statistics.processor_utilization_base<br><br>• Introduced in: 9.8       |
| statistics.timestamp                        | string  | query | False    | Filter by statistics.timestamp<br><br>• Introduced in: 9.8                        |
| controller.frus.id                          | string  | query | False    | Filter by controller.frus.id  |
| controller.frus.state                       | string  | query | False    | Filter by controller.frus.state   |
| controller.frus.type                        | string  | query | False    | Filter by controller.frus.type  |
| controller.memory_size                      | integer | query | False    | Filter by controller.memory_size<br><br>• Introduced in: 9.9                      |
| controller.failed_power_supply.count        | integer | query | False    | Filter by controller.failed_power_supply.count<br><br>• Introduced in: 9.9        |
| controller.failed_power_supply.message.code | string  | query | False    | Filter by controller.failed_power_supply.message.code<br><br>• Introduced in: 9.9 |

| Name   | Type    | In    | Required | Description  |
|--|---------|-------|----------|--|
| controller.failed_power_supply.message.message | string  | query | False    | Filter by controller.failed_power_supply.message.message<br><br>• Introduced in: 9.9 |
| controller.cpu.count                           | integer | query | False    | Filter by controller.cpu.count<br><br>• Introduced in: 9.9                           |
| controller.cpu.firmware_release                | string  | query | False    | Filter by controller.cpu.firmware_release<br><br>• Introduced in: 9.9                |
| controller.cpu.processor                       | string  | query | False    | Filter by controller.cpu.processor<br><br>• Introduced in: 9.9                       |
| controller.failed_fan.message.code             | string  | query | False    | Filter by controller.failed_fan.message.code<br><br>• Introduced in: 9.9             |
| controller.failed_fan.message.message          | string  | query | False    | Filter by controller.failed_fan.message.message<br><br>• Introduced in: 9.9          |
| controller.failed_fan.count                    | integer | query | False    | Filter by controller.failed_fan.count<br><br>• Introduced in: 9.9                    |



| Name                                     | Type    | In    | Required | Description  |
|--|---------|-------|----------|--|
| controller.flash_cache.slot              | string  | query | False    | Filter by controller.flash_cache.slot                                      |
| controller.flash_cache.serial_number     | string  | query | False    | Filter by controller.flash_cache.serial_number                             |
| controller.flash_cache.hardware_revision | string  | query | False    | Filter by controller.flash_cache.hardware_revision                         |
| controller.flash_cache.firmware_version  | string  | query | False    | Filter by controller.flash_cache.firmware_version                          |
| controller.flash_cache.firmware_file     | string  | query | False    | Filter by controller.flash_cache.firmware_file<br><br>• Introduced in: 9.9 |
| controller.flash_cache.capacity          | integer | query | False    | Filter by controller.flash_cache.capacity                                  |
| controller.flash_cache.state             | string  | query | False    | Filter by controller.flash_cache.state                                     |
| controller.flash_cache.part_number       | string  | query | False    | Filter by controller.flash_cache.part_number                               |
| controller.flash_cache.device_id         | integer | query | False    | Filter by controller.flash_cache.device_id<br><br>• Introduced in: 9.9     |
| controller.flash_cache.model             | string  | query | False    | Filter by controller.flash_cache.model                                     |

| Name                             | Type    | In    | Required | Description  |
|----------------------------------|---------|-------|----------|--|
| controller.board                 | string  | query | False    | Filter by controller.board<br><br>• Introduced in: 9.9                 |
| controller.over_temperature      | string  | query | False    | Filter by controller.over_temperature                                  |
| date                             | string  | query | False    | Filter by date   |
| owner                            | string  | query | False    | Filter by owner<br><br>• Introduced in: 9.9                            |
| metrocluster.type                | string  | query | False    | Filter by metrocluster.type<br><br>• Introduced in: 9.8                |
| metrocluster.custom_vlan_capable | boolean | query | False    | Filter by metrocluster.custom_vlan_capable<br><br>• Introduced in: 9.8 |
| metrocluster.ports.name          | string  | query | False    | Filter by metrocluster.ports.name<br><br>• Introduced in: 9.8          |
| vendor_serial_number             | string  | query | False    | Filter by vendor_serial_number<br><br>• Introduced in: 9.7             |
| model                            | string  | query | False    | Filter by model  |
| name                             | string  | query | False    | Filter by name   |

| 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"> <li>• Default value: 1</li> </ul>  |
| 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"> <li>• Default value: 1</li> <li>• Max value: 120</li> <li>• Min value: 0</li> </ul> |
| order_by       | array[string] | query | False    | Order results by specified fields and optional [asc   |

## Response

Status: 200, Ok

| Name        | Type                             | Description |
|-------------|----------------------------------|-------------|
| _links      | <a href="#">_links</a>           |             |
| num_records | integer                          |             |
| records     | array[ <a href="#">records</a> ] |             |

## 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": {
      "board": "System Board XXVIII",
      "cpu": {
        "count": 20,
        "firmware_release": "string",
        "processor": "string"
      },
      "failed_fan": {
        "count": 1,
        "message": {
          "code": "111411207",
          "message": "There are no failed fans."
        }
      }
    }
  }
}
```

```

    }
  },
  "failed_power_supply": {
    "count": 1,
    "message": {
      "code": "111411208",
      "message": "There are no failed power supplies."
    }
  },
  "flash_cache": {
    "capacity": 102400000000,
    "device_id": 0,
    "firmware_file": "X9170_O000Z6300NVM",
    "firmware_version": "NA05",
    "hardware_revision": "A1",
    "model": "X1970A",
    "part_number": "119-00207",
    "serial_number": "A22P5061550000187",
    "slot": "6-1",
    "state": "ok"
  },
  "frus": {
    "id": "string",
    "state": "ok",
    "type": "fan"
  },
  "memory_size": 1024000000,
  "over_temperature": "over"
},
"date": "2019-04-17T11:49:26-04:00",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed"
  },
  "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",  
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"  
},  
"metrocluster": {  
  "ports": {  
    "name": "elb"  
  },  
  "type": "fc"  
},  
"model": "FAS3070",  
"name": "node-01",  
"nvram": {  
  "battery_state": "battery_ok",  
  "id": 0  
},  
"owner": "Example Corp",  
"serial_number": "4048820-60-9",  
"service_processor": {  
  "backup": {  
    "state": "installed",  
    "version": "11.6"  
  },  
  "firmware_version": "string",  
  "ipv4_interface": {  
    "address": "10.10.10.7",  
    "gateway": "10.1.1.1",  
    "netmask": "24"  
  },  
  "ipv6_interface": {  
    "address": "fd20:8b1e:b255:5011:10:141:4:97",  
    "gateway": "fd20:8b1e:b255:5011:10::1",  
    "netmask": 64  
  },  
  "last_update_state": "failed",  
  "link_status": "up",  
  "mac_address": "string",  
  "primary": {  
    "state": "installed",  
    "version": "11.6"  
  },  
  "ssh_info": {  
    "allowed_addresses": {  
    }  
  }  
},
```

