



## **Networking**

### **ONTAP 9.10.1 REST API Documentation**

NetApp  
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# Networking

## Networking overview

### Overview

The ONTAP networking APIs enable reporting on networking information, such as IPspaces, interfaces, routes, ports, service policies and broadcast domains. Some can also be used to manage networking.

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### IPspaces

IPspaces enable you to configure a single ONTAP cluster so that it can be accessed by clients from more than one administratively separate network domain, even if those clients are using the same IP address subnet range. This allows for separation of client traffic for privacy and security.

An IPspace defines a distinct IP address space in which storage virtual machines (SVMs) reside. Ports and IP addresses defined for an IPspace are applicable only within that IPspace. A distinct routing table is maintained for each SVM within an IPspace, so that no cross-SVM or cross-IPspace traffic routing occurs.

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### Ethernet

#### Broadcast Domains

A broadcast domain is a set of ports which would all receive a broadcast packet that is sent from any of the ports.

By accurately representing the physical network with an ONTAP broadcast domain, ONTAP ensures that IP interfaces are able to migrate to appropriate ports in case of failure. ONTAP also ensures that characteristics, such as MTU, stay matched across all ports of the broadcast domain.

A broadcast domain resides in an IPspace, and can be used by cluster-scoped or SVM-scoped IP interfaces in that IPspace. The scope of the broadcast domain's uniqueness is the IPspace it is in. You must create as many broadcast domains in an IPspace as there are IP subnets with interfaces in that IPspace.

Ports are mapped to an IPspace by assigning the port's broadcast domain.

#### Ports

A port is a physical or virtual Ethernet network device. Physical ports may be combined into Link Aggregation Groups (LAGs, or ifgrps), or divided into Virtual LANs (VLANs).

The GET and PATCH APIs are available for all port types. The POST and DELETE APIs are available for "lag" and "vlan" port types.

A given port can host zero or more IP interfaces.

A port exists in a broadcast domain and all ports within the same broadcast domain must have layer 2 network connectivity to one another. If a port within a broadcast domain goes down, any IP interfaces hosted by that port can fail over to other ports in the same broadcast domain.

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## Fibre Channel

### Interfaces

Fibre Channel (FC) interfaces are the logical endpoints for Fibre Channel network connections to an SVM. A Fibre Channel interface provides Fibre Channel access to storage within the interface's SVM using either Fibre Channel Protocol (FCP) or Non-Volatile Memory Express over Fibre Channel (NVMe over FC).

The Fibre Channel interface REST API allows you to create, delete, update and discover Fibre Channel interfaces and obtain status information for Fibre Channel interfaces.

A Fibre Channel interface is created on a Fibre Channel port that is located on a cluster node. The Fibre Channel port must be specified to identify the location of the interface for a POST or PATCH that relocates an interface. You can identify the port by either supplying the node and port names or the port UUID.

### Ports

Fibre Channel ports are the physical ports of Fibre Channel adapters on ONTAP cluster nodes that can be connected to Fibre Channel networks to provide Fibre Channel network connectivity. A Fibre Channel port defines the location of a Fibre Channel interface within the ONTAP cluster.

The Fibre Channel port REST API allows you to discover Fibre Channel ports, obtain status information for Fibre Channel ports, and configure Fibre Channel port properties.

### Learn More

- *Fibre Channel Logins* found in both the *SAN* and *NVMe* sections. Fibre Channel logins represent connections formed by Fibre Channel initiators that have successfully logged in to ONTAP.

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## IP

### Interfaces

An interface (also referred to as a *LIF* in ONTAP documentation) represents a network access point to a node in a cluster. In other words, an interface is essentially an IPv4 or IPv6 address with associated attributes.

IP interfaces are configured on ports to send and receive communications over the network. The port that will host the interface can either be explicitly specified using node and/or port fields or implicitly specified using a broadcast domain.

The IPspace of the interface is required for cluster-scoped interfaces. The SVM owning the interface is required for SVM-scoped interfaces. These interfaces are in the SVM's IPspace.

The service policy of an interface defines what network services are provided by the interface.

### Routes

Routes indicate which IPv4 or IPv6 gateway to use to communicate with hosts that are not on the local subnet. Typically, an IP interface (or LIF) can only use a gateway if it has the same address family and is in the LIF's subnet.

It is important that every gateway address belongs to a physical or virtual router that has connectivity to the specified destination network.

SVM-scoped routes can only be used by IP interfaces of the specified SVM. Likewise, cluster-scoped routes can only be used by cluster-scoped IP interfaces in the specified IPspace.

## Service Policies

Service policies are named groupings that define what services are supported by an IP interface. These include both built-in service policies (for example: default-data-files or default-management) and custom service policies.

Service policies are scoped to either an SVM or IPspace.

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# Manage broadcast domains

## Network Ethernet broadcast-domains endpoint overview

### Overview

A broadcast domain is a collection of Ethernet ports that have layer 2 connectivity. They are used to determine which Ethernet ports can host interfaces of various types. The broadcast domain REST API allows you to retrieve, create, modify, and delete broadcast domains. The broadcast domain APIs do not manage port membership. To add a port to a broadcast domain or to move a port to a different broadcast domain, use `PATCH /network/ethernet/ports/<uuid>.</uuid>`

### Retrieving network Ethernet broadcast domain information

The broadcast domains GET API retrieves and displays relevant information pertaining to the broadcast domains configured in the cluster. The API retrieves the list of all broadcast domains configured in the cluster, or a specific broadcast domain.

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## Examples

### Retrieving all broadcast domains in the cluster

The following output shows the list of all broadcast domains configured in a cluster.

```
# The API:
/api/network/ethernet/broadcast-domains

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

# The response:
{
  "records": [
```

```

{
  "uuid": "6970c2a9-f34f-11e8-8373-005056bb6b85",
  "name": "Cluster",
  "ipSPACE": {
    "uuid": "6267eff8-f34f-11e8-8373-005056bb6b85",
    "name": "Cluster",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/6267eff8-f34f-11e8-8373-005056bb6b85"
      }
    }
  },
  "ports": [
    {
      "uuid": "626b4d19-f34f-11e8-8373-005056bb6b85",
      "name": "e0a",
      "node": {
        "name": "examplecluster-node01"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/626b4d19-f34f-11e8-8373-005056bb6b85"
        }
      }
    },
    {
      "uuid": "626b77b9-f34f-11e8-8373-005056bb6b85",
      "name": "e0b",
      "node": {
        "name": "examplecluster-node01"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/626b77b9-f34f-11e8-8373-005056bb6b85"
        }
      }
    }
  ],
  "mtu": 9000,
  "_links": {
    "self": {
      "href": "/api/network/ethernet/broadcast-domains/6970c2a9-f34f-11e8-8373-005056bb6b85"
    }
  }
}

```

```

    }
  },
  {
    "uuid": "6972416c-f34f-11e8-8373-005056bb6b85",
    "name": "Default",
    "ipSpace": {
      "uuid": "5f650349-f34f-11e8-8373-005056bb6b85",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/5f650349-f34f-11e8-8373-005056bb6b85"
        }
      }
    },
    "ports": [
      {
        "uuid": "626bae19-f34f-11e8-8373-005056bb6b85",
        "name": "e0c",
        "node": {
          "name": "examplecluster-node01"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/626bae19-f34f-11e8-8373-005056bb6b85"
          }
        }
      },
      {
        "uuid": "626bd677-f34f-11e8-8373-005056bb6b85",
        "name": "e0d",
        "node": {
          "name": "examplecluster-node01"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/626bd677-f34f-11e8-8373-005056bb6b85"
          }
        }
      }
    ],
    "mtu": 1500,
    "_links": {

```

```

    "self": {
      "href": "/api/network/ethernet/broadcast-domains/6972416c-f34f-
11e8-8373-005056bb6b85"
    }
  }
],
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/ethernet/broadcast-domains?fields=*"
  }
}
}
}

```

### Retrieving a specific broadcast domain

The following output shows the response returned when a specific broadcast domain is requested. The system returns an error if there is no broadcast domain with the requested UUID.

```

# The API:
/api/network/ethernet/broadcast-domains/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains/4475a2c8-f8a0-11e8-8d33-005056bb986f/?fields=*" -H "accept:
application/hal+json"

# The response:
{
  "uuid": "4475a2c8-f8a0-11e8-8d33-005056bb986f",
  "name": "Cluster",
  "ipspace": {
    "uuid": "3e518ed5-f8a0-11e8-8d33-005056bb986f",
    "name": "Cluster",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/3e518ed5-f8a0-11e8-8d33-005056bb986f"
      }
    }
  },
  "ports": [
    {

```



```

    "uuid": "3e539a62-f8a0-11e8-8d33-005056bb986f",
    "name": "e0a",
    "node": {
      "name": "examplecluster-node01"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/3e539a62-f8a0-11e8-8d33-005056bb986f"
      }
    }
  },
  {
    "uuid": "3e53c94a-f8a0-11e8-8d33-005056bb986f",
    "name": "e0b",
    "node": {
      "name": "examplecluster-node01"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/3e53c94a-f8a0-11e8-8d33-005056bb986f"
      }
    }
  }
],
"mtu": 9000,
"_links": {
  "self": {
    "href": "/api/network/ethernet/broadcast-domains/4475a2c8-f8a0-11e8-8d33-005056bb986f/"
  }
}
}
}

```

### Retrieving all broadcast domains with a specific name

The following output shows the response returned when broadcast domains with a specific name in any IPspace are requested.

```
# The API:
/api/network/ethernet/broadcast-domains

# The call:
curl -X GET "https://10.224.87.121/api/network/ethernet/broadcast-
domains/?name=bd1" -H "accept: application/hal+json"

# The response:
{
  "records": [
    {
      "uuid": "66b607e5-4bee-11e9-af6a-005056bb13c0",
      "name": "bd1",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/broadcast-domains/66b607e5-4bee-
11e9-af6a-005056bb13c0"
        }
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/network/ethernet/broadcast-domains/?name=bd1"
    }
  }
}
```

---

### Retrieving the broadcast domains for an IPspace

The following output shows the response returned when the broadcast domains for a specified IPspace are requested.

```
# The API:
/api/network/ethernet/broadcast-domains

# The call:
curl -X GET "https://10.224.87.121/api/network/ethernet/broadcast-
domains/?ipspace.name=Cluster&fields=*" -H "accept: application/hal+json"

# The response:
```

```
{
  "records": [
    {
      "uuid": "ae69070c-4bed-11e9-af6a-005056bb13c0",
      "name": "Cluster",
      "ipSPACE": {
        "uuid": "ac466a88-4bed-11e9-af6a-005056bb13c0",
        "name": "Cluster",
        "_links": {
          "self": {
            "href": "/api/network/ipspaces/ac466a88-4bed-11e9-af6a-005056bb13c0"
          }
        }
      },
    },
    "ports": [
      {
        "uuid": "acd67884-4bed-11e9-af6a-005056bb13c0",
        "name": "e0a",
        "node": {
          "name": "examplecluster-node-1"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/acd67884-4bed-11e9-af6a-005056bb13c0"
          }
        }
      },
      {
        "uuid": "acela36f-4bed-11e9-af6a-005056bb13c0",
        "name": "e0b",
        "node": {
          "name": "examplecluster-node-1"
        },
        "_links": {
          "self": {
            "href": "/api/network/ethernet/ports/acela36f-4bed-11e9-af6a-005056bb13c0"
          }
        }
      }
    ],
    "mtu": 1500,
    "_links": {
      "self": {
```

```
        "href": "/api/network/ethernet/broadcast-domains/ae69070c-4bed-
11e9-af6a-005056bb13c0"
      }
    }
  ],
  "num_records": 1,
  "_links": {
    "self": {
      "href": "/api/network/ethernet/broadcast-
domains/?ipspace.name=Cluster&fields=*"
    }
  }
}
```

---

## Creating network Ethernet broadcast domains

You can use the POST API to create broadcast domains.

