



# Manage cluster nodes

## ONTAP 9.11.1 REST API reference

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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.

---

## Deleting a node from a cluster

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

---

## Node state

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

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

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

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

---

## HA

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

### Takeover

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

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

Possible values for takeover failure code and messages are:

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

### Giveback

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

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

Possible values for giveback failure codes and messages are:

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

---

## Performance monitoring

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

---

## Examples

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

### Adding a single node with a minimal configuration

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

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

---

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

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

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

---

## Modifying a cluster-wide configuration

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

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

## Shutting down a node

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

## Powering off a node using SP assistance

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

## Deleting a node from a cluster

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

## Force a node deletion from a cluster

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

## Retrieving the state of all nodes in a cluster



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

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

---

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

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

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

---

### Retrieving statistics and metric for a node

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

```

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

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

```

## Retrieving takeover and giveback failure codes and messages

```

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

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

```

```

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

```

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

---

### Retrieving external cache information for a node

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

```

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

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

```

# Retrieve 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>uuid</code>	string	query	False	Filter by <code>uuid</code>
<code>system_id</code>	string	query	False	Filter by <code>system_id</code>  • Introduced in: 9.7
<code>owner</code>	string	query	False	Filter by <code>owner</code>  • Introduced in: 9.9
<code>hw_assist.status.enabled</code>	boolean	query	False	Filter by <code>hw_assist.status.enabled</code>  • Introduced in: 9.11
<code>hw_assist.status.partner.port</code>	integer	query	False	Filter by <code>hw_assist.status.partner.port</code>  • Introduced in: 9.11

Name	Type	In	Required	Description
hw_assist.status.partner.state	string	query	False	Filter by hw_assist.status.partner.state  • Introduced in: 9.11
hw_assist.status.partner.ip	string	query	False	Filter by hw_assist.status.partner.ip  • Introduced in: 9.11
hw_assist.status.local.port	integer	query	False	Filter by hw_assist.status.local.port  • Introduced in: 9.11
hw_assist.status.local.state	string	query	False	Filter by hw_assist.status.local.state  • Introduced in: 9.11
hw_assist.status.local.ip	string	query	False	Filter by hw_assist.status.local.ip  • Introduced in: 9.11
vm.update_domain	string	query	False	Filter by vm.update_domain  • Introduced in: 9.11
vm.fault_domain	string	query	False	Filter by vm.fault_domain  • Introduced in: 9.11



Name	Type	In	Required	Description
vm.account_id	string	query	False	Filter by vm.account_id  • Introduced in: 9.11
vm.primary_ip	string	query	False	Filter by vm.primary_ip  • Introduced in: 9.11
vm.deployment_id	string	query	False	Filter by vm.deployment_id  • Introduced in: 9.11
vm.instance_id	string	query	False	Filter by vm.instance_id  • Introduced in: 9.11
vm.provider_type	string	query	False	Filter by vm.provider_type  • Introduced in: 9.7
is_capacity_optimized	boolean	query	False	Filter by is_capacity_optimized  • Introduced in: 9.11
storage_configuration	string	query	False	Filter by storage_configuration  • Introduced in: 9.9

Name	Type	In	Required	Description
external_cache.pcs_size	integer	query	False	Filter by external_cache.pcs_size  • Introduced in: 9.10
external_cache.is_enabled	boolean	query	False	Filter by external_cache.is_enabled  • Introduced in: 9.10
external_cache.is_hya_enabled	boolean	query	False	Filter by external_cache.is_hya_enabled  • Introduced in: 9.10
external_cache.is_rewarm_enabled	boolean	query	False	Filter by external_cache.is_rewarm_enabled  • Introduced in: 9.10
is_all_flash_optimized	boolean	query	False	Filter by is_all_flash_optimized  • Introduced in: 9.11
is_performance_optimized	boolean	query	False	Filter by is_performance_optimized  • Introduced in: 9.11
date	string	query	False	Filter by date

Name	Type	In	Required	Description
is_all_flash_select_optimized	boolean	query	False	Filter by is_all_flash_select_optimized  • Introduced in: 9.11
ha.interconnect.adapter	string	query	False	Filter by ha.interconnect.adapter  • Introduced in: 9.11
ha.interconnect.state	string	query	False	Filter by ha.interconnect.state  • Introduced in: 9.11
ha.giveback.status.error.message	string	query	False	Filter by ha.giveback.status.error.message  • Introduced in: 9.11
ha.giveback.status.error.code	string	query	False	Filter by ha.giveback.status.error.code  • Introduced in: 9.11
ha.giveback.status.aggregate.uuid	string	query	False	Filter by ha.giveback.status.aggregate.uuid  • Introduced in: 9.11
ha.giveback.status.aggregate.name	string	query	False	Filter by ha.giveback.status.aggregate.name  • Introduced in: 9.11