```

    "state": "online",
    "type": "sp"
  },
  "state": "up",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "storage_configuration": "unknown",
  "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 | <a href="#">href</a> |             |
| self | <a href="#">href</a> |             |

\_links

| Name | Type                 | Description |
|------|----------------------|-------------|
| self | <a href="#">href</a> |             |

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   | <a href="#">node_setup_ip</a> | 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                                      |
|------------------------|------------------------|--|
| <a href="#">_links</a> | <a href="#">_links</a> |  |
| ip                     | <a href="#">ip</a>     | IP information                                   |
| name                   | string                 | The name of the interface.                       |
| uuid                   | string                 | The UUID that uniquely identifies the interface. |

cpu

CPU information.

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

message

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

failed\_fan

| Name    | Type                    | Description  |
|---------|-------------------------|--|
| count   | integer                 | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | <a href="#">message</a> |  |

message

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

#### failed\_power\_supply

| Name    | Type                    | Description                          |
|---------|-------------------------|--------------------------------------|
| count   | integer                 | Number of failed power supply units. |
| message | <a href="#">message</a> |                                      |

#### flash\_cache

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

#### frus

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

#### controller

## Controller information

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

## external\_cache

Cache used for buffer management.

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

## failure

Indicates the failure code and message.

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

#### giveback

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

| Name    | Type                    | Description                             |
|---------|-------------------------|---|
| failure | <a href="#">failure</a> | Indicates the failure code and message. |
| state   | string                  |   |

#### partners

| Name   | Type                   | Description |
|--------|------------------------|-------------|
| _links | <a href="#">_links</a> |             |
| 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"> <li>• <i>down</i> - Logical HA link is down.</li> <li>• <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port.</li> <li>• <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.</li> <li>• <i>active</i> - Logical HA link is active.</li> <li>• <i>reserved</i> - Logical HA link is active, but the physical link is down.</li> </ul> |

#### takeover

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

| Name    | Type                    | Description                             |
|---------|-------------------------|---|
| failure | <a href="#">failure</a> | 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      | <a href="#">giveback</a> | Represents the state of the node that is giving storage back to its HA partner.                     |

| Name     | Type                              | Description  |
|----------|-----------------------------------|--|
| partners | array[ <a href="#">partners</a> ] | Nodes in this node's High Availability (HA) group.                                     |
| ports    | array[ <a href="#">ports</a> ]    |  |
| takeover | <a href="#">takeover</a>          | 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   | <a href="#">node_setup_ip</a> | The IP configuration for cluster setup. |

#### management\_interfaces

##### Network interface

| Name   | Type                   | Description                                      |
|--------|------------------------|--|
| _links | <a href="#">_links</a> |  |
| ip     | <a href="#">ip</a>     | 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   | <a href="#">_links</a> |  |
| 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".<br>"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.<br>"Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp             | string  | The timestamp of the performance data.  |
| uuid                  | string  |   |

#### ports

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

#### metrocluster

#### Metrocluster

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

| Name  | Type         | Description                         |
|-------|--------------|-------------------------------------|
| ports | array[ports] | MetroCluster over IP ports.         |
| type  | string       | The Metrocluster configuration type |

#### nvrाम

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

#### backup

Provides the properties of the service processor backup partition.

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

#### ipv4\_interface

Object to setup an interface along with its default router.

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

#### ipv6\_interface

Object to setup an interface along with its default router.

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

#### primary

Provides the properties of the service processor primary partition.

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

#### ssh\_info

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

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

#### service\_processor

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

| Name     | Type     | Description  |
|----------|----------|--|
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state    | string   |  |
| type     | 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.       |
| 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             | <a href="#">_links</a>                      |   |
| cluster_interface  | <a href="#">cluster_interface</a>           | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[ <a href="#">cluster_interfaces</a> ] |   |
| controller         | <a href="#">controller</a>                  | 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"> <li>• example: 2019-04-17T11:49:26-04:00</li> <li>• format: date-time</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul> |
| external_cache        | <a href="#">external_cache</a>                 | Cache used for buffer management.  |
| ha                    | <a href="#">ha</a>                             |  |
| is_spares_low         | boolean  | Specifies whether or not the node is in spares low condition.  |
| location              | string   |  |
| management_interface  | <a href="#">management_interface</a>           | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.   |
| management_interfaces | array[ <a href="#">management_interfaces</a> ] |  |

| Name              | Type                              | Description  |
|-------------------|-----------------------------------|--|
| membership        | string                            | <p>Possible values:</p> <ul style="list-style-type: none"> <li>• <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.</li> <li>• <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.</li> <li>• <i>member</i> - Nodes that are members have successfully joined the cluster.</li> </ul> |
| metric            | <a href="#">metric</a>            | CPU performance for the nodes.   |
| metrocluster      | <a href="#">metrocluster</a>      | Metrocluster   |
| model             | string                            |  |
| name              | string                            |  |
| nvrn              | <a href="#">nvrn</a>              |  |
| owner             | string                            | Owner of the node.   |
| serial_number     | string                            |  |
| service_processor | <a href="#">service_processor</a> |  |



| Name                  | Type                       | Description   |
|-----------------------|----------------------------|---|
| state                 | string                     | State of the node: <ul style="list-style-type: none"> <li>• <i>up</i> - Node is up and operational.</li> <li>• <i>booting</i> - Node is booting up.</li> <li>• <i>down</i> - Node has stopped or is dumping core.</li> <li>• <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback.</li> <li>• <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.</li> <li>• <i>degraded</i> - Node has one or more critical services offline.</li> <li>• <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state.</li> </ul> |
| statistics            | <a href="#">statistics</a> | Raw CPU performance for the nodes.  |
| storage_configuration | string                     | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> <li>• <i>mixed_path</i></li> <li>• <i>single_path</i></li> <li>• <i>multi_path</i></li> <li>• <i>quad_path</i></li> <li>• <i>mixed_path_ha</i></li> <li>• <i>single_path_ha</i></li> <li>• <i>multi_path_ha</i></li> <li>• <i>quad_path_ha</i></li> <li>• <i>unknown</i></li> </ul>  |
| system_id             | string                     |   |
| system_machine_type   | string                     | OEM system machine type.  |

| Name                 | Type                    | Description   |
|----------------------|-------------------------|---|
| uptime               | integer                 | The total time, in seconds, that the node has been up.  |
| uuid                 | string                  |   |
| vendor_serial_number | string                  | OEM vendor serial number.   |
| version              | <a href="#">version</a> | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm                   | <a href="#">vm</a>      |   |