---

### Example

#### Creating a new broadcast domain

The following example shows how to create a broadcast domain with a name of 'bd1' and an MTU of 1500.

---

```
# The API:
/api/network/ethernet/broadcast-domains

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains?return_records=true" -H "accept: application/hal+json" -d '{
"name": "bd1", "mtu": 1500 }'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "name": "bd1",
      "mtu": 1500,
      "_links": {
        "self": {
          "href": "/api/network/ethernet/broadcast-domains/"
        }
      }
    }
  ]
}
```

---

## Updating network Ethernet broadcast domains

You can use the PATCH API to update the attributes of broadcast domains.

---

### Examples

#### Updating the name and MTU of a specific broadcast domain

The following example shows how the PATCH request changes the broadcast domain name to 'bd2' and the broadcast domain MTU to 9000.

---

```
# The API:
/api/network/ethernet/broadcast-domains/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains/6cde03b2-f8a2-11e8-8d33-005056bb986f/" -d '{ "name": "bd2", "mtu":
9000 }'
{
}
```

---

### Updating the IPspace of a specific broadcast domain

The following example shows how the PATCH request changes the IPspace of a broadcast domain to 'ipspace2'.

```
# The API:
/api/network/ethernet/broadcast-domains/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains/c6fe2541-61f4-11e9-a66e-005056bbe83e" -d '{ "ipspace" : { "name" :
"ipspace2" } }'
{
}
```

---

### Deleting network Ethernet broadcast domains

You can use the DELETE API to delete a broadcast domain from the cluster configuration.

#### Example

##### Deleting a specific broadcast domain

The following DELETE request deletes a broadcast domain.

```
# The API:
/api/network/ethernet/broadcast-domains/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ethernet/broadcast-
domains/6cde03b2-f8a2-11e8-8d33-005056bb986f/"
```

## Retrieve broadcast domains for the entire cluster

GET /network/ethernet/broadcast-domains

**Introduced In:** 9.6

Retrieves a collection of broadcast domains for the entire cluster.

### Related ONTAP commands

- `network port broadcast-domain show`

### Parameters

Name	Type	In	Required	Description
name	string	query	False	Filter by name
mtu	integer	query	False	Filter by mtu
uuid	string	query	False	Filter by uuid
ipspace.uuid	string	query	False	Filter by ipspace.uuid
ipspace.name	string	query	False	Filter by ipspace.name
ports.name	string	query	False	Filter by ports.name
ports.node.name	string	query	False	Filter by ports.node.name
ports.uuid	string	query	False	Filter by ports.uuid
fields	array[string]	query	False	Specify the fields to return.

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

## Response

Status: 200, Ok

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



## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ipspace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "exchange",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "mtu": 1500,
    "name": "bd1",
    "ports": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "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>	

ipSPACE

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

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

node

Name	Type	Description
name	string	Name of node on which the port is located.

ports

Port UUID along with readable names

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

## broadcast\_domain

Set of ports that will receive a broadcast Ethernet packet from any of them

Name	Type	Description
_links	<a href="#">_links</a>	
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ <a href="#">ports</a> ]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

## 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.

## Create a new broadcast domain

POST /network/ethernet/broadcast-domains

## Introduced In: 9.6

Creates a new broadcast domain.

### Required properties

- `name` - Name of the broadcast-domain to create.
- `mtu` - Maximum transmission unit (MTU) of the broadcast domain.

### Recommended optional properties

- `ipSpace.name` or `ipSpace.uuid` - IPspace the broadcast domain belongs to.

### Default property values

If not specified in POST, the following default property values are assigned:

- `ipSpace` - *Default*

### Related ONTAP commands

- `network port broadcast-domain create`

### Parameters

Name	Type	In	Required	Description
<code>return_records</code>	boolean	query	False	The default is false. If set to true, the records are returned.  • Default value:

### Request Body

Name	Type	Description
<code>_links</code>	<a href="#">_links</a>	
<code>ipSpace</code>	<a href="#">ipSpace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
<code>mtu</code>	integer	Maximum transmission unit, largest packet size on this network
<code>name</code>	string	Name of the broadcast domain, scoped to its IPspace

Name	Type	Description
ports	array[ports]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

### Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "mtu": 1500,
  "name": "bd1",
  "ports": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "elb",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

### Response

Status: 201, Created

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1377267	The specified IPspace does not exist.
1967082	The specified ipspace.name does not match the IPspace name of ipspace.uuid.
1967102	A POST operation might have left the configuration in an inconsistent state. Check the configuration.
53281982	The specified broadcast domain name is reserved by the system.

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>	

ipSPACE

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

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

node

Name	Type	Description
name	string	Name of node on which the port is located.

ports

Port UUID along with readable names

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

broadcast\_domain

Set of ports that will receive a broadcast Ethernet packet from any of them

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



Name	Type	Description
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ <a href="#">ports</a> ]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

#### 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 broadcast domain

```
DELETE /network/ethernet/broadcast-domains/{uuid}
```

**Introduced In:** 9.6

Deletes a broadcast domain.

## Related ONTAP commands

- `network port broadcast-domain delete`

## Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Broadcast domain UUID

## Response

```
Status: 200, Ok
```

## Error

```
Status: Default
```

## ONTAP Error Response Codes

Error Code	Description
1967103	A broadcast domain with ports cannot be deleted.

Name	Type	Description
error	error	

## Example error

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

## Definitions

### See Definitions

#### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

#### error

Name	Type	Description
arguments	array[ <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 broadcast domain details

GET /network/ethernet/broadcast-domains/{uuid}

**Introduced In:** 9.6

Retrieves details of a broadcast domain.

### Related ONTAP commands

- `network port broadcast-domain show`

### Parameters

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

## Response

Status: 200, Ok

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ <a href="#">ports</a> ]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipstack": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "mtu": 1500,
  "name": "bd1",
  "ports": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "e1b",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

ipospace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

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

node

Name	Type	Description
name	string	Name of node on which the port is located.

ports

Port UUID along with readable names

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

error\_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
message	string	Message argument

error

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

## Update broadcast domain properties

PATCH /network/ethernet/broadcast-domains/{uuid}

**Introduced In:** 9.6

Updates the properties of a broadcast domain.

### Related ONTAP commands

- `network port broadcast-domain modify`
- `network port broadcast-domain rename`
- `network port broadcast-domain move`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Broadcast domain UUID

### Request Body

Name	Type	Description
<code>_links</code>	<a href="#">_links</a>	
<code>ipspace</code>	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.



<b>Name</b>	<b>Type</b>	<b>Description</b>
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ports]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "mtu": 1500,
  "name": "bd1",
  "ports": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "e1b",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Response

Status: 200, Ok

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1377267	The specified IPspace does not exist.
1377269	Failed to lookup the specified IPspace.
1377560	Broadcast domain already exists in specified IPspace.
1377605	Moving the system-generated broadcast domain to another IPspace is not supported.
1967082	The specified ipspace.name does not match the IPspace name of ipspace.uuid.
1967150	The specified ipspace.uuid is not valid.
1967151	The specified ipspace.uuid and ipspace.name do not match.
1967152	Patching IPspace for a broadcast domain requires an effective cluster version of 9.7 or later.
53280884	The MTU of the broadcast domain cannot be modified on this platform.

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>	

ipSPACE

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

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

node

Name	Type	Description
name	string	Name of node on which the port is located.

ports

Port UUID along with readable names

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

broadcast\_domain

Set of ports that will receive a broadcast Ethernet packet from any of them

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

Name	Type	Description
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
mtu	integer	Maximum transmission unit, largest packet size on this network
name	string	Name of the broadcast domain, scoped to its IPspace
ports	array[ <a href="#">ports</a> ]	Ports that belong to the broadcast domain
uuid	string	Broadcast domain UUID

#### 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.

## Manage network Ethernet ports

### Network Ethernet ports endpoint overview

#### Overview

A port is a physical or virtual Ethernet network device. Physical ports may be combined into Link Aggregation Groups (LAGs or ifgrps), or divided into Virtual LANs (VLANs).

GET (collection), GET (instance), and PATCH APIs are available for all port types. POST and DELETE APIs are available for "lag" (ifgrp) and "vlan" port types.

## Retrieving network port information

The network ports GET API retrieves and displays relevant information pertaining to the ports configured in the cluster. The API retrieves the list of all ports configured in the cluster, or specifically requested ports. The fields returned in the response vary for different ports and configurations.