Name	Type	In	Required	Description
ha.giveback.status.state	string	query	False	Filter by ha.giveback.status.state  • Introduced in: 9.11
ha.giveback.state	string	query	False	Filter by ha.giveback.state  • Introduced in: 9.7
ha.giveback.failure.message	string	query	False	Filter by ha.giveback.failure.message  • Introduced in: 9.7
ha.giveback.failure.code	integer	query	False	Filter by ha.giveback.failure.code  • Introduced in: 9.7
ha.auto_giveback	boolean	query	False	Filter by ha.auto_giveback
ha.ports.state	string	query	False	Filter by ha.ports.state  • Introduced in: 9.7
ha.ports.number	integer	query	False	Filter by ha.ports.number  • Introduced in: 9.7
ha.enabled	boolean	query	False	Filter by ha.enabled

Name	Type	In	Required	Description
ha.takeover.failure.message	string	query	False	Filter by ha.takeover.failure.message  • Introduced in: 9.7
ha.takeover.failure.code	integer	query	False	Filter by ha.takeover.failure.code  • Introduced in: 9.7
ha.takeover.state	string	query	False	Filter by ha.takeover.state  • Introduced in: 9.7
ha.partners.uuid	string	query	False	Filter by ha.partners.uuid
ha.partners.name	string	query	False	Filter by ha.partners.name
statistics.status	string	query	False	Filter by statistics.status  • Introduced in: 9.8
statistics.timestamp	string	query	False	Filter by statistics.timestamp  • Introduced in: 9.8
statistics.processor_utilization_raw	integer	query	False	Filter by statistics.processor_utilization_raw  • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.processor_utilization_base	integer	query	False	Filter by statistics.processor_utilization_base  • Introduced in: 9.8
is_spares_low	boolean	query	False	Filter by is_spares_low  • Introduced in: 9.10
serial_number	string	query	False	Filter by serial_number
controller.over_temperature	string	query	False	Filter by controller.over_temperature
controller.failed_fan.count	integer	query	False	Filter by controller.failed_fan.count  • Introduced in: 9.9
controller.failed_fan.message.message	string	query	False	Filter by controller.failed_fan.message.message  • Introduced in: 9.9
controller.failed_fan.message.code	string	query	False	Filter by controller.failed_fan.message.code  • Introduced in: 9.9
controller.board	string	query	False	Filter by controller.board  • Introduced in: 9.9

Name	Type	In	Required	Description
controller.memory_size	integer	query	False	Filter by controller.memory_size  • Introduced in: 9.9
controller.frus.type	string	query	False	Filter by controller.frus.type
controller.frus.state	string	query	False	Filter by controller.frus.state
controller.frus.id	string	query	False	Filter by controller.frus.id
controller.failed_power_supply.message.message	string	query	False	Filter by controller.failed_power_supply.message.message  • Introduced in: 9.9
controller.failed_power_supply.message.code	string	query	False	Filter by controller.failed_power_supply.message.code  • Introduced in: 9.9
controller.failed_power_supply.count	integer	query	False	Filter by controller.failed_power_supply.count  • Introduced in: 9.9
controller.cpu.count	integer	query	False	Filter by controller.cpu.count  • Introduced in: 9.9

Name	Type	In	Required	Description
controller.cpu.firmware_release	string	query	False	Filter by controller.cpu.firmware_release  • Introduced in: 9.9
controller.cpu.processor	string	query	False	Filter by controller.cpu.processor  • Introduced in: 9.9
controller.flash_cache.serial_number	string	query	False	Filter by controller.flash_cache.serial_number
controller.flash_cache.model	string	query	False	Filter by controller.flash_cache.model
controller.flash_cache.capacity	integer	query	False	Filter by controller.flash_cache.capacity
controller.flash_cache.part_number	string	query	False	Filter by controller.flash_cache.part_number
controller.flash_cache.firmware_file	string	query	False	Filter by controller.flash_cache.firmware_file  • Introduced in: 9.9
controller.flash_cache.firmware_version	string	query	False	Filter by controller.flash_cache.firmware_version
controller.flash_cache.state	string	query	False	Filter by controller.flash_cache.state
controller.flash_cache.hardware_revision	string	query	False	Filter by controller.flash_cache.hardware_revision