#### error\_arguments

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

#### error

| Name      | Type                                     | Description                                 |
|-----------|--|---|
| arguments | array[ <a href="#">error_arguments</a> ] | 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   |
|--|---------|-------|----------|---|
| <code>create_recommended_aggregates</code> | boolean | query | False    | <p>Creates aggregates based on an optimal layout recommended by the system.</p> <ul style="list-style-type: none"><li>• Default value:</li><li>• Introduced in: 9.7</li></ul> |

| 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"> <li>• Default value: 1</li> <li>• Max value: 120</li> <li>• Min value: 0</li> </ul> |
| 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"> <li>• Default value:</li> </ul>  |

## Request Body

| Name               | Type  | Description   |
|--------------------|---|---|
| _links             | <a href="#">_links</a>                      |   |
| cluster_interface  | <a href="#">cluster_interface</a>           | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[ <a href="#">cluster_interfaces</a> ] |   |

| Name                  | Type   | Description  |
|-----------------------|--|--|
| controller            | <a href="#">controller</a>                     | 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"> <li>• example: 2019-04-17T11:49:26-04:00</li> <li>• format: date-time</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> <li>• x-nullable: true</li> </ul> |
| external_cache        | <a href="#">external_cache</a>                 | Cache used for buffer management.  |
| ha                    | <a href="#">ha</a>                             |  |
| is_spares_low         | boolean  | Specifies whether or not the node is in spares low condition.  |
| location              | string   |  |
| management_interface  | <a href="#">management_interface</a>           | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.   |
| management_interfaces | array[ <a href="#">management_interfaces</a> ] |  |

| Name              | Type                              | Description  |
|-------------------|-----------------------------------|--|
| membership        | string                            | <p>Possible values:</p> <ul style="list-style-type: none"> <li>• <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.</li> <li>• <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.</li> <li>• <i>member</i> - Nodes that are members have successfully joined the cluster.</li> </ul> |
| metric            | <a href="#">metric</a>            | CPU performance for the nodes.   |
| metrocluster      | <a href="#">metrocluster</a>      | Metrocluster   |
| model             | string                            |  |
| name              | string                            |  |
| nvrn              | <a href="#">nvrn</a>              |  |
| owner             | string                            | Owner of the node.   |
| serial_number     | string                            |  |
| service_processor | <a href="#">service_processor</a> |  |

| Name                  | Type                       | Description   |
|-----------------------|----------------------------|---|
| state                 | string                     | State of the node: <ul style="list-style-type: none"> <li>• <i>up</i> - Node is up and operational.</li> <li>• <i>booting</i> - Node is booting up.</li> <li>• <i>down</i> - Node has stopped or is dumping core.</li> <li>• <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback.</li> <li>• <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.</li> <li>• <i>degraded</i> - Node has one or more critical services offline.</li> <li>• <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state.</li> </ul> |
| statistics            | <a href="#">statistics</a> | Raw CPU performance for the nodes.  |
| storage_configuration | string                     | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> <li>• <i>mixed_path</i></li> <li>• <i>single_path</i></li> <li>• <i>multi_path</i></li> <li>• <i>quad_path</i></li> <li>• <i>mixed_path_ha</i></li> <li>• <i>single_path_ha</i></li> <li>• <i>multi_path_ha</i></li> <li>• <i>quad_path_ha</i></li> <li>• <i>unknown</i></li> </ul>  |
| system_id             | string                     |   |
| system_machine_type   | string                     | OEM system machine type.  |
| uptime                | integer                    | The total time, in seconds, that the node has been up.  |

| Name                 | Type                    | Description   |
|----------------------|-------------------------|---|
| uuid                 | string                  |   |
| vendor_serial_number | string                  | OEM vendor serial number.   |
| version              | <a href="#">version</a> | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm                   | <a href="#">vm</a>      |   |



## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    }
  },
}
```

```

"flash_cache": {
  "capacity": 102400000000,
  "device_id": 0,
  "firmware_file": "X9170_O000Z6300NVM",
  "firmware_version": "NA05",
  "hardware_revision": "A1",
  "model": "X1970A",
  "part_number": "119-00207",
  "serial_number": "A22P5061550000187",
  "slot": "6-1",
  "state": "ok"
},
"frus": {
  "id": "string",
  "state": "ok",
  "type": "fan"
},
"memory_size": 1024000000,
"over_temperature": "over"
},
"date": "2019-04-17T11:49:26-04:00",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed"
  },
  "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",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "e1b"
  }
},
```

```

    "type": "fc"
  },
  "model": "FAS3070",
  "name": "node-01",
  "nvram": {
    "battery_state": "battery_ok",
    "id": 0
  },
  "owner": "Example Corp",
  "serial_number": "4048820-60-9",
  "service_processor": {
    "backup": {
      "state": "installed",
      "version": "11.6"
    },
    "firmware_version": "string",
    "ipv4_interface": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    },
    "ipv6_interface": {
      "address": "fd20:8b1e:b255:5011:10:141:4:97",
      "gateway": "fd20:8b1e:b255:5011:10::1",
      "netmask": 64
    },
    "last_update_state": "failed",
    "link_status": "up",
    "mac_address": "string",
    "primary": {
      "state": "installed",
      "version": "11.6"
    },
    "ssh_info": {
      "allowed_addresses": {
      }
    },
    "state": "online",
    "type": "sp"
  },
  "state": "up",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  }
}

```

```

},
"storage_configuration": "unknown",
"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  | <a href="#">job_link</a> |             |

## 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.  |
| 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 | <a href="#">href</a> |             |

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   | <a href="#">node_setup_ip</a> | 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 | <a href="#">_links</a> |                            |
| ip     | <a href="#">ip</a>     | IP information             |
| name   | string                 | The name of the interface. |

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

cpu

CPU information.

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

message

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

failed\_fan

| Name    | Type                    | Description  |
|---------|-------------------------|--|
| count   | integer                 | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | <a href="#">message</a> |  |

message

| Name | Type   | Description  |
|------|--------|--|
| code | string | Error code describing the current condition of power supply. |



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

#### failed\_power\_supply

| Name    | Type                    | Description                          |
|---------|-------------------------|--------------------------------------|
| count   | integer                 | Number of failed power supply units. |
| message | <a href="#">message</a> |                                      |

#### flash\_cache

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

#### frus

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

#### controller

##### Controller information

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

external\_cache

Cache used for buffer management.

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

failure

Indicates the failure code and message.