## Examples

### Retrieving all ports in the cluster

The following output displays the UUID, name, and port type for all ports configured in a 2-node cluster. The port types are physical, vlan, lag (ifgrp), and p-vlan (available in select environments only).

```
# The API:
/api/network/ethernet/ports

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/ethernet/ports?fields=uuid,name,type" -H "accept:
application/hal+json"

# The response:
{
  "records": [
    {
      "uuid": "2d2c90c0-f70d-11e8-b145-005056bb5b8e",
      "name": "e0a",
      "type": "physical",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/2d2c90c0-f70d-11e8-b145-
005056bb5b8e"
        }
      }
    },
    {
      "uuid": "2d3004da-f70d-11e8-b145-005056bb5b8e",
      "name": "e0b",
      "type": "physical",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/2d3004da-f70d-11e8-b145-
005056bb5b8e"
        }
      }
    }
  ]
}
```

```

    }
  },
  {
    "uuid": "2d34a2cb-f70d-11e8-b145-005056bb5b8e",
    "name": "e0c",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/2d34a2cb-f70d-11e8-b145-005056bb5b8e"
      }
    }
  },
  {
    "uuid": "2d37189f-f70d-11e8-b145-005056bb5b8e",
    "name": "e0d",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/2d37189f-f70d-11e8-b145-005056bb5b8e"
      }
    }
  },
  {
    "uuid": "35de5d8b-f70d-11e8-abdf-005056bb7fc8",
    "name": "e0a",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35de5d8b-f70d-11e8-abdf-005056bb7fc8"
      }
    }
  },
  {
    "uuid": "35de78cc-f70d-11e8-abdf-005056bb7fc8",
    "name": "e0b",
    "type": "physical",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35de78cc-f70d-11e8-abdf-005056bb7fc8"
      }
    }
  }
}

```

```

},
{
  "uuid": "35dead3c-f70d-11e8-abdf-005056bb7fc8",
  "name": "e0c",
  "type": "physical",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/ports/35dead3c-f70d-11e8-abdf-005056bb7fc8"
    }
  }
},
{
  "uuid": "35deda90-f70d-11e8-abdf-005056bb7fc8",
  "name": "e0d",
  "type": "physical",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/ports/35deda90-f70d-11e8-abdf-005056bb7fc8"
    }
  }
},
{
  "uuid": "42e25145-f97d-11e8-ade9-005056bb7fc8",
  "name": "e0c-100",
  "type": "vlan",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/ports/42e25145-f97d-11e8-ade9-005056bb7fc8"
    }
  }
},
{
  "uuid": "569e0abd-f97d-11e8-ade9-005056bb7fc8",
  "name": "a0a",
  "type": "lag",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/ports/569e0abd-f97d-11e8-ade9-005056bb7fc8"
    }
  }
}
],

```



```
"num_records": 10,
"_links": {
  "self": {
    "href": "/api/network/ethernet/ports?fields=uuid,name,type"
  }
}
}
```

### Retrieving a specific physical port

The following output displays the response when a specific physical port is requested. The system returns an error when there is no port with the requested UUID. Also, the "speed" field for the physical port is set only if the state of the port is up.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/ports/2d37189f-f70d-11e8-b145-005056bb5b8e?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "2d37189f-f70d-11e8-b145-005056bb5b8e",
  "name": "e0d",
  "mac_address": "00:50:56:bb:62:2d",
  "type": "physical",
  "node": {
    "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
    "name": "user-cluster-01",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/faa56898-f70c-11e8-b145-005056bb5b8e"
      }
    }
  },
  "broadcast_domain": {
    "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
    "name": "Default",
    "ipspace": {
      "name": "Default"
    },
    "_links": {
```

```
    "self": {
      "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-11e8-
b145-005056bb5b8e"
    }
  },
  "enabled": true,
  "state": "up",
  "mtu": 1500,
  "speed": 1000,
  "reachability": "not_repairable",
  "reachable_broadcast_domains": [
    {
      "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
      "name": "Default",
      "ipspace": {
        "name": "Default"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-
11e8-b145-005056bb5b8e"
        }
      }
    },
    {
      "uuid": "df640ccf-72c4-11ea-b31d-005056bbfb29",
      "name": "Default-1",
      "ipspace": {
        "name": "Default"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/broadcast-domains/df640ccf-72c4-
11ea-b31d-005056bbfb29"
        }
      }
    }
  ],
  "_links": {
    "self": {
      "href": "/api/network/ethernet/ports/2d37189f-f70d-11e8-b145-
005056bb5b8e"
    }
  }
}
```

## Retrieving a specific VLAN port

The following output displays the response when a specific VLAN port is requested. The system returns an error when there is no port with the requested UUID. Also, the "speed" field for a VLAN port is always set to zero if the state of the port is up. If the state of the port is down, the "speed" field is unset and not reported back.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/ports/42e25145-f97d-11e8-ade9-005056bb7fc8?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "42e25145-f97d-11e8-ade9-005056bb7fc8",
  "name": "e0e-100",
  "mac_address": "00:50:56:bb:52:2f",
  "type": "vlan",
  "node": {
    "uuid": "6042cf47-f70c-11e8-abdf-005056bb7fc8",
    "name": "user-cluster-02",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/6042cf47-f70c-11e8-abdf-005056bb7fc8"
      }
    }
  },
  "broadcast_domain": {
    "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
    "name": "Default",
    "ipspace": {
      "name": "Default"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-11e8-b145-005056bb5b8e"
      }
    }
  },
  "enabled": true,
  "state": "up",
  "mtu": 1500,
```

```

"speed": 0,
"reachability": "ok",
"reachable_broadcast_domains": [
  {
    "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
    "name": "Default",
    "ipspace": {
      "name": "Default"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-11e8-b145-005056bb5b8e"
      }
    }
  },
],
"vlan": {
  "tag": 100,
  "base_port": {
    "uuid": "35deff03-f70d-11e8-abdf-005056bb7fc8",
    "name": "e0e",
    "node": {
      "name": "user-cluster-02"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35deff03-f70d-11e8-abdf-005056bb7fc8"
      }
    }
  },
},
"_links": {
  "self": {
    "href": "/api/network/ethernet/ports/42e25145-f97d-11e8-ade9-005056bb7fc8"
  }
}
}
}

```

### Retrieving a specific LAG port

The following output displays the response when a specific LAG port is requested. The system returns an error when there is no port with the requested UUID. The "lag.active\_ports" field is set only if the state of the port is

up. Also, the "speed" field for a LAG port is always set to zero if the state of the port is up. If the state of the port is down, the "speed" field is unset and not reported back.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/ports/569e0abd-f97d-11e8-ade9-005056bb7fc8?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "569e0abd-f97d-11e8-ade9-005056bb7fc8",
  "name": "a0a",
  "mac_address": "02:50:56:bb:7f:c8",
  "type": "lag",
  "node": {
    "uuid": "6042cf47-f70c-11e8-abdf-005056bb7fc8",
    "name": "user-cluster-02",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/6042cf47-f70c-11e8-abdf-005056bb7fc8"
      }
    }
  },
  "broadcast_domain": {
    "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
    "name": "Default",
    "ipspace": {
      "name": "Default"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-11e8-b145-005056bb5b8e"
      }
    }
  },
  "enabled": true,
  "state": "up",
  "mtu": 1500,
  "speed": 0,
  "reachability": "repairable",
  "reachable_broadcast_domains": [
    {
```

```
"uuid": "c7934b4f-691f-11ea-87fd-005056bb1ad3",
"name": "Default",
"ipspace": {
  "name": "Default"
},
"_links": {
  "self": {
    "href": "/api/network/ethernet/broadcast-domains/c7934b4f-691f-11ea-87fd-005056bb1ad3"
  }
}
],
"lag": {
  "mode": "singlemode",
  "distribution_policy": "mac",
  "member_ports": [
    {
      "uuid": "35df318d-f70d-11e8-abdf-005056bb7fc8",
      "name": "e0f",
      "node": {
        "name": "user-cluster-02"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/35df318d-f70d-11e8-abdf-005056bb7fc8"
        }
      }
    },
    {
      "uuid": "35df5bad-f70d-11e8-abdf-005056bb7fc8",
      "name": "e0g",
      "node": {
        "name": "user-cluster-02"
      },
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/35df5bad-f70d-11e8-abdf-005056bb7fc8"
        }
      }
    },
    {
      "uuid": "35df9926-f70d-11e8-abdf-005056bb7fc8",
      "name": "e0h",
```

```

    "node": {
      "name": "user-cluster-02"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/35df9926-f70d-11e8-abdf-005056bb7fc8"
      }
    }
  ],
  "active_ports": [
    {
      "uuid": "35df318d-f70d-11e8-abdf-005056bb7fc8",
      "name": "e0f",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/35df318d-f70d-11e8-abdf-005056bb7fc8"
        }
      }
    }
  ]
},
"_links": {
  "self": {
    "href": "/api/network/ethernet/ports/569e0abd-f97d-11e8-ade9-005056bb7fc8"
  }
}
}
}

```

### Retrieving all LAG (ifgrp) ports in the cluster

This command retrieves all LAG ports in the cluster (that is, all ports with type=LAG). The example shows how to filter a GET collection based on type.

```

# The API:
/api/network/ethernet/ports

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/ethernet/ports?type=lag&node.name=user-cluster-

```

```
01&fields=name,enabled,speed,mtu" -H "accept: application/hal+json"
```

```
# The response:
```

```
{
  "records": [
    {
      "uuid": "0c226db0-4b63-11e9-8113-005056bbe040",
      "name": "a0b",
      "type": "lag",
      "node": {
        "name": "user-cluster-01"
      },
      "enabled": true,
      "mtu": 1500,
      "speed": 0,
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/0c226db0-4b63-11e9-8113-005056bbe040"
        }
      }
    },
    {
      "uuid": "d3a84153-4b3f-11e9-a00d-005056bbe040",
      "name": "a0a",
      "type": "lag",
      "node": {
        "name": "user-cluster-01"
      },
      "enabled": true,
      "mtu": 1500,
      "speed": 0,
      "_links": {
        "self": {
          "href": "/api/network/ethernet/ports/d3a84153-4b3f-11e9-a00d-005056bbe040"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href":
"/api/network/ethernet/ports?fields=name,enabled,speed,mtu&type=lag&node.name=user-cluster-01"
    }
  }
}
```



```
}  
}  
}
```

## Creating VLAN and LAG ports

You can use the network ports POST API to create VLAN and LAG ports. If you supply the optional broadcast domain property, the specified broadcast domain will be assigned to the new port immediately. Otherwise, within a few minutes automatic probing will determine the correct broadcast domain and will assign it to the port. During that period of time, the port will not be capable of hosting interfaces.

## Examples

### Creating a VLAN port

The following output displays the record returned after the creation of a VLAN port on "e0e" and VLAN tag "100".