Name	Type	In	Required	Description
controller.flash_cache.device_id	integer	query	False	Filter by controller.flash_cache.device_id  • Introduced in: 9.9
controller.flash_cache.slot	string	query	False	Filter by controller.flash_cache.slot
metrocluster.ports.name	string	query	False	Filter by metrocluster.ports.name  • Introduced in: 9.8
metrocluster.type	string	query	False	Filter by metrocluster.type  • Introduced in: 9.8
metrocluster.custom_vlan_capable	boolean	query	False	Filter by metrocluster.custom_vlan_capable  • Introduced in: 9.8
cluster_interfaces.uuid	string	query	False	Filter by cluster_interfaces.uuid
cluster_interfaces.ip.address	string	query	False	Filter by cluster_interfaces.ip.address
cluster_interfaces.name	string	query	False	Filter by cluster_interfaces.name
management_interfaces.uuid	string	query	False	Filter by management_interfaces.uuid

Name	Type	In	Required	Description
management_interfaces.ip.address	string	query	False	Filter by management_interfaces.ip.address
management_interfaces.name	string	query	False	Filter by management_interfaces.name
nvr.am.id	integer	query	False	Filter by nvr.am.id  • Introduced in: 9.9
nvr.am.battery_state	string	query	False	Filter by nvr.am.battery_state  • Introduced in: 9.9
uptime	integer	query	False	Filter by uptime
membership	string	query	False	Filter by membership
version.full	string	query	False	Filter by version.full
version.patch	string	query	False	Filter by version.patch  • Introduced in: 9.11
version.generation	integer	query	False	Filter by version.generation
version.major	integer	query	False	Filter by version.major
version.minor	integer	query	False	Filter by version.minor
name	string	query	False	Filter by name

Name	Type	In	Required	Description
service_processor.last_update_state	string	query	False	Filter by service_processor.last_update_state  • Introduced in: 9.10
service_processor.dhcp_enabled	boolean	query	False	Filter by service_processor.dhcp_enabled
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.ipv4_interface.address	string	query	False	Filter by service_processor.ipv4_interface.address
service_processor.firmware_version	string	query	False	Filter by service_processor.firmware_version
service_processor.ssh_info.allowed_addresses	string	query	False	Filter by service_processor.ssh_info.allowed_addresses  • Introduced in: 9.10
service_processor.backup.state	string	query	False	Filter by service_processor.backup.state  • Introduced in: 9.10

Name	Type	In	Required	Description
service_processor.backup.is_current	boolean	query	False	Filter by service_processor.backup.is_current  • Introduced in: 9.10
service_processor.backup.version	string	query	False	Filter by service_processor.backup.version  • Introduced in: 9.10
service_processor.is_ip_configured	boolean	query	False	Filter by service_processor.is_ip_configured  • Introduced in: 9.10
service_processor.ipv6_interface.gateway	string	query	False	Filter by service_processor.ipv6_interface.gateway
service_processor.ipv6_interface.netmask	integer	query	False	Filter by service_processor.ipv6_interface.netmask
service_processor.ipv6_interface.address	string	query	False	Filter by service_processor.ipv6_interface.address
service_processor.autoupdate_enabled	boolean	query	False	Filter by service_processor.autoupdate_enabled  • Introduced in: 9.10
service_processor.type	string	query	False	Filter by service_processor.type  • Introduced in: 9.10

Name	Type	In	Required	Description
service_processor.a pi_service.port	integer	query	False	Filter by service_processor.a pi_service.port  • Introduced in: 9.11
service_processor.a pi_service.enabled	boolean	query	False	Filter by service_processor.a pi_service.enabled  • Introduced in: 9.11
service_processor.a pi_service.limit_acce ss	boolean	query	False	Filter by service_processor.a pi_service.limit_acce ss  • Introduced in: 9.11
service_processor.m ac_address	string	query	False	Filter by service_processor.m ac_address
service_processor.st ate	string	query	False	Filter by service_processor.st ate
service_processor.a uto_config.ipv6_sub net	string	query	False	Filter by service_processor.a uto_config.ipv6_sub net  • Introduced in: 9.11
service_processor.a uto_config.ipv4_sub net	string	query	False	Filter by service_processor.a uto_config.ipv4_sub net  • Introduced in: 9.11