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

#### giveback

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

| Name    | Type                    | Description                             |
|---------|-------------------------|---|
| failure | <a href="#">failure</a> | Indicates the failure code and message. |
| state   | string                  |   |

#### partners

| Name                   | Type                   | Description |
|------------------------|------------------------|-------------|
| <a href="#">_links</a> | <a href="#">_links</a> |             |
| 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"> <li>• <i>down</i> - Logical HA link is down.</li> <li>• <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port.</li> <li>• <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.</li> <li>• <i>active</i> - Logical HA link is active.</li> <li>• <i>reserved</i> - Logical HA link is active, but the physical link is down.</li> </ul> |

#### takeover

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

| Name    | Type                    | Description                             |
|---------|-------------------------|---|
| failure | <a href="#">failure</a> | 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      | <a href="#">giveback</a> | Represents the state of the node that is giving storage back to its HA partner.                     |

| Name     | Type                              | Description  |
|----------|-----------------------------------|--|
| partners | array[ <a href="#">partners</a> ] | Nodes in this node's High Availability (HA) group.                                     |
| ports    | array[ <a href="#">ports</a> ]    |  |
| takeover | <a href="#">takeover</a>          | 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   | <a href="#">node_setup_ip</a> | The IP configuration for cluster setup. |

#### management\_interfaces

##### Network interface

| Name                   | Type                   | Description                                      |
|------------------------|------------------------|--|
| <a href="#">_links</a> | <a href="#">_links</a> |  |
| ip                     | <a href="#">ip</a>     | 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  |
|------------------------|------------------------|--|
| <a href="#">_links</a> | <a href="#">_links</a> |  |
| 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".<br>"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.<br>"Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp             | string  | The timestamp of the performance data.  |
| uuid                  | string  |   |

#### ports

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

#### metrocluster

#### Metrocluster

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

| Name  | Type         | Description                         |
|-------|--------------|-------------------------------------|
| ports | array[ports] | MetroCluster over IP ports.         |
| type  | string       | The Metrocluster configuration type |

#### nvrाम

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

#### backup

Provides the properties of the service processor backup partition.

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

#### ipv4\_interface

Object to setup an interface along with its default router.

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

#### ipv6\_interface

Object to setup an interface along with its default router.

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

#### primary

Provides the properties of the service processor primary partition.

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

#### ssh\_info

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



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

#### service\_processor

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

| Name     | Type     | Description  |
|----------|----------|--|
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state    | string   |  |
| type     | 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.       |
| 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             | <a href="#">_links</a>                      |   |
| cluster_interface  | <a href="#">cluster_interface</a>           | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[ <a href="#">cluster_interfaces</a> ] |   |
| controller         | <a href="#">controller</a>                  | 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"> <li>• example: 2019-04-17T11:49:26-04:00</li> <li>• format: date-time</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> <li>• x-nullable: true</li> </ul> |
| external_cache        | <a href="#">external_cache</a>                 | Cache used for buffer management.  |
| ha                    | <a href="#">ha</a>                             |  |
| is_spares_low         | boolean  | Specifies whether or not the node is in spares low condition.  |
| location              | string   |  |
| management_interface  | <a href="#">management_interface</a>           | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.   |
| management_interfaces | array[ <a href="#">management_interfaces</a> ] |  |

| Name              | Type                              | Description  |
|-------------------|-----------------------------------|--|
| membership        | string                            | <p>Possible values:</p> <ul style="list-style-type: none"> <li>• <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.</li> <li>• <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.</li> <li>• <i>member</i> - Nodes that are members have successfully joined the cluster.</li> </ul> |
| metric            | <a href="#">metric</a>            | CPU performance for the nodes.   |
| metrocluster      | <a href="#">metrocluster</a>      | Metrocluster   |
| model             | string                            |  |
| name              | string                            |  |
| nvram             | <a href="#">nvram</a>             |  |
| owner             | string                            | Owner of the node.   |
| serial_number     | string                            |  |
| service_processor | <a href="#">service_processor</a> |  |

| Name                  | Type                       | Description   |
|-----------------------|----------------------------|---|
| state                 | string                     | State of the node: <ul style="list-style-type: none"> <li>• <i>up</i> - Node is up and operational.</li> <li>• <i>booting</i> - Node is booting up.</li> <li>• <i>down</i> - Node has stopped or is dumping core.</li> <li>• <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback.</li> <li>• <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.</li> <li>• <i>degraded</i> - Node has one or more critical services offline.</li> <li>• <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state.</li> </ul> |
| statistics            | <a href="#">statistics</a> | Raw CPU performance for the nodes.  |
| storage_configuration | string                     | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> <li>• <i>mixed_path</i></li> <li>• <i>single_path</i></li> <li>• <i>multi_path</i></li> <li>• <i>quad_path</i></li> <li>• <i>mixed_path_ha</i></li> <li>• <i>single_path_ha</i></li> <li>• <i>multi_path_ha</i></li> <li>• <i>quad_path_ha</i></li> <li>• <i>unknown</i></li> </ul>  |
| system_id             | string                     |   |
| system_machine_type   | string                     | OEM system machine type.  |

| Name                 | Type                    | Description   |
|----------------------|-------------------------|---|
| uptime               | integer                 | The total time, in seconds, that the node has been up.  |
| uuid                 | string                  |   |
| vendor_serial_number | string                  | OEM vendor serial number.   |
| version              | <a href="#">version</a> | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm                   | <a href="#">vm</a>      |   |

#### job\_link

| Name                   | Type                   | Description   |
|------------------------|------------------------|---|
| <a href="#">_links</a> | <a href="#">_links</a> |   |
| 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[ <a href="#">error_arguments</a> ] | 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    | Set the force flag to "true" to forcibly remove a node that is down and cannot be brought online to remove its shared resources.<br><br>• 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"> <li>• Default value: 1</li> <li>• Max value: 120</li> <li>• Min value: 0</li> </ul> |

## Response

Status: 202, Accepted

| Name | Type                     | Description |
|------|--------------------------|-------------|
| job  | <a href="#">job_link</a> |             |

## 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.                            |
| 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  |

| Error Code | Description   |
|------------|---|
| 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 | <a href="#">href</a> |             |

job\_link

| Name   | Type                   | Description   |
|--------|------------------------|---|
| _links | <a href="#">_links</a> |   |
| 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[ <a href="#">error_arguments</a> ] | Message arguments                           |
| code      | string                                   | Error code                                  |
| message   | string                                   | Error message                               |
| target    | string                                   | The target parameter that caused the error. |

## Retrieve node information

GET /cluster/nodes/{uuid}

## Introduced In: 9.6

Retrieves information for the node.