```
# The API:  
/api/network/ethernet/ports  
  
# The call:  
curl -X POST "https://<mgmt-  
ip>/api/network/ethernet/ports?return_records=true" -H "accept:  
application/hal+json" -H "Content-Type: application/json" -d "{ \"type\":  
\"vlan\", \"node\": { \"name\": \"user-cluster-01\" }, \"enabled\": true,  
\"vlan\": { \"tag\": 100, \"base_port\": { \"name\": \"e0e\", \"node\": {  
\"name\": \"user-cluster-01\" } } } }"  
  
# The response:  
{  
  "num_records": 1,  
  "records": [  
    {  
      "uuid": "88b2f682-fa42-11e8-a6d7-005056bb5b8e",  
      "type": "vlan",  
      "node": {  
        "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",  
        "name": "user-cluster-01",  
        "_links": {  
          "self": {  
            "href": "/api/cluster/nodes/faa56898-f70c-11e8-b145-
```

```

005056bb5b8e"
    }
  }
},
"enabled": true,
"vlan": {
  "tag": 100,
  "base_port": {
    "uuid": "2d39df72-f70d-11e8-b145-005056bb5b8e",
    "name": "e0e",
    "node": {
      "name": "user-cluster-01"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/2d39df72-f70d-11e8-b145-
005056bb5b8e"
      }
    }
  }
},
"_links": {
  "self": {
    "href": "/api/network/ethernet/ports/88b2f682-fa42-11e8-a6d7-
005056bb5b8e"
  }
}
]
}

```

### Creating a VLAN port in a specific broadcast domain

The following output displays the record returned after the creation of a VLAN port on "e0e" and VLAN tag "100". Also, the VLAN port is added to the "Default" broadcast domain in the "Default" IPspace.

```

# The API:
/api/network/ethernet/ports

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ethernet/ports?return_records=true" -H "accept:
application/hal+json" -H "Content-Type: application/json" -d "{

```

```
\ "type\ ": \ "vlan\ ", \ "node\ ": { \ "name\ ": \ "user-cluster-01\ " },
\ "broadcast_domain\ ": { \ "name\ ": \ "Default\ ", \ "ipSPACE\ ": { \ "name\ ":
\ "Default \ " } }, \ "enabled\ ": true, \ "vlan\ ": { \ "tag\ ": 100,
\ "base_port\ ": { \ "name\ ": \ "e0e\ ", \ "node\ ": { \ "name\ ": \ "user-cluster-
01\ " } } } }
```

# The response:

```
{
"num_records": 1,
"records": [
{
  "uuid": "88b2f682-fa42-11e8-a6d7-005056bb5b8e",
  "type": "vlan",
  "node": {
    "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
    "name": "user-cluster-01",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/faa56898-f70c-11e8-b145-
005056bb5b8e"
      }
    }
  },
  "broadcast_domain": {
    "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
    "name": "Default",
    "ipSPACE": {
      "name": "Default"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/broadcast-domains/36434bec-f70d-
11e8-b145-005056bb5b8e"
      }
    }
  },
  "enabled": true,
  "vlan": {
    "tag": 100,
    "base_port": {
      "uuid": "2d39df72-f70d-11e8-b145-005056bb5b8e",
      "name": "e0e",
      "node": {
        "name": "user-cluster-01"
      },
      "_links": {
```

```

        "self": {
            "href": "/api/network/ethernet/ports/2d39df72-f70d-11e8-b145-005056bb5b8e"
        }
    },
    "_links": {
        "self": {
            "href": "/api/network/ethernet/ports/88b2f682-fa42-11e8-a6d7-005056bb5b8e"
        }
    }
}
]
}

```

### Creating a LAG (ifgrp) port

The following output displays the record returned after the creation of a LAG port with "e0f", "e0g" and "e0h" as member ports.

```

# The API:
/api/network/ethernet/ports

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ethernet/ports?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"type\":
\"lag\", \"node\": { \"name\": \"user-cluster-01\" }, \"enabled\": true,
\"lag\": { \"mode\": \"singlemode\", \"distribution_policy\": \"mac\",
\"member_ports\": [ { \"name\": \"e0f\", \"node\": { \"name\": \"user-
cluster-01\" } }, { \"name\": \"e0g\", \"node\": { \"name\": \"user-
cluster-01\" } }, { \"name\": \"e0h\", \"node\": { \"name\": \"user-
cluster-01\" } } ] } }"

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "1807772a-fa4d-11e8-a6d7-005056bb5b8e",
      "type": "lag",

```

```

"node": {
  "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
  "name": "user-cluster-01"
},
"enabled": true,
"lag": {
  "mode": "singlemode",
  "distribution_policy": "mac",
  "member_ports": [
    {
      "uuid": "2d3c9adc-f70d-11e8-b145-005056bb5b8e",
      "name": "e0f",
      "node": {
        "name": "user-cluster-01"
      }
    },
    {
      "uuid": "2d40b097-f70d-11e8-b145-005056bb5b8e",
      "name": "e0g",
      "node": {
        "name": "user-cluster-01"
      }
    },
    {
      "uuid": "2d46d01e-f70d-11e8-b145-005056bb5b8e",
      "name": "e0h",
      "node": {
        "name": "user-cluster-01"
      }
    }
  ]
}
}
}

```

### Creating a LAG (ifgrp) port in a specific broadcast domain

The following output displays the record returned after the creation of a LAG port with "e0f", "e0g" and "e0h" as member ports. Also, the LAG port is added to the "Default" broadcast domain in the "Default" IPspace.

```

# The API:
/api/network/ethernet/ports

```

```
# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ethernet/ports?return_records=true" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"type\":
\"lag\", \"node\": { \"name\": \"user-cluster-01\" },
\"broadcast_domain\": { \"name\": \"Default\", \"ipspace\": { \"name\":
\"Default\" } }, \"enabled\": true, \"lag\": { \"mode\": \"singlemode\",
\"distribution_policy\": \"mac\", \"member_ports\": [ { \"name\": \"e0f\",
\"node\": { \"name\": \"user-cluster-01\" } }, { \"name\": \"e0g\",
\"node\": { \"name\": \"user-cluster-01\" } } ], } }" -u admin:netapp! -k
```

```
# The response:
```

```
{
  "num_records": 1,
  "records": [
    {
      "uuid": "1807772a-fa4d-11e8-a6d7-005056bb5b8e",
      "type": "lag",
      "node": {
        "uuid": "faa56898-f70c-11e8-b145-005056bb5b8e",
        "name": "user-cluster-01"
      },
      "broadcast_domain": {
        "uuid": "36434bec-f70d-11e8-b145-005056bb5b8e",
        "name": "Default",
        "ipspace": {
          "name": "Default"
        }
      },
      "enabled": true,
      "lag": {
        "mode": "singlemode",
        "distribution_policy": "mac",
        "member_ports": [
          {
            "uuid": "2d3c9adc-f70d-11e8-b145-005056bb5b8e",
            "name": "e0f",
            "node": {
              "name": "user-cluster-01"
            }
          },
          {
            "uuid": "2d40b097-f70d-11e8-b145-005056bb5b8e",
            "name": "e0g",
```

```

        "node": {
            "name": "user-cluster-01"
        }
    },
    {
        "uuid": "2d46d01e-f70d-11e8-b145-005056bb5b8e",
        "name": "e0h",
        "node": {
            "name": "user-cluster-01"
        }
    }
]
}
}
]
}

```

## Updating ports

You can use the network ports PATCH API to update the attributes of ports.

## Examples

### Updating the broadcast domain of a port

The following PATCH request removes the port from the current broadcast domain and adds it to the specified broadcast domain.

```

# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/ports/6867efaf-d702-11e8-994f-005056bbc994" -H "accept: application/hal+json" -H "Content-Type: application/json" -d "{ \"broadcast_domain\": { \"name\": \"Default\", \"ipSpace\": { \"name\": \"Default\" } } }"

```

### Updating the admin status of a port

The following PATCH request brings the specified port down.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/ports/51d3ab39-d86d-11e8-aca6-005056bbc994" -H "accept: application/hal+json" -H "Content-Type: application/json" -d "{ \"enabled\": \"false\" }"
```

---

### Repairing a port

The following PATCH request repairs a port. Only ports that have reachability as "repairable" can be repaired. The "reachability" parameter cannot be patched in the same request as other parameters that might affect the target port's reachability status.

```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/ports/51d3ab39-d86d-11e8-aca6-005056bbc994" -H "accept: application/hal+json" -H "Content-Type: application/json" -d "{ \"reachability\": \"ok\" }"
```

---

### Deleting ports

You can use the network ports DELETE API to delete VLAN and LAG ports in the cluster. Note that physical ports cannot be deleted. Deleting a port also removes the port from the broadcast domain.

---

### Example

#### Deleting a VLAN port

The network ports DELETE API is used to delete a VLAN port.

---



```
# The API:
/api/network/ethernet/ports/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ethernet/ports/6867efaf-
d702-11e8-994f-005056bbc994" -H "accept: application/hal+json" -H
"Content-Type: application/json"
```

## Retrieve ports

GET /network/ethernet/ports

**Introduced In:** 9.6

Retrieves a collection of ports (physical, VLAN and LAG) for an entire cluster.

### Related ONTAP commands

- network port show
- network port ifgrp show
- network port vlan show

### Parameters

Name	Type	In	Required	Description
uuid	string	query	False	Filter by uuid
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
statistics.device.link_down_count_raw	integer	query	False	Filter by statistics.device.link_down_count_raw  • Introduced in: 9.8
statistics.device.time stamp	string	query	False	Filter by statistics.device.time stamp  • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.device.transmit_raw.errors	integer	query	False	Filter by statistics.device.transmit_raw.errors  • Introduced in: 9.8
statistics.device.transmit_raw.discards	integer	query	False	Filter by statistics.device.transmit_raw.discards  • Introduced in: 9.8
statistics.device.transmit_raw.packets	integer	query	False	Filter by statistics.device.transmit_raw.packets  • Introduced in: 9.8
statistics.device.receive_raw.errors	integer	query	False	Filter by statistics.device.receive_raw.errors  • Introduced in: 9.8
statistics.device.receive_raw.discards	integer	query	False	Filter by statistics.device.receive_raw.discards  • Introduced in: 9.8
statistics.device.receive_raw.packets	integer	query	False	Filter by statistics.device.receive_raw.packets  • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status  • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.timestamp	string	query	False	Filter by statistics.timestamp  • Introduced in: 9.8
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read  • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total  • Introduced in: 9.8
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write  • Introduced in: 9.8
enabled	boolean	query	False	Filter by enabled
metric.timestamp	string	query	False	Filter by metric.timestamp  • Introduced in: 9.8
metric.duration	string	query	False	Filter by metric.duration  • Introduced in: 9.8
metric.throughput.read	integer	query	False	Filter by metric.throughput.read  • Introduced in: 9.8

Name	Type	In	Required	Description
metric.throughput.total	integer	query	False	Filter by metric.throughput.total  • Introduced in: 9.8
metric.throughput.write	integer	query	False	Filter by metric.throughput.write  • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status  • Introduced in: 9.8
reachability	string	query	False	Filter by reachability  • Introduced in: 9.8
lag.member_ports.name	string	query	False	Filter by lag.member_ports.name
lag.member_ports.node.name	string	query	False	Filter by lag.member_ports.node.name
lag.member_ports.uid	string	query	False	Filter by lag.member_ports.uid
lag.distribution_policy	string	query	False	Filter by lag.distribution_policy
lag.mode	string	query	False	Filter by lag.mode
lag.active_ports.name	string	query	False	Filter by lag.active_ports.name