Name	Type	In	Required	Description
service_processor.primary.is_current	boolean	query	False	Filter by service_processor.primary.is_current  • Introduced in: 9.10
service_processor.primary.state	string	query	False	Filter by service_processor.primary.state  • Introduced in: 9.10
service_processor.primary.version	string	query	False	Filter by service_processor.primary.version  • Introduced in: 9.10
service_processor.link_status	string	query	False	Filter by service_processor.link_status
state	string	query	False	Filter by state  • Introduced in: 9.7
model	string	query	False	Filter by model
location	string	query	False	Filter by location
system_machine_type	string	query	False	Filter by system_machine_type  • Introduced in: 9.7
metric.timestamp	string	query	False	Filter by metric.timestamp  • Introduced in: 9.8

Name	Type	In	Required	Description
metric.processor_utilization	integer	query	False	Filter by metric.processor_utilization  • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status  • Introduced in: 9.8
metric.uuid	string	query	False	Filter by metric.uuid  • Introduced in: 9.10
metric.duration	string	query	False	Filter by metric.duration  • Introduced in: 9.8
vendor_serial_number	string	query	False	Filter by vendor_serial_number  • Introduced in: 9.7
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned.  • Default value: 1

Name	Type	In	Required	Description
return_timeout	integer	query	False	<p>The number of seconds to allow the call to execute before returning. When iterating over a collection, the default is 15 seconds. ONTAP returns earlier if either max records or the end of the collection is reached.</p> <ul style="list-style-type: none"> <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": "string"
    }
  ],
  "frus": [
    {
      "id": "string",
      "state": "string",
      "type": "string"
    }
  ],
  "memory_size": 102400000,
  "over_temperature": "string"
},
"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",
  "status": [
    {
      "aggregate": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "error": {
        "code": "852126",
        "message": "string"
      },
      "state": "string"
    }
  ],
  "interconnect": {
    "adapter": "MVIA-RDMA",
    "state": "string"
  },
  "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"
}
},
"hw_assist": {
  "status": {
    "local": {
      "ip": "string",
      "state": "string"
    },
    "partner": {
      "ip": "string",
      "state": "string"
    }
  }
},
"location": "rack 2 row 5",
"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": [
  {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"membership": "string",
"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": "string"
  },
  "model": "FAS3070",
  "name": "node-01",
  "nvram": {
    "battery_state": "string",
    "id": 0
  },
  "owner": "Example Corp",
  "serial_number": "4048820-60-9",
  "service_processor": {
    "api_service": {
      "port": 0
    },
    "auto_config": {
      "ipv4_subnet": "ipv4_mgmt",
      "ipv6_subnet": "ipv6_mgmt"
    },
    "backup": {
      "state": "string",
      "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": "string",

```