## Related ONTAP commands

- `cluster add-node-status`
- `cluster date show`
- `cluster ha show`
- `network interface show`
- `network port show`
- `storage failover show`
- `system controller show`
- `system node show`
- `system node show-discovered`
- `system service-processor network show`
- `system service-processor show`
- `system service-processor ssh show`
- `system service-processor image show`
- `version`

## Parameters

| Name   | Type          | In    | Required | Description  |
|--------|---------------|-------|----------|--|
| uuid   | string        | path  | True     | <ul style="list-style-type: none"><li>• format: uuid</li></ul> |
| fields | array[string] | query | False    | Specify the fields to return.                                  |

## Response

Status: 200, Ok

| Name                            | Type  | Description   |
|---------------------------------|---|---|
| <code>_links</code>             | <a href="#">_links</a>                      |   |
| <code>cluster_interface</code>  | <a href="#">cluster_interface</a>           | The cluster network IP address of the node to be added. |
| <code>cluster_interfaces</code> | array[ <a href="#">cluster_interfaces</a> ] |   |

| Name                  | Type   | Description  |
|-----------------------|--|--|
| controller            | <a href="#">controller</a>                     | 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"> <li>• example: 2019-04-17T11:49:26-04:00</li> <li>• format: date-time</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> <li>• x-nullable: true</li> </ul> |
| external_cache        | <a href="#">external_cache</a>                 | Cache used for buffer management.  |
| ha                    | <a href="#">ha</a>                             |  |
| is_spares_low         | boolean  | Specifies whether or not the node is in spares low condition.  |
| location              | string   |  |
| management_interface  | <a href="#">management_interface</a>           | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.   |
| management_interfaces | array[ <a href="#">management_interfaces</a> ] |  |

| Name              | Type                              | Description  |
|-------------------|-----------------------------------|--|
| membership        | string                            | <p>Possible values:</p> <ul style="list-style-type: none"> <li>• <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.</li> <li>• <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.</li> <li>• <i>member</i> - Nodes that are members have successfully joined the cluster.</li> </ul> |
| metric            | <a href="#">metric</a>            | CPU performance for the nodes.   |
| metrocluster      | <a href="#">metrocluster</a>      | Metrocluster   |
| model             | string                            |  |
| name              | string                            |  |
| nvram             | <a href="#">nvram</a>             |  |
| owner             | string                            | Owner of the node.   |
| serial_number     | string                            |  |
| service_processor | <a href="#">service_processor</a> |  |

| Name                  | Type                       | Description   |
|-----------------------|----------------------------|---|
| state                 | string                     | State of the node: <ul style="list-style-type: none"> <li>• <i>up</i> - Node is up and operational.</li> <li>• <i>booting</i> - Node is booting up.</li> <li>• <i>down</i> - Node has stopped or is dumping core.</li> <li>• <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback.</li> <li>• <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.</li> <li>• <i>degraded</i> - Node has one or more critical services offline.</li> <li>• <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state.</li> </ul> |
| statistics            | <a href="#">statistics</a> | Raw CPU performance for the nodes.  |
| storage_configuration | string                     | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> <li>• <i>mixed_path</i></li> <li>• <i>single_path</i></li> <li>• <i>multi_path</i></li> <li>• <i>quad_path</i></li> <li>• <i>mixed_path_ha</i></li> <li>• <i>single_path_ha</i></li> <li>• <i>multi_path_ha</i></li> <li>• <i>quad_path_ha</i></li> <li>• <i>unknown</i></li> </ul>  |
| system_id             | string                     |   |
| system_machine_type   | string                     | OEM system machine type.  |
| uptime                | integer                    | The total time, in seconds, that the node has been up.  |



| Name                 | Type                    | Description   |
|----------------------|-------------------------|---|
| uuid                 | string                  |   |
| vendor_serial_number | string                  | OEM vendor serial number.   |
| version              | <a href="#">version</a> | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm                   | <a href="#">vm</a>      |   |

## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    }
  },
}
```

```

"flash_cache": {
  "capacity": 102400000000,
  "device_id": 0,
  "firmware_file": "X9170_O000Z6300NVM",
  "firmware_version": "NA05",
  "hardware_revision": "A1",
  "model": "X1970A",
  "part_number": "119-00207",
  "serial_number": "A22P5061550000187",
  "slot": "6-1",
  "state": "ok"
},
"frus": {
  "id": "string",
  "state": "ok",
  "type": "fan"
},
"memory_size": 1024000000,
"over_temperature": "over"
},
"date": "2019-04-17T11:49:26-04:00",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed"
  },
  "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",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "e1b"
  }
},

```

```
  "type": "fc"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "battery_ok",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "backup": {
    "state": "installed",
    "version": "11.6"
  },
  "firmware_version": "string",
  "ipv4_interface": {
    "address": "10.10.10.7",
    "gateway": "10.1.1.1",
    "netmask": "24"
  },
  "ipv6_interface": {
    "address": "fd20:8b1e:b255:5011:10:141:4:97",
    "gateway": "fd20:8b1e:b255:5011:10::1",
    "netmask": 64
  },
  "last_update_state": "failed",
  "link_status": "up",
  "mac_address": "string",
  "primary": {
    "state": "installed",
    "version": "11.6"
  },
  "ssh_info": {
    "allowed_addresses": {
    }
  },
  "state": "online",
  "type": "sp"
},
"state": "up",
"statistics": {
  "processor_utilization_base": 12345123,
  "processor_utilization_raw": 13,
  "status": "ok",
  "timestamp": "2017-01-25T11:20:13Z"
```

```

},
"storage_configuration": "unknown",
"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 | <a href="#">href</a> |             |

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   | <a href="#">node_setup_ip</a> | 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 | <a href="#">_links</a> |                            |
| ip     | <a href="#">ip</a>     | IP information             |
| name   | string                 | The name of the interface. |



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

cpu

CPU information.

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

message

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

failed\_fan

| Name    | Type                    | Description  |
|---------|-------------------------|--|
| count   | integer                 | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | <a href="#">message</a> |  |

message

| Name | Type   | Description  |
|------|--------|--|
| code | string | Error code describing the current condition of power supply. |

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

#### failed\_power\_supply

| Name    | Type                    | Description                          |
|---------|-------------------------|--------------------------------------|
| count   | integer                 | Number of failed power supply units. |
| message | <a href="#">message</a> |                                      |

#### flash\_cache

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

#### frus

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

#### controller

Controller information

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

#### external\_cache

Cache used for buffer management.

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

#### failure

Indicates the failure code and message.