Name	Type	In	Required	Description
lag.active_ports.node.name	string	query	False	Filter by lag.active_ports.node.name
lag.active_ports.uuid	string	query	False	Filter by lag.active_ports.uuid
name	string	query	False	Filter by name
rdma_protocols	string	query	False	Filter by rdma_protocols  • Introduced in: 9.10
reachable_broadcast_domains.name	string	query	False	Filter by reachable_broadcast_domains.name  • Introduced in: 9.8
reachable_broadcast_domains.ipaddress.name	string	query	False	Filter by reachable_broadcast_domains.ipaddress.name  • Introduced in: 9.8
reachable_broadcast_domains.uuid	string	query	False	Filter by reachable_broadcast_domains.uuid  • Introduced in: 9.8
state	string	query	False	Filter by state
speed	integer	query	False	Filter by speed
mtu	integer	query	False	Filter by mtu
vlan.tag	integer	query	False	Filter by vlan.tag

Name	Type	In	Required	Description
vlan.base_port.name	string	query	False	Filter by vlan.base_port.name
vlan.base_port.node.name	string	query	False	Filter by vlan.base_port.node.name
vlan.base_port.uuid	string	query	False	Filter by vlan.base_port.uuid
type	string	query	False	Filter by type
broadcast_domain.name	string	query	False	Filter by broadcast_domain.name
broadcast_domain.ip.space.name	string	query	False	Filter by broadcast_domain.ip.space.name
broadcast_domain.uuid	string	query	False	Filter by broadcast_domain.uuid
mac_address	string	query	False	Filter by mac_address
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	<p>The default is true for GET calls. When set to false, only the number of records is returned.</p> <ul style="list-style-type: none"> <li>• Default value: 1</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 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="#">port</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "broadcast_domain": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ipspace": {
        "name": "ipspace1"
      },
      "name": "bd1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "lag": {
      "active_ports": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "elb",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "distribution_policy": "port",
      "member_ports": {
        "_links": {
          "self": {
```



```

        "href": "/api/resourcelink"
      }
    },
    "name": "elb",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "mode": "multimode_lacp"
},
"mac_address": "01:02:03:04:05:06",
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"mtu": 1500,
"name": "elb",
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"rdma_protocols": {
},
"reachability": "ok",
"reachable_broadcast_domains": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}

```

```

    },
    "ipspace": {
      "name": "ipspace1"
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "speed": 1000,
  "state": "up",
  "statistics": {
    "device": {
      "link_down_count_raw": 3,
      "receive_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      },
      "timestamp": "2017-01-25T11:20:13Z",
      "transmit_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      }
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "type": "vlan",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vlan": {
    "base_port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  }
}

```

```
    },
    "tag": 100
  }
}
```

## 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>	

ipospace

Name	Type	Description
name	string	Name of the broadcast domain's IPspace

broadcast\_domain

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	<a href="#">_links</a>	
ipospace	<a href="#">ipospace</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

node

Name	Type	Description
name	string	Name of node on which the port is located.

## active\_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

## member\_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

## lag

Name	Type	Description
active_ports	array[ <a href="#">active_ports</a> ]	Active ports of a LAG (ifgrp). (Some member ports may be inactive.)
distribution_policy	string	Policy for mapping flows to ports for outbound packets through a LAG (ifgrp).
member_ports	array[ <a href="#">member_ports</a> ]	
mode	string	Determines how the ports interact with the switch.

## throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.

Name	Type	Description
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

metric

The most recent sample of I/O metrics for the port.

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

Name	Type	Description
timestamp	string	The timestamp of the performance data.

node

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

reachable\_broadcast\_domains

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
<a href="#">ipspace</a>	<a href="#">ipspace</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

receive\_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit\_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

#### device

Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
link_down_count_raw	integer	The number of link state changes from up to down seen on the device.
receive_raw	<a href="#">receive_raw</a>	Packet receive counters for the Ethernet port.
timestamp	string	The timestamp when the device specific counters were collected.
transmit_raw	<a href="#">transmit_raw</a>	Packet transmit counters for the Ethernet port.

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics



The real time I/O statistics for the port.

Name	Type	Description
device	device	Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	throughput_raw	Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the throughput_raw performance data.

## base\_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

## vlan

Name	Type	Description
base_port	<a href="#">base_port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
tag	integer	VLAN ID

## port

Name	Type	Description
_links	<a href="#">_links</a>	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
enabled	boolean	
lag	<a href="#">lag</a>	
mac_address	string	
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the port.
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	<a href="#">node</a>	

Name	Type	Description
rdma_protocols	array[string]	Supported RDMA offload protocols
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[ <a href="#">reachable_broadcast_domains</a> ]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the port.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	<a href="#">vlan</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

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

## Create a new VLAN or LAG

POST /network/ethernet/ports

**Introduced In:** 9.6

Creates a new VLAN (such as node1:e0a-100) or LAG (ifgrp, such as node2:a0a).

### Required properties

- `node` - Node the port will be created on.
- `type` - Defines if a VLAN or LAG will be created:
  - VLAN
    - `vlan.base_port` - Physical port or LAG the VLAN will be created on.
    - `vlan.tag` - Tag used to identify VLAN on the base port.
  - LAG
    - `lag.mode` - Policy for the LAG that will be created.
    - `lag.distribution_policy` - Indicates how the packets are distributed between ports.
    - `lag.member_ports` - Set of ports the LAG consists of.

### Optional properties

- `broadcast_domain` - The layer-2 broadcast domain the port is associated with. The port will be placed in a broadcast domain if it is not specified. It may take several minutes for the broadcast domain to be assigned. During that period the port cannot host interfaces.

### Related ONTAP commands

- `network port ifgrp create`
- `network port vlan create`

### Parameters

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

## Request Body

Name	Type	Description
_links	<a href="#">_links</a>	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
enabled	boolean	
lag	<a href="#">lag</a>	
mac_address	string	
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the port.
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	<a href="#">node</a>	
rdma_protocols	array[string]	Supported RDMA offload protocols
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[ <a href="#">reachable_broadcast_domains</a> ]	Reachable broadcast domains.
speed	integer	Link speed in Mbps

Name	Type	Description
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the port.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	<a href="#">vlan</a>	

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "broadcast_domain": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ipspace": {
      "name": "ipspace1"
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "lag": {
    "active_ports": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "distribution_policy": "port",
    "member_ports": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
}
```

```
    "mode": "multimode_lacp"
  },
  "mac_address": "01:02:03:04:05:06",
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "duration": "PT15S",
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"mtu": 1500,
"name": "e1b",
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"name": "node1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"rdma_protocols": {
},
"reachability": "ok",
"reachable_broadcast_domains": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"ipspace": {
  "name": "ipspace1"
},
"name": "bd1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"speed": 1000,
"state": "up",
```



```

"statistics": {
  "device": {
    "link_down_count_raw": 3,
    "receive_raw": {
      "discards": 100,
      "errors": 200,
      "packets": 500
    },
    "timestamp": "2017-01-25T11:20:13Z",
    "transmit_raw": {
      "discards": 100,
      "errors": 200,
      "packets": 500
    }
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"type": "vlan",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"vlan": {
  "base_port": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "e1b",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "tag": 100
}
}

```

## Response

Status: 201, Created

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

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "broadcast_domain": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ipspace": {
        "name": "ipspace1"
      },
      "name": "bd1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "lag": {
      "active_ports": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "elb",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "distribution_policy": "port",
      "member_ports": {
        "_links": {
          "self": {
```

```

        "href": "/api/resourcelink"
    },
    },
    "name": "elb",
    "node": {
        "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"mode": "multimode_lacp"
},
"mac_address": "01:02:03:04:05:06",
"metric": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "duration": "PT15S",
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
},
"mtu": 1500,
"name": "elb",
"node": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"rdma_protocols": {
},
"reachability": "ok",
"reachable_broadcast_domains": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    }
}

```

```

    },
    "ipspace": {
      "name": "ipspace1"
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "speed": 1000,
  "state": "up",
  "statistics": {
    "device": {
      "link_down_count_raw": 3,
      "receive_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      },
      "timestamp": "2017-01-25T11:20:13Z",
      "transmit_raw": {
        "discards": 100,
        "errors": 200,
        "packets": 500
      }
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "type": "vlan",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "vlan": {
    "base_port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  }
}

```