```

    "link_status": "string",
    "mac_address": "string",
    "primary": {
      "state": "string",
      "version": "11.6"
    },
    "ssh_info": {
      "allowed_addresses": [
        "10.10.10.7/24"
      ]
    },
    "state": "string",
    "type": "string"
  },
  "state": "string",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "storage_configuration": "string",
  "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,
    "patch": "P2"
  },
  "vm": {
    "account_id": "string",
    "deployment_id": "string",
    "fault_domain": "string",
    "instance_id": "string",
    "primary_ip": "string",
    "provider_type": "string",
    "update_domain": "string"
  }
}
]
}

```

## Error

Status: Default, Error

Name	Type	Description
error	error	

### Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

cpu

CPU information.

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

message

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

failed\_fan

Name	Type	Description
count	integer	Specifies a count of the number of chassis fans that are not operating within the recommended RPM range.
message	<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	<a href="#">cpu</a>	CPU information.
failed_fan	<a href="#">failed_fan</a>	
failed_power_supply	<a href="#">failed_power_supply</a>	
flash_cache	array[ <a href="#">flash_cache</a> ]	A list of Flash-Cache devices. Only returned when requested by name.
frus	array[ <a href="#">frus</a> ]	List of FRUs on the node. Only returned when requested by name.
memory_size	integer	Memory available on the node, in bytes.
over_temperature	string	Specifies whether the hardware is currently operating outside of its recommended temperature range. The hardware shuts down if the temperature exceeds critical thresholds.

## external\_cache

Cache used for buffer management.

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

## failure

Indicates the failure code and message.

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

aggregate

Aggregate name and UUID.

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	
uuid	string	

error

Indicates the failed aggregate giveback code and message.

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

status

Name	Type	Description
aggregate	<a href="#">aggregate</a>	Aggregate name and UUID.
error	<a href="#">error</a>	Indicates the failed aggregate giveback code and message.

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

#### giveback

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

Name	Type	Description
failure	<a href="#">failure</a>	Indicates the failure code and message.
state	string	
status	array[ <a href="#">status</a> ]	Giveback status of each aggregate.

#### interconnect

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

#### partners

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	
uuid	string	

#### ports

Name	Type	Description
number	integer	HA port number
state	string	<p>HA port state:</p> <ul style="list-style-type: none"> <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.

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

#### local

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

#### partner

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

#### status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.
local	<a href="#">local</a>	
partner	<a href="#">partner</a>	

## hw\_assist

The hardware assist information.

Name	Type	Description
status	<a href="#">status</a>	

## 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. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

## metric

CPU performance for the nodes.

Name	Type	Description
<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". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

#### ports

Name	Type	Description
name	string	

#### metrocluster

#### Metrocluster

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

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.

#### api\_service

Provides the properties of the service processor API service.

Name	Type	Description
enabled	boolean	Indicates whether the service processor API service is enabled.
limit_access	boolean	Indicates whether the service processor API service limit access is enabled.
port	integer	Indicates the port number of service processor API service.

#### auto\_config

Provides the properties of the service processor auto configuration.

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

### backup

Provides the properties of the service processor backup partition.

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

### ipv4\_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
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
api_service	<a href="#">api_service</a>	Provides the properties of the service processor API service.
auto_config	<a href="#">auto_config</a>	Provides the properties of the service processor auto configuration.

Name	Type	Description
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP.  <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.
ssh_info	<a href="#">ssh_info</a>	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.

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

#### vm

Name	Type	Description
account_id	string	The cloud provider account ID.
deployment_id	string	The cloud provider deployment ID.
fault_domain	string	The VM fault domain.
instance_id	string	The cloud provider instance ID.
primary_ip	string	The VM primary IP address.
provider_type	string	Cloud provider where the VM is hosted.
update_domain	string	The VM update domain.

#### 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>	
hw_assist	<a href="#">hw_assist</a>	The hardware assist information.
is_all_flash_optimized	boolean	Specifies whether the node is all flash optimized.
is_all_flash_select_optimized	boolean	Specifies whether the node is all flash select optimized.
is_capacity_optimized	boolean	Specifies whether the node is capacity optimized.
is_performance_optimized	boolean	Specifies whether the node is performance optimized.
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	
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	Creates aggregates based on an optimal layout recommended by the system. <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>	
hw_assist	<a href="#">hw_assist</a>	The hardware assist information.
is_all_flash_optimized	boolean	Specifies whether the node is all flash optimized.
is_all_flash_select_optimized	boolean	Specifies whether the node is all flash select optimized.
is_capacity_optimized	boolean	Specifies whether the node is capacity optimized.
is_performance_optimized	boolean	Specifies whether the node is performance optimized.
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.

Name	Type	Description
management_interfaces	array[ <a href="#">management_interfaces</a> ]	
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": "string"
    }
  ],
  "frus": [
    {
      "id": "string",
      "state": "string",
      "type": "string"
    }
  ],
  "memory_size": 1024000000,
  "over_temperature": "string"
},
"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",
    "status": [
      {
        "aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          }
        }
      }
    ]
  }
}

```

```

    }
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "error": {
    "code": "852126",
    "message": "string"
  },
  "state": "string"
}
]
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "string"
},
"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"
}
},
"hw_assist": {
  "status": {
    "local": {

```

```

    "ip": "string",
    "state": "string"
  },
  "partner": {
    "ip": "string",
    "state": "string"
  }
},
"location": "rack 2 row 5",
"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": [
  {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"membership": "string",
"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": "string"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "string",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {
    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "string",
    "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": "string",
  "link_status": "string",
  "mac_address": "string",
  "primary": {
    "state": "string",
    "version": "11.6"
  },
  "ssh_info": {
    "allowed_addresses": [
      "10.10.10.7/24"
    ]
  }
}

```

```

    },
    "state": "string",
    "type": "string"
  },
  "state": "string",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "storage_configuration": "string",
  "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,
    "patch": "P2"
  },
  "vm": {
    "account_id": "string",
    "deployment_id": "string",
    "fault_domain": "string",
    "instance_id": "string",
    "primary_ip": "string",
    "provider_type": "string",
    "update_domain": "string"
  }
}

```

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

cpu

CPU information.

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

message

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

failed\_fan

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

#### aggregate

Aggregate name and UUID.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	
uuid	string	

#### error

Indicates the failed aggregate giveback code and message.

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

#### status

Name	Type	Description
aggregate	<a href="#">aggregate</a>	Aggregate name and UUID.
error	<a href="#">error</a>	Indicates the failed aggregate giveback code and message.

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

#### giveback

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

Name	Type	Description
failure	<a href="#">failure</a>	Indicates the failure code and message.
state	string	
status	array[ <a href="#">status</a> ]	Giveback status of each aggregate.