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

#### giveback

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

| Name    | Type                    | Description                             |
|---------|-------------------------|---|
| failure | <a href="#">failure</a> | Indicates the failure code and message. |
| state   | string                  |   |

#### partners

| Name   | Type                   | Description |
|--------|------------------------|-------------|
| _links | <a href="#">_links</a> |             |
| 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"> <li>• <i>down</i> - Logical HA link is down.</li> <li>• <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port.</li> <li>• <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.</li> <li>• <i>active</i> - Logical HA link is active.</li> <li>• <i>reserved</i> - Logical HA link is active, but the physical link is down.</li> </ul> |

#### takeover

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

| Name    | Type                    | Description                             |
|---------|-------------------------|---|
| failure | <a href="#">failure</a> | 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      | <a href="#">giveback</a> | Represents the state of the node that is giving storage back to its HA partner.                     |

| Name     | Type                              | Description  |
|----------|-----------------------------------|--|
| partners | array[ <a href="#">partners</a> ] | Nodes in this node's High Availability (HA) group.                                     |
| ports    | array[ <a href="#">ports</a> ]    |  |
| takeover | <a href="#">takeover</a>          | 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   | <a href="#">node_setup_ip</a> | The IP configuration for cluster setup. |

#### management\_interfaces

##### Network interface

| Name   | Type                   | Description                                      |
|--------|------------------------|--|
| _links | <a href="#">_links</a> |  |
| ip     | <a href="#">ip</a>     | 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   | <a href="#">_links</a> |  |
| 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".<br>"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.<br>"Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp             | string  | The timestamp of the performance data.  |
| uuid                  | string  |   |

#### ports

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

#### metrocluster

#### Metrocluster

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

| Name  | Type         | Description                         |
|-------|--------------|-------------------------------------|
| ports | array[ports] | MetroCluster over IP ports.         |
| type  | string       | The Metrocluster configuration type |

#### nvrाम

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

#### backup

Provides the properties of the service processor backup partition.

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

#### ipv4\_interface

Object to setup an interface along with its default router.



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

#### ipv6\_interface

Object to setup an interface along with its default router.

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

#### primary

Provides the properties of the service processor primary partition.

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

#### ssh\_info

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

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

#### service\_processor

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

| Name     | Type     | Description  |
|----------|----------|--|
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state    | string   |  |
| type     | 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".<br>"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.<br>"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.       |
| 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[ <a href="#">error_arguments</a> ] | Message arguments                           |
| code      | string                                   | Error code                                  |
| message   | string                                   | Error message                               |
| target    | string                                   | The target parameter that caused the error. |

# Update node information

PATCH /cluster/nodes/{uuid}

**Introduced In:** 9.6

Updates the node information or performs shutdown/reboot actions on a node.

## Related ONTAP commands

- cluster ha modify
- storage failover modify
- system node modify
- system node reboot
- system node power off
- system node power on
- system service-processor network modify
- system service-processor reboot-sp
- system service-processor image modify

## Parameters

| Name | Type   | In   | Required | Description  |
|------|--------|------|----------|--|
| uuid | string | path | True     | <ul style="list-style-type: none"><li>• format: uuid</li></ul> |

| Name                   | Type   | In    | Required | Description  |
|------------------------|--------|-------|----------|--|
| action                 | string | query | False    | <p>The shutdown action shuts the node down and transfers storage control to its HA group if storage failover is enabled. The reboot action reboots the node and transfers storage control to its HA group if storage failover is enabled. The giveback action transfers storage control back to the owner from its HA group. The "power_off" action shuts the node down with the assistance of the service processor. The "power_on" action restores power to the node with the assistance of the service processor.</p> <ul style="list-style-type: none"> <li>• enum:<br/>["shutdown", "reboot", "giveback", "power_off", "power_on"]</li> </ul> |
| shutdown_reboot_reason | string | query | False    | <p>Indicates the reason for the reboot or shutdown. This only applies when an action of reboot or shutdown is provided.</p>  |

| Name                             | Type    | In    | Required | Description   |
|----------------------------------|---------|-------|----------|---|
| allow_data_outage                | boolean | query | False    | <p>This only applies when an action of reboot or shutdown is provided. It allows storage failover to be bypassed along with any failures related to maintaining quorum in the cluster.</p> <ul style="list-style-type: none"> <li>• Default value:</li> </ul> |
| service_processor.firmware_image | string  | query | False    | <p>Service processor image to boot with after a reboot.</p> <ul style="list-style-type: none"> <li>• Introduced in: 9.10</li> <li>• enum: ["primary", "backup"]</li> </ul>  |
| service_processor.action         | string  | query | False    | <p>Action used to reboot the service processor (SP).</p> <ul style="list-style-type: none"> <li>• Introduced in: 9.10</li> <li>• enum: ["reboot"]</li> </ul>  |

| 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"> <li>• Default value: 1</li> <li>• Max value: 120</li> <li>• Min value: 0</li> </ul> |

## Request Body

| Name               | Type  | Description   |
|--------------------|---|---|
| _links             | <a href="#">_links</a>                      |   |
| cluster_interface  | <a href="#">cluster_interface</a>           | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[ <a href="#">cluster_interfaces</a> ] |   |
| controller         | <a href="#">controller</a>                  | 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"> <li>• example: 2019-04-17T11:49:26-04:00</li> <li>• format: date-time</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> <li>• x-nullable: true</li> </ul> |
| external_cache        | <a href="#">external_cache</a>                 | Cache used for buffer management.  |
| ha                    | <a href="#">ha</a>                             |  |
| is_spare_low          | boolean  | Specifies whether or not the node is in spares low condition.  |
| location              | string   |  |
| management_interface  | <a href="#">management_interface</a>           | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.   |
| management_interfaces | array[ <a href="#">management_interfaces</a> ] |  |

| Name              | Type                              | Description  |
|-------------------|-----------------------------------|--|
| membership        | string                            | <p>Possible values:</p> <ul style="list-style-type: none"> <li>• <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.</li> <li>• <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.</li> <li>• <i>member</i> - Nodes that are members have successfully joined the cluster.</li> </ul> |
| metric            | <a href="#">metric</a>            | CPU performance for the nodes.   |
| metrocluster      | <a href="#">metrocluster</a>      | Metrocluster   |
| model             | string                            |  |
| name              | string                            |  |
| nvrnm             | <a href="#">nvrnm</a>             |  |
| owner             | string                            | Owner of the node.   |
| serial_number     | string                            |  |
| service_processor | <a href="#">service_processor</a> |  |

| Name                  | Type                       | Description   |
|-----------------------|----------------------------|---|
| state                 | string                     | State of the node: <ul style="list-style-type: none"> <li>• <i>up</i> - Node is up and operational.</li> <li>• <i>booting</i> - Node is booting up.</li> <li>• <i>down</i> - Node has stopped or is dumping core.</li> <li>• <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback.</li> <li>• <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.</li> <li>• <i>degraded</i> - Node has one or more critical services offline.</li> <li>• <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state.</li> </ul> |
| statistics            | <a href="#">statistics</a> | Raw CPU performance for the nodes.  |
| storage_configuration | string                     | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> <li>• <i>mixed_path</i></li> <li>• <i>single_path</i></li> <li>• <i>multi_path</i></li> <li>• <i>quad_path</i></li> <li>• <i>mixed_path_ha</i></li> <li>• <i>single_path_ha</i></li> <li>• <i>multi_path_ha</i></li> <li>• <i>quad_path_ha</i></li> <li>• <i>unknown</i></li> </ul>  |
| system_id             | string                     |   |
| system_machine_type   | string                     | OEM system machine type.  |
| uptime                | integer                    | The total time, in seconds, that the node has been up.  |

| Name                 | Type                    | Description   |
|----------------------|-------------------------|---|
| uuid                 | string                  |   |
| vendor_serial_number | string                  | OEM vendor serial number.   |
| version              | <a href="#">version</a> | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm                   | <a href="#">vm</a>      |   |