```

    },
    "tag": 100
  }
}
}

```

## Error

Status: Default

### ONTAP Error Response Codes

Error Code	Description
1376361	Port is already a member of a LAG.
1966189	Port is the home port or current port of an interface.
1967083	The specified type is not valid.
1967084	The specified node UUID is not valid.
1967085	The specified node name is not valid.
1967086	Node name and UUID must match if both are provided.
1967087	The specified broadcast domain UUID is not valid.
1967088	The specified broadcast domain name does not exist in the specified IPspace.
1967089	The specified broadcast domain UUID, name, and IPspace name do not match.
1967090	The specified VLAN base port UUID is not valid.
1967091	The specified VLAN base port name and node name are not valid.
1967092	The specified node does not match the node specified for the VLAN base port.
1967093	The specified VLAN base port UUID, name, and VLAN base port node name do not match.
1967094	The specified LAG member port UUID is not valid.
1967095	The specified LAG member port name and node name combination is not valid.
1967096	The specified node does not match the specified LAG member port node.
1967097	The specified LAG member ports UUID, name, and node name do not match.

Error Code	Description
1967098	VLAN POST operation has failed because admin status could not be set for the specified port.
1967099	Partial success of the VLAN POST operation. Verify the state of the created VLAN for more information.
1967100	LAG POST operation failed because admin status could not be set.
1967101	Partial success of the LAG POST operation. Verify the state of the created LAG for more information.
1967102	POST operation might have left the configuration in an inconsistent state. Check the configuration.
1967148	Failure to remove port from broadcast domain.
1967149	Failure to add port to broadcast domain.
1967175	VLANs cannot be created on ports in the Cluster IPspace.

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>	

ipospace

Name	Type	Description
name	string	Name of the broadcast domain's IPspace

broadcast\_domain

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	<a href="#">_links</a>	
ipospace	<a href="#">ipospace</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

node

Name	Type	Description
name	string	Name of node on which the port is located.

active\_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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



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

member\_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

lag

Name	Type	Description
active_ports	array[ <a href="#">active_ports</a> ]	Active ports of a LAG (ifgrp). (Some member ports may be inactive.)
distribution_policy	string	Policy for mapping flows to ports for outbound packets through a LAG (ifgrp).
member_ports	array[ <a href="#">member_ports</a> ]	
mode	string	Determines how the ports interact with the switch.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

## metric

The most recent sample of I/O metrics for the port.

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

## node

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

Name	Type	Description
name	string	
uuid	string	

#### reachable\_broadcast\_domains

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
<a href="#">ipspace</a>	<a href="#">ipspace</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

#### receive\_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

#### transmit\_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

#### device

Device-related counters for the port object. These counters are applicable at the lowest layer of the

networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
link_down_count_raw	integer	The number of link state changes from up to down seen on the device.
receive_raw	<a href="#">receive_raw</a>	Packet receive counters for the Ethernet port.
timestamp	string	The timestamp when the device specific counters were collected.
transmit_raw	<a href="#">transmit_raw</a>	Packet transmit counters for the Ethernet port.

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

The real time I/O statistics for the port.

Name	Type	Description
device	device	Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.
status	string	<p>Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data".</p> <p>"inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated.</p> <p>"Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.</p>
throughput_raw	throughput_raw	Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the throughput_raw performance data.

base\_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

vlan

Name	Type	Description
base_port	<a href="#">base_port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
tag	integer	VLAN ID

port

Name	Type	Description
_links	<a href="#">_links</a>	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
enabled	boolean	
lag	<a href="#">lag</a>	
mac_address	string	
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the port.
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	<a href="#">node</a>	

Name	Type	Description
rdma_protocols	array[string]	Supported RDMA offload protocols
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[ <a href="#">reachable_broadcast_domains</a> ]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the port.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	<a href="#">vlan</a>	

#### \_links

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

#### error\_arguments

Name	Type	Description
code	string	Argument code

Name	Type	Description
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 VLAN or LAG

DELETE /network/ethernet/ports/{uuid}

**Introduced In:** 9.6

Deletes a VLAN or LAG.

### Related ONTAP commands

- `network port ifgrp delete`
- `network port vlan delete`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Port UUID

### Response

Status: 200, Ok

### Error

Status: Default

ONTAP Error Response Codes



Error Code	Description
1376858	Port already has an interface bound.
1966189	Port is the home port or current port of an interface.

Name	Type	Description
error	error	

### Example error

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

### Definitions

## See Definitions

### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

### error

Name	Type	Description
arguments	array[ <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 a physical port, VLAN, or LAG details

GET /network/ethernet/ports/{uuid}

**Introduced In:** 9.6

Retrieves the details of a physical port, VLAN, or LAG.

### Related ONTAP commands

- `network port show`
- `network port ifgrp show`
- `network port vlan show`

### Parameters

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

## Response

Status: 200, Ok

Name	Type	Description
_links	<a href="#">_links</a>	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
enabled	boolean	
lag	<a href="#">lag</a>	
mac_address	string	
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the port.
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	<a href="#">node</a>	
rdma_protocols	array[string]	Supported RDMA offload protocols
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[ <a href="#">reachable_broadcast_domains</a> ]	Reachable broadcast domains.
speed	integer	Link speed in Mbps

Name	Type	Description
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the port.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	<a href="#">vlan</a>	

## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "broadcast_domain": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ipspace": {
      "name": "ipspace1"
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "lag": {
    "active_ports": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "distribution_policy": "port",
    "member_ports": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
}
```

```
    "mode": "multimode_lacp"
  },
  "mac_address": "01:02:03:04:05:06",
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "duration": "PT15S",
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"mtu": 1500,
"name": "e1b",
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"name": "node1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"rdma_protocols": {
},
"reachability": "ok",
"reachable_broadcast_domains": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"ipspace": {
  "name": "ipspace1"
},
"name": "bd1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"speed": 1000,
"state": "up",
```

```

"statistics": {
  "device": {
    "link_down_count_raw": 3,
    "receive_raw": {
      "discards": 100,
      "errors": 200,
      "packets": 500
    },
    "timestamp": "2017-01-25T11:20:13Z",
    "transmit_raw": {
      "discards": 100,
      "errors": 200,
      "packets": 500
    }
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"type": "vlan",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"vlan": {
  "base_port": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "e1b",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "tag": 100
}
}

```

**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>	

ipspace

Name	Type	Description
name	string	Name of the broadcast domain's IPspace

broadcast\_domain

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	<a href="#">_links</a>	
ipspace	<a href="#">ipspace</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

node

Name	Type	Description
name	string	Name of node on which the port is located.

active\_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

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

member\_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

lag

Name	Type	Description
active_ports	array[ <a href="#">active_ports</a> ]	Active ports of a LAG (ifgrp). (Some member ports may be inactive.)
distribution_policy	string	Policy for mapping flows to ports for outbound packets through a LAG (ifgrp).
member_ports	array[ <a href="#">member_ports</a> ]	
mode	string	Determines how the ports interact with the switch.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

## metric

The most recent sample of I/O metrics for the port.

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

## node

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

Name	Type	Description
name	string	
uuid	string	

#### reachable\_broadcast\_domains

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
<a href="#">ipspace</a>	<a href="#">ipspace</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

#### receive\_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

#### transmit\_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

#### device

Device-related counters for the port object. These counters are applicable at the lowest layer of the

networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
link_down_count_raw	integer	The number of link state changes from up to down seen on the device.
receive_raw	<a href="#">receive_raw</a>	Packet receive counters for the Ethernet port.
timestamp	string	The timestamp when the device specific counters were collected.
transmit_raw	<a href="#">transmit_raw</a>	Packet transmit counters for the Ethernet port.

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

The real time I/O statistics for the port.

Name	Type	Description
device	device	Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.
status	string	<p>Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data".</p> <p>"inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated.</p> <p>"Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.</p>
throughput_raw	throughput_raw	Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the throughput_raw performance data.

base\_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

vlan

Name	Type	Description
<code>base_port</code>	<a href="#">base_port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
<code>tag</code>	integer	VLAN ID

error\_arguments

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

error

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

## Update a port

PATCH `/network/ethernet/ports/{uuid}`

**Introduced In:** 9.6

Updates a port.

## Related ONTAP commands

- `network port broadcast-domain add-ports`
- `network port broadcast-domain remove-ports`
- `network port ifgrp modify`
- `network port modify`
- `network port vlan modify`
- `network port reachability repair`

## Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Port UUID

## Request Body

Name	Type	Description
<code>_links</code>	<code>_links</code>	
<code>broadcast_domain</code>	<code>broadcast_domain</code>	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
<code>enabled</code>	boolean	
<code>lag</code>	<code>lag</code>	
<code>mac_address</code>	string	
<code>metric</code>	<code>metric</code>	The most recent sample of I/O metrics for the port.
<code>mtu</code>	integer	MTU of the port in bytes. Set by broadcast domain.
<code>name</code>	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
<code>node</code>	<code>node</code>	
<code>rdma_protocols</code>	array[string]	Supported RDMA offload protocols



Name	Type	Description
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[ <a href="#">reachable_broadcast_domains</a> ]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the port.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	<a href="#">vlan</a>	

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "broadcast_domain": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ipspace": {
      "name": "ipspace1"
    },
    "name": "bd1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "lag": {
    "active_ports": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "distribution_policy": "port",
    "member_ports": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
}
```

```
    "mode": "multimode_lacp"
  },
  "mac_address": "01:02:03:04:05:06",
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "duration": "PT15S",
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"mtu": 1500,
"name": "e1b",
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"name": "node1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"rdma_protocols": {
},
"reachability": "ok",
"reachable_broadcast_domains": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"ipspace": {
  "name": "ipspace1"
},
"name": "bd1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"speed": 1000,
"state": "up",
```

```
"statistics": {
  "device": {
    "link_down_count_raw": 3,
    "receive_raw": {
      "discards": 100,
      "errors": 200,
      "packets": 500
    },
    "timestamp": "2017-01-25T11:20:13Z",
    "transmit_raw": {
      "discards": 100,
      "errors": 200,
      "packets": 500
    }
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"type": "vlan",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"vlan": {
  "base_port": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "e1b",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "tag": 100
}
}
```

## Response

Status: 200, Ok

## Error

Status: Default

### ONTAP Error Response Codes

Error Code	Description
1376361	Port is already a member of a LAG.
1376488	Disabling the last operational cluster port on a node is not allowed.
1377562	Port cannot be used because it is currently the home port or current port of an interface.
1377563	Port is already a member of a LAG.
1967087	The specified broadcast domain UUID is not valid.
1967088	The specified broadcast domain name does not exist in the specified IPspace.
1967089	The specified broadcast domain UUID, name and IPspace name do not match.
1967094	The specified LAG member port UUID is not valid.
1967095	The specified LAG member port name and node name combination is not valid.
1967096	The specified node does not match the specified LAG member port node.
1967097	The specified LAG member ports UUID, name, and node name do not match.
1967148	Failure to remove port from broadcast domain.
1967149	Failure to add port to broadcast domain.
1967184	The reachability parameter cannot be patched in the same request as other parameters that might affect the target port's reachability status.
1967185	The port cannot be repaired because the port is deemed as non-repairable.
1967186	Invalid value for the reachability parameter.
1967580	This command is not supported as the effective cluster version is earlier than 9.8.
1967582	The reachability parameter is not supported on this 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>	

ipospace

Name	Type	Description
name	string	Name of the broadcast domain's IPspace

broadcast\_domain

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	<a href="#">_links</a>	
ipospace	<a href="#">ipospace</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

node

Name	Type	Description
name	string	Name of node on which the port is located.

active\_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

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

member\_ports

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

lag

Name	Type	Description
active_ports	array[ <a href="#">active_ports</a> ]	Active ports of a LAG (ifgrp). (Some member ports may be inactive.)
distribution_policy	string	Policy for mapping flows to ports for outbound packets through a LAG (ifgrp).
member_ports	array[ <a href="#">member_ports</a> ]	
mode	string	Determines how the ports interact with the switch.

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.



## metric

The most recent sample of I/O metrics for the port.

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

## node

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

Name	Type	Description
name	string	
uuid	string	

reachable\_broadcast\_domains

Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.

Name	Type	Description
_links	<a href="#">_links</a>	
ipspace	<a href="#">ipspace</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

receive\_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit\_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

device

Device-related counters for the port object. These counters are applicable at the lowest layer of the

networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.

Name	Type	Description
link_down_count_raw	integer	The number of link state changes from up to down seen on the device.
receive_raw	<a href="#">receive_raw</a>	Packet receive counters for the Ethernet port.
timestamp	string	The timestamp when the device specific counters were collected.
transmit_raw	<a href="#">transmit_raw</a>	Packet transmit counters for the Ethernet port.

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

The real time I/O statistics for the port.

Name	Type	Description
device	device	Device-related counters for the port object. These counters are applicable at the lowest layer of the networking stack. These values can be used to calculate both transmit and receive packet and error rates by comparing two samples taken at different times and calculating the increase in counter value divided by the elapsed time between the two samples.
status	string	<p>Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data".</p> <p>"inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated.</p> <p>"Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.</p>
throughput_raw	throughput_raw	Throughput bytes observed at the port object. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the throughput_raw performance data.

base\_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

vlan

Name	Type	Description
base_port	<a href="#">base_port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
tag	integer	VLAN ID

port

Name	Type	Description
_links	<a href="#">_links</a>	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name. Either the UUID or both names may be provided on input.
enabled	boolean	
lag	<a href="#">lag</a>	
mac_address	string	
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the port.
mtu	integer	MTU of the port in bytes. Set by broadcast domain.
name	string	Portname, such as e0a, e1b-100 (VLAN on Ethernet), a0c (LAG/ifgrp), a0d-200 (VLAN on LAG/ifgrp), e0a.pv1 (p-VLAN, in select environments only)
node	<a href="#">node</a>	

Name	Type	Description
rdma_protocols	array[string]	Supported RDMA offload protocols
reachability	string	Reachability status of the port. Enum value "ok" is the only acceptable value for a PATCH request to repair a port.
reachable_broadcast_domains	array[ <a href="#">reachable_broadcast_domains</a> ]	Reachable broadcast domains.
speed	integer	Link speed in Mbps
state	string	Operational state of the port. The state is set to 'down' if the operational state of the port is down. The state is set to 'up' if the link state of the port is up and the port is healthy. The state is set to 'up' if the link state of the port is up and configured to ignore health status. The state is 'degraded' if the link state of the port is up, and the port is not healthy.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the port.
type	string	Type of physical or virtual port
uuid	string	Port UUID
vlan	<a href="#">vlan</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

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

## Retrieve historical port performance metrics

GET /network/ethernet/ports/{uuid}/metrics

Introduced In: 9.8

Retrieves historical performance metrics for a port.

### Parameters

Name	Type	In	Required	Description
timestamp	string	query	False	Filter by timestamp
duration	string	query	False	Filter by duration
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
status	string	query	False	Filter by status
uuid	string	path	True	Unique identifier of the port.

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",
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

## Error

Status: Default, Error

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

## 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>	

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Throughput performance for the Ethernet port.

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

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

#### 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

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

## Retrieve network Ethernet switch ports

### Network Ethernet switch ports endpoint overview

#### Overview

This API can be used to get the port information for an ethernet switch used in a cluster or storage networks. This API supports GET only. The GET operation returns a list of ports with status and configuration information.

#### Examples

##### Retrieving the ports for ethernet switches

The following example retrieves the ethernet switch ports for all the ethernet switches used for cluster and/or storage networks. Note that if the *fields=\** parameter is not specified, the fields identity.number, statistics, and mac\_address are not returned. Filters can be added on the fields to limit the results.