#### interconnect

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

#### partners

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	
uuid	string	

#### ports

Name	Type	Description
number	integer	HA port number
state	string	<p>HA port state:</p> <ul style="list-style-type: none"> <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.



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

#### local

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

#### partner

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

#### status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.
local	<a href="#">local</a>	
partner	<a href="#">partner</a>	

## hw\_assist

The hardware assist information.

Name	Type	Description
status	<a href="#">status</a>	

## 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. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

## metric

CPU performance for the nodes.

Name	Type	Description
<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". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

#### ports

Name	Type	Description
name	string	

#### metrocluster

#### Metrocluster

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

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.

#### api\_service

Provides the properties of the service processor API service.

Name	Type	Description
enabled	boolean	Indicates whether the service processor API service is enabled.
limit_access	boolean	Indicates whether the service processor API service limit access is enabled.
port	integer	Indicates the port number of service processor API service.

#### auto\_config

Provides the properties of the service processor auto configuration.

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

### backup

Provides the properties of the service processor backup partition.

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

### ipv4\_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
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
api_service	<a href="#">api_service</a>	Provides the properties of the service processor API service.
auto_config	<a href="#">auto_config</a>	Provides the properties of the service processor auto configuration.

Name	Type	Description
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP.  <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.
ssh_info	<a href="#">ssh_info</a>	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.



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

#### vm

Name	Type	Description
account_id	string	The cloud provider account ID.
deployment_id	string	The cloud provider deployment ID.
fault_domain	string	The VM fault domain.
instance_id	string	The cloud provider instance ID.
primary_ip	string	The VM primary IP address.
provider_type	string	Cloud provider where the VM is hosted.
update_domain	string	The VM update domain.

#### 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>	
hw_assist	<a href="#">hw_assist</a>	The hardware assist information.
is_all_flash_optimized	boolean	Specifies whether the node is all flash optimized.
is_all_flash_select_optimized	boolean	Specifies whether the node is all flash select optimized.
is_capacity_optimized	boolean	Specifies whether the node is capacity optimized.
is_performance_optimized	boolean	Specifies whether the node is performance optimized.
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	
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
_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.

# 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.  • 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`
- `system service-processor api-service show`
- `system service-processor network auto-configuration show`

## Parameters

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

## Response

Status: 200, Ok

Name	Type	Description
<code>_links</code>	<code><a href="#">_links</a></code>	

Name	Type	Description
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
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>	
hw_assist	<a href="#">hw_assist</a>	The hardware assist information.
is_all_flash_optimized	boolean	Specifies whether the node is all flash optimized.
is_all_flash_select_optimized	boolean	Specifies whether the node is all flash select optimized.
is_capacity_optimized	boolean	Specifies whether the node is capacity optimized.
is_performance_optimized	boolean	Specifies whether the node is performance optimized.
is_spare_low	boolean	Specifies whether or not the node is in spares low condition.
location	string	

Name	Type	Description
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> ]	
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.

Name	Type	Description
serial_number	string	
service_processor	<a href="#">service_processor</a>	
state	string	<p>State of the node:</p> <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	<p>The storage configuration in the system. Possible values:</p> <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>	

## 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": "string"
    }
  ],
  "frus": [
    {
      "id": "string",
      "state": "string",
      "type": "string"
    }
  ],
  "memory_size": 1024000000,
  "over_temperature": "string"
},
"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",
    "status": [
      {
        "aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          }
        }
      }
    ]
  }
}

```

```

        }
        },
        "name": "aggr1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "error": {
        "code": "852126",
        "message": "string"
    },
    "state": "string"
}
]
},
"interconnect": {
    "adapter": "MVIA-RDMA",
    "state": "string"
},
"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"
}
},
"hw_assist": {
    "status": {
        "local": {

```

```

    "ip": "string",
    "state": "string"
  },
  "partner": {
    "ip": "string",
    "state": "string"
  }
},
"location": "rack 2 row 5",
"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": [
  {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"membership": "string",
"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": "string"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "string",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {
    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "string",
    "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": "string",
  "link_status": "string",
  "mac_address": "string",
  "primary": {
    "state": "string",
    "version": "11.6"
  },
  "ssh_info": {
    "allowed_addresses": [
      "10.10.10.7/24"
    ]
  }
}

```