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "cluster_interface": {
    "ip": {
      "address": "10.10.10.7"
    }
  },
  "cluster_interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "controller": {
    "board": "System Board XXVIII",
    "cpu": {
      "count": 20,
      "firmware_release": "string",
      "processor": "string"
    },
    "failed_fan": {
      "count": 1,
      "message": {
        "code": "111411207",
        "message": "There are no failed fans."
      }
    },
    "failed_power_supply": {
      "count": 1,
      "message": {
        "code": "111411208",
        "message": "There are no failed power supplies."
      }
    }
  },
}
```

```

"flash_cache": {
  "capacity": 102400000000,
  "device_id": 0,
  "firmware_file": "X9170_O000Z6300NVM",
  "firmware_version": "NA05",
  "hardware_revision": "A1",
  "model": "X1970A",
  "part_number": "119-00207",
  "serial_number": "A22P5061550000187",
  "slot": "6-1",
  "state": "ok"
},
"frus": {
  "id": "string",
  "state": "ok",
  "type": "fan"
},
"memory_size": 1024000000,
"over_temperature": "over"
},
"date": "2019-04-17T11:49:26-04:00",
"external_cache": {
  "is_enabled": 1,
  "is_hya_enabled": 1,
  "is_rewarm_enabled": 1
},
"ha": {
  "giveback": {
    "failure": {
      "code": 852126,
      "message": "Failed to initiate giveback. Run the \"storage failover show-giveback\" command for more information."
    },
    "state": "failed"
  },
  "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",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"metrocluster": {
  "ports": {
    "name": "e1b"
  }
},
```

```

    "type": "fc"
  },
  "model": "FAS3070",
  "name": "node-01",
  "nvram": {
    "battery_state": "battery_ok",
    "id": 0
  },
  "owner": "Example Corp",
  "serial_number": "4048820-60-9",
  "service_processor": {
    "backup": {
      "state": "installed",
      "version": "11.6"
    },
    "firmware_version": "string",
    "ipv4_interface": {
      "address": "10.10.10.7",
      "gateway": "10.1.1.1",
      "netmask": "24"
    },
    "ipv6_interface": {
      "address": "fd20:8b1e:b255:5011:10:141:4:97",
      "gateway": "fd20:8b1e:b255:5011:10::1",
      "netmask": 64
    },
    "last_update_state": "failed",
    "link_status": "up",
    "mac_address": "string",
    "primary": {
      "state": "installed",
      "version": "11.6"
    },
    "ssh_info": {
      "allowed_addresses": {
      }
    },
    "state": "online",
    "type": "sp"
  },
  "state": "up",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  }
}

```



```

},
"storage_configuration": "unknown",
"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  | <a href="#">job_link</a> |             |

## Example response

```

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

```

## Error

Status: Default

## ONTAP Error Response Codes

| Error Code | Description  |
|------------|--|
| 852046     | HA partner node  |
| 852115     | The reboot/shutdown is prevented because LIFs cannot be moved away from the node   |
| 3604514    | A reboot or shutdown request is already in progress.   |
| 3604515    | Reboot or shutdown of all nodes results in data service failure and client disruption for the entire cluster. Use "allow-data-outage=true" to bypass this check. |
| 9240606    | The reboot/shutdown is prevented due to quorum warnings.   |

| 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 | <a href="#">href</a> |             |

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   | <a href="#">node_setup_ip</a> | 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 | <a href="#">_links</a> |                            |
| ip     | <a href="#">ip</a>     | IP information             |
| name   | string                 | The name of the interface. |

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

cpu

CPU information.

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

message

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

failed\_fan

| Name    | Type                    | Description  |
|---------|-------------------------|--|
| count   | integer                 | Specifies a count of the number of chassis fans that are not operating within the recommended RPM range. |
| message | <a href="#">message</a> |  |

message

| Name | Type   | Description  |
|------|--------|--|
| code | string | Error code describing the current condition of power supply. |

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

#### failed\_power\_supply

| Name    | Type                    | Description                          |
|---------|-------------------------|--------------------------------------|
| count   | integer                 | Number of failed power supply units. |
| message | <a href="#">message</a> |                                      |

#### flash\_cache

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

#### frus

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

#### controller

Controller information

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

external\_cache

Cache used for buffer management.

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

failure

Indicates the failure code and message.

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

#### giveback

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

| Name    | Type                    | Description                             |
|---------|-------------------------|---|
| failure | <a href="#">failure</a> | Indicates the failure code and message. |
| state   | string                  |   |

#### partners

| Name   | Type                   | Description |
|--------|------------------------|-------------|
| _links | <a href="#">_links</a> |             |
| 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"> <li>• <i>down</i> - Logical HA link is down.</li> <li>• <i>initialized</i> - Logical HA link is initialized. The physical link is up, but the subnet manager hasn't started to configure the port.</li> <li>• <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.</li> <li>• <i>active</i> - Logical HA link is active.</li> <li>• <i>reserved</i> - Logical HA link is active, but the physical link is down.</li> </ul> |

#### takeover

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

| Name    | Type                    | Description                             |
|---------|-------------------------|---|
| failure | <a href="#">failure</a> | 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      | <a href="#">giveback</a> | Represents the state of the node that is giving storage back to its HA partner.                     |



| Name     | Type                              | Description  |
|----------|-----------------------------------|--|
| partners | array[ <a href="#">partners</a> ] | Nodes in this node's High Availability (HA) group.                                     |
| ports    | array[ <a href="#">ports</a> ]    |  |
| takeover | <a href="#">takeover</a>          | 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   | <a href="#">node_setup_ip</a> | The IP configuration for cluster setup. |

#### management\_interfaces

##### Network interface

| Name   | Type                   | Description                                      |
|--------|------------------------|--|
| _links | <a href="#">_links</a> |  |
| ip     | <a href="#">ip</a>     | 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   | <a href="#">_links</a> |  |
| 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".<br>"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.<br>"Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data. |
| timestamp             | string  | The timestamp of the performance data.  |
| uuid                  | string  |   |

#### ports

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

#### metrocluster

#### Metrocluster

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

| Name  | Type         | Description                         |
|-------|--------------|-------------------------------------|
| ports | array[ports] | MetroCluster over IP ports.         |
| type  | string       | The Metrocluster configuration type |

#### nvrाम

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

#### backup

Provides the properties of the service processor backup partition.