```
# The API:
GET /network/ethernet/switch/ports

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/switch/ports?fields=*"
-H "accept: application/json" -H "Content-Type: application/hal+json"

# The response: (abbreviated output due to length, shows a port connected
to a node, a port with no remote connection and a port connected to shelf)
{
  "records": [
    {
      "switch": {
        "name": "RTP-CS01-510R11 (FOC22092K12)",
        "_links": {
          "self": {
            "href": "/api/network/ethernet/switches/RTP-CS01-
510R11 (FOC22092K12)"
          }
        }
      }
    }
  ]
}
```

```

},
"identity": {
  "name": "Ethernet1/1",
  "index": 436207616,
  "number": 1,
  "type": "ethernetcsmacd"
},
"mtu": 9216,
"duplex_type": "full_duplex",
"speed": 100000,
"configured": "up",
"state": "up",
"isl": false,
"statistics": {
  "receive_raw": {
    "packets": 1616467751,
    "errors": 0,
    "discards": 0
  },
  "transmit_raw": {
    "packets": 206717534,
    "errors": 0,
    "discards": 0
  }
},
"remote_port": {
  "mtu": 9000,
  "name": "e3a",
  "device": {
    "node": {
      "name": "stiA400-311",
      "uuid": "54c0f036-8a3a-11ea-893d-00a098fd726d",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/54c0f036-8a3a-11ea-893d-00a098fd726d"
        }
      }
    }
  }
},
"mac_address": "00:be:75:ae:2a:d4",
"vlan_id": [
  1,
  17,
  18,

```

```

    92
  ],
  "_links": {
    "self": {
      "href": "/api/network/ethernet/switch/ports/RTP-CS01-
510R11%28FOC22092K12%29/Ethernet1%2F1/436207616"
    }
  }
},
{
  "switch": {
    "name": "RTP-CS01-510R11 (FOC22092K12)",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switches/RTP-CS01-
510R11 (FOC22092K12) "
      }
    }
  },
  "identity": {
    "name": "Ethernet1/11",
    "index": 436212736,
    "number": 11,
    "type": "ethernetcsmacd"
  },
  "mtu": 9216,
  "duplex_type": "unknown",
  "speed": 100000,
  "configured": "up",
  "state": "down",
  "isl": false,
  "statistics": {
    "receive_raw": {
      "packets": 0,
      "errors": 0,
      "discards": 0
    },
    "transmit_raw": {
      "packets": 0,
      "errors": 0,
      "discards": 0
    }
  },
  "mac_address": "00be75ae2afc",
  "vlan_id": [
    1,

```



```

    17,
    18,
    92
  ],
  "_links": {
    "self": {
      "href": "/api/network/ethernet/switch/ports/RTP-CS01-
510R11%28FOC22092K12%29/Ethernet1%2F11/436212736"
    }
  }
},
{
  "switch": {
    "name": "RTP-SS01-510R10 (FOC22170DFR)",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switches/RTP-SS01-
510R10 (FOC22170DFR) "
      }
    }
  },
  "identity": {
    "name": "Ethernet1/10",
    "index": 436212224,
    "number": 10,
    "type": "ethernetcsmacd"
  },
  "mtu": 9216,
  "duplex_type": "full_duplex",
  "speed": 100000,
  "configured": "up",
  "state": "up",
  "isl": false,
  "statistics": {
    "receive_raw": {
      "packets": 332013844,
      "errors": 0,
      "discards": 0
    },
    "transmit_raw": {
      "packets": 2429595607,
      "errors": 0,
      "discards": 0
    }
  }
},
  "remote_port": {

```

```

"mtu": 9000,
"name": "e0a",
"device": {
  "shelf": {
    "name": "SHFFG1828000004:B",
    "uid": "12439000444923584512",
    "_links": {
      "self": {
        "href": "/api/storage/shelves/12439000444923584512"
      }
    }
  }
},
"mac_address": "00fcbaead548",
"vlan_id": [
  1,
  30
],
"_links": {
  "self": {
    "href": "/api/network/ethernet/switch/ports/RTP-SS01-510R10%28FOC22170DFR%29/Ethernet1%2F10/436212224"
  }
}
],
"num_records": 138,
"_links": {
  "self": {
    "href": "/api/network/ethernet/switch/ports?fields=*"
  }
}
}
}

```

### Retrieving a ports on an ethernet switch

```

# The API:
GET
/network/ethernet/switch/ports/{switch.name}/{identity.name}/{identity.index}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/switch/ports/RTP-SS02-

```

```
510R10%28FOC22131U6T%29/Ethernet1%2F9/436211712" -H "accept:
application/json" -H "Content-Type: application/hal+json"
```

```
# The response:
```

```
{
"switch": {
  "name": "RTP-SS02-510R10 (FOC22131U6T) ",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/switches/RTP-SS02-
510R10 (FOC22131U6T) "
    }
  }
},
"identity": {
  "name": "Ethernet1/9",
  "index": 436211712,
  "number": 9,
  "type": "ethernetcsmacd"
},
"mtu": 9216,
"duplex_type": "full_duplex",
"speed": 100000,
"configured": "up",
"state": "up",
"isl": false,
"statistics": {
  "receive_raw": {
    "packets": 4012559315,
    "errors": 0,
    "discards": 0
  },
  "transmit_raw": {
    "packets": 337898026,
    "errors": 0,
    "discards": 0
  }
},
"remote_port": {
  "mtu": 9000,
  "name": "e0b",
  "device": {
    "shelf": {
      "name": "SHFFG1828000004:A",
      "uid": "12439000444923584512",
      "_links": {
```

```

        "self": {
            "href": "/api/storage/shelves/12439000444923584512"
        }
    }
}
},
"mac_address": "00fcbaea7228",
"vlan_id": [
    1,
    30
],
"_links": {
    "self": {
        "href": "/api/network/ethernet/switch/ports/RTP-SS02-510R10%28FOC22131U6T%29/Ethernet1%2F9/436211712"
    }
}
}
}

```

## Retrieve Ethernet switch ports

GET /network/ethernet/switch/ports

**Introduced In:** 9.8

Retrieves the ethernet switch ports.

### Related ONTAP commands

- `system switch ethernet interface show`

### Learn more

- [DOC /network/ethernet/switch/ports](#)

### Parameters

Name	Type	In	Required	Description
remote_port.device.shelf.uid	string	query	False	Filter by remote_port.device.shelf.uid

Name	Type	In	Required	Description
remote_port.device. node.uuid	string	query	False	Filter by remote_port.device. node.uuid
remote_port.device. node.name	string	query	False	Filter by remote_port.device. node.name
remote_port.name	string	query	False	Filter by remote_port.name
remote_port.mtu	integer	query	False	Filter by remote_port.mtu
mtu	integer	query	False	Filter by mtu
switch.name	string	query	False	Filter by switch.name
speed	integer	query	False	Filter by speed
state	string	query	False	Filter by state
duplex_type	string	query	False	Filter by duplex_type
type	string	query	False	Filter by type
isl	boolean	query	False	Filter by isl
statistics.receive_ra w.errors	integer	query	False	Filter by statistics.receive_ra w.errors
statistics.receive_ra w.discards	integer	query	False	Filter by statistics.receive_ra w.discards
statistics.receive_ra w.packets	integer	query	False	Filter by statistics.receive_ra w.packets
statistics.transmit_ra w.errors	integer	query	False	Filter by statistics.transmit_ra w.errors

Name	Type	In	Required	Description
statistics.transmit_rate.discards	integer	query	False	Filter by statistics.transmit_rate.discards
statistics.transmit_rate.packets	integer	query	False	Filter by statistics.transmit_rate.packets
identity.name	string	query	False	Filter by identity.name
identity.number	integer	query	False	Filter by identity.number
identity.index	integer	query	False	Filter by identity.index
configured	string	query	False	Filter by configured
mac_address	string	query	False	Filter by mac_address
vlan_id	integer	query	False	Filter by vlan_id
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	<p>The default is true for GET calls. When set to false, only the number of records is returned.</p> <ul style="list-style-type: none"> <li>• Default value: 1</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 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="#">collection_links</a>	
num_records	integer	Number of Records
records	array[ <a href="#">switch_port</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "configured": "down",
    "duplex_type": "full_duplex",
    "identity": {
      "index": 0,
      "name": "string",
      "number": 0
    },
    "mac_address": "string",
    "mtu": 0,
    "remote_port": {
      "device": {
        "node": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "name": "node1",
          "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
        },
        "shelf": {
          "_links": {
            "self": {
              "href": "/api/resourcelink"
            }
          },
          "uid": "7777841915827391056"
        }
      }
    }
  },
}
```



```

    "mtu": 0,
    "name": "string"
  },
  "speed": 0,
  "state": "dormant",
  "statistics": {
    "receive_raw": {
      "discards": 100,
      "errors": 200,
      "packets": 500
    },
    "transmit_raw": {
      "discards": 100,
      "errors": 200,
      "packets": 500
    }
  },
  "switch": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "RTP-SS01-510R03 (FOC223443KQ) "
  },
  "type": "ethernetcsmacd",
  "vlan_id": {
  }
}

```

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

collection\_links

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

self\_link

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

identity

Name	Type	Description
index	integer	Interface Index.
name	string	Interface Name.
number	integer	Interface Number.