```

    },
    "state": "string",
    "type": "string"
  },
  "state": "string",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "storage_configuration": "string",
  "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,
    "patch": "P2"
  },
  "vm": {
    "account_id": "string",
    "deployment_id": "string",
    "fault_domain": "string",
    "instance_id": "string",
    "primary_ip": "string",
    "provider_type": "string",
    "update_domain": "string"
  }
}

```

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

cpu

CPU information.

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

message

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

failed\_fan

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

#### aggregate

Aggregate name and UUID.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	
uuid	string	

#### error

Indicates the failed aggregate giveback code and message.

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

#### status

Name	Type	Description
aggregate	<a href="#">aggregate</a>	Aggregate name and UUID.
error	<a href="#">error</a>	Indicates the failed aggregate giveback code and message.

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

#### giveback

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

Name	Type	Description
failure	<a href="#">failure</a>	Indicates the failure code and message.
state	string	
status	array[ <a href="#">status</a> ]	Giveback status of each aggregate.

#### interconnect

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

#### partners

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	
uuid	string	

#### ports

Name	Type	Description
number	integer	HA port number
state	string	<p>HA port state:</p> <ul style="list-style-type: none"> <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.

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

#### local

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

#### partner

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

#### status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.
local	<a href="#">local</a>	
partner	<a href="#">partner</a>	

## hw\_assist

The hardware assist information.

Name	Type	Description
status	<a href="#">status</a>	

## 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. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

## metric

CPU performance for the nodes.

Name	Type	Description
<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". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

#### ports

Name	Type	Description
name	string	

#### metrocluster

#### Metrocluster

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



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.

#### api\_service

Provides the properties of the service processor API service.

Name	Type	Description
enabled	boolean	Indicates whether the service processor API service is enabled.
limit_access	boolean	Indicates whether the service processor API service limit access is enabled.
port	integer	Indicates the port number of service processor API service.

#### auto\_config

Provides the properties of the service processor auto configuration.

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

### backup

Provides the properties of the service processor backup partition.

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

### ipv4\_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
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
api_service	<a href="#">api_service</a>	Provides the properties of the service processor API service.
auto_config	<a href="#">auto_config</a>	Provides the properties of the service processor auto configuration.

Name	Type	Description
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP.  <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.
ssh_info	<a href="#">ssh_info</a>	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.

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

#### vm

Name	Type	Description
account_id	string	The cloud provider account ID.
deployment_id	string	The cloud provider deployment ID.
fault_domain	string	The VM fault domain.
instance_id	string	The cloud provider instance ID.
primary_ip	string	The VM primary IP address.
provider_type	string	Cloud provider where the VM is hosted.
update_domain	string	The VM update domain.

#### 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

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

## Update node information

PATCH /cluster/nodes/{uuid}

**Introduced In:** 9.6

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

### Related ONTAP commands

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

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• format: uuid

Name	Type	In	Required	Description
action	string	query	False	<p>The shutdown action shuts the node down and transfers storage control to its HA group if storage failover is enabled. The reboot action reboots the node and transfers storage control to its HA group if storage failover is enabled. The giveback action transfers storage control back to the owner from its HA group. The "power_off" action shuts the node down with the assistance of the service processor. The "power_on" action restores power to the node with the assistance of the service processor.</p> <ul style="list-style-type: none"> <li>• enum: ["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>	
hw_assist	<a href="#">hw_assist</a>	The hardware assist information.
is_all_flash_optimized	boolean	Specifies whether the node is all flash optimized.
is_all_flash_select_optimized	boolean	Specifies whether the node is all flash select optimized.
is_capacity_optimized	boolean	Specifies whether the node is capacity optimized.
is_performance_optimized	boolean	Specifies whether the node is performance optimized.
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": "string"
    }
  ],
  "frus": [
    {
      "id": "string",
      "state": "string",
      "type": "string"
    }
  ],
  "memory_size": 1024000000,
  "over_temperature": "string"
},
"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",
    "status": [
      {
        "aggregate": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          }
        }
      }
    ]
  }
}

```



```

    }
    },
    "name": "aggr1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "error": {
    "code": "852126",
    "message": "string"
  },
  "state": "string"
}
]
},
"interconnect": {
  "adapter": "MVIA-RDMA",
  "state": "string"
},
"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"
}
},
"hw_assist": {
  "status": {
    "local": {