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

#### ipv4\_interface

Object to setup an interface along with its default router.

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

#### ipv6\_interface

Object to setup an interface along with its default router.

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

#### primary

Provides the properties of the service processor primary partition.

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

#### ssh\_info

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

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

#### service\_processor

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

| Name     | Type     | Description  |
|----------|----------|--|
| ssh_info | ssh_info | Service processor SSH allowed IP address configuration applied across the cluster. |
| state    | string   |  |
| type     | 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.       |
| 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             | <a href="#">_links</a>                      |   |
| cluster_interface  | <a href="#">cluster_interface</a>           | The cluster network IP address of the node to be added. |
| cluster_interfaces | array[ <a href="#">cluster_interfaces</a> ] |   |
| controller         | <a href="#">controller</a>                  | 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"> <li>• example: 2019-04-17T11:49:26-04:00</li> <li>• format: date-time</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> <li>• x-nullable: true</li> </ul> |
| external_cache        | <a href="#">external_cache</a>                 | Cache used for buffer management.  |
| ha                    | <a href="#">ha</a>                             |  |
| is_spares_low         | boolean  | Specifies whether or not the node is in spares low condition.  |
| location              | string   |  |
| management_interface  | <a href="#">management_interface</a>           | The management interface of the node to be added. The subnet mask is set based on the management interface of the cluster or the management interfaces of other nodes.   |
| management_interfaces | array[ <a href="#">management_interfaces</a> ] |  |



| Name              | Type                              | Description  |
|-------------------|-----------------------------------|--|
| membership        | string                            | <p>Possible values:</p> <ul style="list-style-type: none"> <li>• <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.</li> <li>• <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.</li> <li>• <i>member</i> - Nodes that are members have successfully joined the cluster.</li> </ul> |
| metric            | <a href="#">metric</a>            | CPU performance for the nodes.   |
| metrocluster      | <a href="#">metrocluster</a>      | Metrocluster   |
| model             | string                            |  |
| name              | string                            |  |
| nvrn              | <a href="#">nvrn</a>              |  |
| owner             | string                            | Owner of the node.   |
| serial_number     | string                            |  |
| service_processor | <a href="#">service_processor</a> |  |

| Name                  | Type                       | Description   |
|-----------------------|----------------------------|---|
| state                 | string                     | State of the node: <ul style="list-style-type: none"> <li>• <i>up</i> - Node is up and operational.</li> <li>• <i>booting</i> - Node is booting up.</li> <li>• <i>down</i> - Node has stopped or is dumping core.</li> <li>• <i>taken_over</i> - Node has been taken over by its HA partner and is not yet waiting for giveback.</li> <li>• <i>waiting_for_giveback</i> - Node has been taken over by its HA partner and is waiting for the HA partner to giveback disks.</li> <li>• <i>degraded</i> - Node has one or more critical services offline.</li> <li>• <i>unknown</i> - Node or its HA partner cannot be contacted and there is no information on the node's state.</li> </ul> |
| statistics            | <a href="#">statistics</a> | Raw CPU performance for the nodes.  |
| storage_configuration | string                     | The storage configuration in the system. Possible values: <ul style="list-style-type: none"> <li>• <i>mixed_path</i></li> <li>• <i>single_path</i></li> <li>• <i>multi_path</i></li> <li>• <i>quad_path</i></li> <li>• <i>mixed_path_ha</i></li> <li>• <i>single_path_ha</i></li> <li>• <i>multi_path_ha</i></li> <li>• <i>quad_path_ha</i></li> <li>• <i>unknown</i></li> </ul>  |
| system_id             | string                     |   |
| system_machine_type   | string                     | OEM system machine type.  |

| Name                 | Type                    | Description   |
|----------------------|-------------------------|---|
| uptime               | integer                 | The total time, in seconds, that the node has been up.  |
| uuid                 | string                  |   |
| vendor_serial_number | string                  | OEM vendor serial number.   |
| version              | <a href="#">version</a> | This returns the cluster version information. When the cluster has more than one node, the cluster version is equivalent to the lowest of generation, major, and minor versions on all nodes. |
| vm                   | <a href="#">vm</a>      |   |

#### job\_link

| Name                   | Type                   | Description   |
|------------------------|------------------------|---|
| <a href="#">_links</a> | <a href="#">_links</a> |   |
| 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[ <a href="#">error_arguments</a> ] | 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                     |
|-----------------------|---------|-------|----------|---------------------------------|
| status                | string  | query | False    | Filter by status                |
| processor_utilization | integer | query | False    | Filter by processor_utilization |
| timestamp             | string  | query | False    | Filter by timestamp             |
| duration              | string  | query | False    | Filter by duration              |
| uuid                  | string  | path  | True     | Unique identifier of the node.  |

| Name     | Type   | In    | Required | Description   |
|----------|--------|-------|----------|---|
| 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"> <li>• 1h: Metrics over the most recent hour sampled over 15 seconds.</li> <li>• 1d: Metrics over the most recent day sampled over 5 minutes.</li> <li>• 1w: Metrics over the most recent week sampled over 30 minutes.</li> <li>• 1m: Metrics over the most recent month sampled over 2 hours.</li> <li>• 1y: Metrics over the most recent year sampled over a day.</li> <li>• Default value: 1</li> <li>• enum: ["1h", "1d", "1w", "1m", "1y"]</li> </ul> |

| 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"> <li>• Default value: 1</li> <li>• Max value: 120</li> <li>• Min value: 0</li> </ul> |
| 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      | <a href="#">_links</a>           |                   |
| num_records | integer                          | Number of records |
| records     | array[ <a href="#">records</a> ] |                   |

## 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",
    "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 | <a href="#">href</a> |             |
| self | <a href="#">href</a> |             |

\_links

| Name | Type                 | Description |
|------|----------------------|-------------|
| self | <a href="#">href</a> |             |

records

CPU performance for the nodes.

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

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

#### error\_arguments

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

#### error

| Name      | Type                                     | Description       |
|-----------|--|-------------------|
| arguments | array[ <a href="#">error_arguments</a> ] | Message arguments |
| code      | string                                   | Error code        |
| message   | string                                   | Error message     |

| <b>Name</b> | <b>Type</b> | <b>Description</b>                          |
|-------------|-------------|---|
| target      | string      | The target parameter that caused the error. |

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