```

```

    "ip": "string",
    "state": "string"
  },
  "partner": {
    "ip": "string",
    "state": "string"
  }
},
"location": "rack 2 row 5",
"management_interface": {
  "ip": {
    "address": "10.10.10.7"
  }
},
"management_interfaces": [
  {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
],
"membership": "string",
"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": "string"
},
"model": "FAS3070",
"name": "node-01",
"nvram": {
  "battery_state": "string",
  "id": 0
},
"owner": "Example Corp",
"serial_number": "4048820-60-9",
"service_processor": {
  "api_service": {
    "port": 0
  },
  "auto_config": {
    "ipv4_subnet": "ipv4_mgmt",
    "ipv6_subnet": "ipv6_mgmt"
  },
  "backup": {
    "state": "string",
    "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": "string",
  "link_status": "string",
  "mac_address": "string",
  "primary": {
    "state": "string",
    "version": "11.6"
  },
  "ssh_info": {
    "allowed_addresses": [
      "10.10.10.7/24"
    ]
  }
}

```

```

    },
    "state": "string",
    "type": "string"
  },
  "state": "string",
  "statistics": {
    "processor_utilization_base": 12345123,
    "processor_utilization_raw": 13,
    "status": "ok",
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "storage_configuration": "string",
  "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,
    "patch": "P2"
  },
  "vm": {
    "account_id": "string",
    "deployment_id": "string",
    "fault_domain": "string",
    "instance_id": "string",
    "primary_ip": "string",
    "provider_type": "string",
    "update_domain": "string"
  }
}

```

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

cpu

CPU information.

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

message

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

failed\_fan

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

#### aggregate

Aggregate name and UUID.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	
uuid	string	

#### error

Indicates the failed aggregate giveback code and message.

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

#### status

Name	Type	Description
aggregate	<a href="#">aggregate</a>	Aggregate name and UUID.
error	<a href="#">error</a>	Indicates the failed aggregate giveback code and message.

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

#### giveback

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

Name	Type	Description
failure	<a href="#">failure</a>	Indicates the failure code and message.
state	string	
status	array[ <a href="#">status</a> ]	Giveback status of each aggregate.

#### interconnect

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

#### partners

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	
uuid	string	

#### ports

Name	Type	Description
number	integer	HA port number
state	string	<p>HA port state:</p> <ul style="list-style-type: none"> <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.

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

#### local

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

#### partner

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

#### status

Name	Type	Description
enabled	boolean	Indicates whether hardware assist is enabled on the node.
local	<a href="#">local</a>	
partner	<a href="#">partner</a>	

## hw\_assist

The hardware assist information.

Name	Type	Description
status	<a href="#">status</a>	

## 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. If only the name is provided, the SVM scope must be provided by the object this object is embedded in.
uuid	string	The UUID that uniquely identifies the interface.

## metric

CPU performance for the nodes.

Name	Type	Description
<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". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

#### ports

Name	Type	Description
name	string	

#### metrocluster

#### Metrocluster

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



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.

#### api\_service

Provides the properties of the service processor API service.

Name	Type	Description
enabled	boolean	Indicates whether the service processor API service is enabled.
limit_access	boolean	Indicates whether the service processor API service limit access is enabled.
port	integer	Indicates the port number of service processor API service.

#### auto\_config

Provides the properties of the service processor auto configuration.

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

### backup

Provides the properties of the service processor backup partition.

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

### ipv4\_interface

Object to setup an interface along with its default router.

Name	Type	Description
address	string	IPv4 or IPv6 address
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
api_service	<a href="#">api_service</a>	Provides the properties of the service processor API service.
auto_config	<a href="#">auto_config</a>	Provides the properties of the service processor auto configuration.

Name	Type	Description
autoupdate_enabled	boolean	Indicates whether the service processor can be automatically updated from ONTAP.  <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.
ssh_info	<a href="#">ssh_info</a>	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.

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

#### vm

Name	Type	Description
account_id	string	The cloud provider account ID.
deployment_id	string	The cloud provider deployment ID.
fault_domain	string	The VM fault domain.
instance_id	string	The cloud provider instance ID.
primary_ip	string	The VM primary IP address.
provider_type	string	Cloud provider where the VM is hosted.
update_domain	string	The VM update domain.

#### 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>	
hw_assist	<a href="#">hw_assist</a>	The hardware assist information.
is_all_flash_optimized	boolean	Specifies whether the node is all flash optimized.
is_all_flash_select_optimized	boolean	Specifies whether the node is all flash select optimized.
is_capacity_optimized	boolean	Specifies whether the node is capacity optimized.
is_performance_optimized	boolean	Specifies whether the node is performance optimized.
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	
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
_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 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
timestamp	string	query	False	Filter by timestamp
processor_utilization	integer	query	False	Filter by processor_utilization
status	string	query	False	Filter by status
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". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
timestamp	string	The timestamp of the performance data.
uuid	string	

#### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

#### 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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