\_links

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

node

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

shelf

Shelf connected to this port.

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

device

Device connected to port.

Name	Type	Description
node	<a href="#">node</a>	
shelf	<a href="#">shelf</a>	Shelf connected to this port.

remote\_port

Remote port

Name	Type	Description
device	<a href="#">device</a>	Device connected to port.
mtu	integer	MTU in octets
name	string	Port Name.

receive\_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit\_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.

Name	Type	Description
errors	integer	Number of packet errors.
packets	integer	Total packet count.

#### statistics

These are raw counters for the device associated with the Ethernet port.

Name	Type	Description
receive_raw	<a href="#">receive_raw</a>	Packet receive counters for the Ethernet port.
transmit_raw	<a href="#">transmit_raw</a>	Packet transmit counters for the Ethernet port.

#### switch

The name of the specified cluster or storage switch.

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

#### switch\_port

Ethernet Switch Port REST API

Name	Type	Description
_links	<a href="#">self_link</a>	
configured	string	Administrative Status.
duplex_type	string	Duplex Settings.
identity	<a href="#">identity</a>	
isl	boolean	Is configured as an ISL link.
mac_address	string	MAC Address.
mtu	integer	MTU.
remote_port	<a href="#">remote_port</a>	Remote port

Name	Type	Description
speed	integer	Interface Speed(Mbps)
state	string	Operational Status.
statistics	<a href="#">statistics</a>	These are raw counters for the device associated with the Ethernet port.
switch	<a href="#">switch</a>	The name of the specified cluster or storage switch.
type	string	Interface Type.
vlan_id	array[integer]	

#### 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 an Ethernet switch port

GET /network/ethernet/switch/ports/{switch}/{identity.name}/{identity.index}

**Introduced In:** 9.8

Retrieves an ethernet switch port.

## Related ONTAP commands

- `system switch ethernet interface show`

## Parameters

Name	Type	In	Required	Description
switch	string	path	True	Switch Name
identity.name	string	path	True	Interface Name
identity.index	integer	path	True	Interface Index
fields	array[string]	query	False	Specify the fields to return.

## Response

Status: 200, Ok

Name	Type	Description
<a href="#">_links</a>	<a href="#">self_link</a>	
configured	string	Administrative Status.
duplex_type	string	Duplex Settings.
identity	<a href="#">identity</a>	
isl	boolean	Is configured as an ISL link.
mac_address	string	MAC Address.
mtu	integer	MTU.
remote_port	<a href="#">remote_port</a>	Remote port
speed	integer	Interface Speed(Mbps)
state	string	Operational Status.
statistics	<a href="#">statistics</a>	These are raw counters for the device associated with the Ethernet port.

Name	Type	Description
switch	switch	The name of the specified cluster or storage switch.
type	string	Interface Type.
vlan_id	array[integer]	



## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "configured": "down",
  "duplex_type": "full_duplex",
  "identity": {
    "index": 0,
    "name": "string",
    "number": 0
  },
  "mac_address": "string",
  "mtu": 0,
  "remote_port": {
    "device": {
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "shelf": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "uid": "7777841915827391056"
      }
    },
    "mtu": 0,
    "name": "string"
  },
  "speed": 0,
  "state": "dormant",
  "statistics": {
    "receive_raw": {
      "discards": 100,
      "errors": 200,
```

```

    "packets": 500
  },
  "transmit_raw": {
    "discards": 100,
    "errors": 200,
    "packets": 500
  }
},
"switch": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "RTP-SS01-510R03 (FOC223443KQ) "
},
"type": "ethernetcsmacd",
"vlan_id": {
}
}

```

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

```

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

```

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

self\_link

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

identity

Name	Type	Description
index	integer	Interface Index.
name	string	Interface Name.
number	integer	Interface Number.

\_links

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

node

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

shelf

Shelf connected to this port.

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

device

Device connected to port.

Name	Type	Description
node	<a href="#">node</a>	
shelf	<a href="#">shelf</a>	Shelf connected to this port.

remote\_port

Remote port

Name	Type	Description
device	<a href="#">device</a>	Device connected to port.
mtu	integer	MTU in octets
name	string	Port Name.

receive\_raw

Packet receive counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

transmit\_raw

Packet transmit counters for the Ethernet port.

Name	Type	Description
discards	integer	Total number of discarded packets.
errors	integer	Number of packet errors.
packets	integer	Total packet count.

statistics

These are raw counters for the device associated with the Ethernet port.

Name	Type	Description
receive_raw	<a href="#">receive_raw</a>	Packet receive counters for the Ethernet port.
transmit_raw	<a href="#">transmit_raw</a>	Packet transmit counters for the Ethernet port.

switch

The name of the specified cluster or storage switch.

Name	Type	Description
_links	<a href="#">self_link</a>	
name	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
target	string	The target parameter that caused the error.

## Manage Ethernet switches

### Network Ethernet switches endpoint overview

#### Overview

This API can be used to get information about the ethernet switches used for cluster and/or storage networks. This API support GET and PATCH calls. The GET operation returns a list of discovered switches with status and configuration information. The PATCH can be used to modify state of the switch.

## Examples

### Retrieving the ethernet switches for a cluster

The following example retrieves the ONTAP switches from the cluster. Note that if the *fields=\** parameter is not specified, the fields `snmp.version`, `snmp.credential`, `model`, `sw-version`, `reason`, `version-source`, `monitoring.enable`, `monitoring.subsystem.type` and `monitoring.subsystem.poll_interval` are not returned. Filters can be added on the fields to limit the results.

```
# The API:
GET network/ethernet/switches

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/ethernet/switches?return_records=true" -H "accept:
application/json" -H "Content-Type: application/hal+json"

# The response:
{
  "records": [
    {
      "name": "RTP-CS01-510R11 (FOC22092K12)",
      "address": "172.26.207.77",
      "discovered": true,
      "model": "NX3232C",
      "monitoring": {
        "monitored": true,
        "reason": "None"
      },
      "network": "cluster",
      "serial_number": "Unknown",
      "snmp": {
        "version": "snmpv2c",
        "user": "cshml!"
      },
      "version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.2(3)",
      "_links": {
        "self": {
          "href": "/api/network/ethernet/switches/RTP-CS01-
510R11%28FOC22092K12%29"
        }
      }
    },
    {
      "name": "RTP-CS01-510R12 (FOC22373C3P)",
      "address": "172.26.207.82",
```

```

"discovered": true,
"model": "NX3232C",
"monitoring": {
  "monitored": true,
  "reason": "None"
},
"network": "cluster",
"serial_number": "FOC22373C3P",
"snmp": {
  "version": "snmpv2c",
  "user": "cshml!"
},
"version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.2(3)",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/switches/RTP-CS01-
510R12%28FOC22373C3P%29"
    }
  }
},
  {
    "name": "RTP-SS01-510R10 (FOC22170DFR)",
    "address": "172.26.207.65",
    "discovered": true,
    "model": "NX3232C",
    "monitoring": {
      "monitored": true,
      "reason": "None"
    },
    "network": "storage",
    "serial_number": "FOC22170DFR",
    "snmp": {
      "version": "snmpv2c",
      "user": "cshml!"
    },
    "version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.3(3)",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switches/RTP-SS01-
510R10%28FOC22170DFR%29"
      }
    }
  },
  {
    "name": "RTP-SS02-510R10 (FOC22131U6T)",

```



```

    "address": "172.26.207.66",
    "discovered": true,
    "model": "NX3232C",
    "monitoring": {
      "monitored": true,
      "reason": "None"
    },
    "network": "storage",
    "serial_number": "FOC22131U6T",
    "snmp": {
      "version": "snmpv2c",
      "user": "cshml!"
    },
    "version": "Cisco Nexus Operating System (NX-OS) Software, Version
9.3(3)",
    "_links": {
      "self": {
        "href": "/api/network/ethernet/switches/RTP-SS02-
510R10%28FOC22131U6T%29"
      }
    }
  ],
  "num_records": 4,
  "_links": {
    "self": {
      "href": "/api/network/ethernet/switches?fields=*&return_records=true"
    }
  }
}

```

### Retrieving an ethernet switch for a cluster

The following example retrieves a single switch by the switchname using the API.

```
# The API:
GET /network/ethernet/switches{name}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ethernet/switches/RTP-SS02-510R10(FOC22131U6T?return_records=true" -H "accept: application/json" -H "Content-Type: application/hal+json"

# The response:
{
  "name": "RTP-SS02-510R10 (FOC22131U6T)",
  "address": "172.26.207.66",
  "discovered": true,
  "model": "NX3232C",
  "monitoring": {
    "monitored": true,
    "reason": "None"
  },
  "network": "storage",
  "serial_number": "FOC22131U6T",
  "snmp": {
    "version": "snmpv2c",
    "user": "cshml!"
  },
  "version": "Cisco Nexus Operating System (NX-OS) Software, Version 9.3(3)",
  "_links": {
    "self": {
      "href": "/api/network/ethernet/switches/RTP-SS02-510R10(FOC22131U6T)"
    }
  }
}
```

---

### Configuring a switch

The following example configures SNMP credential and version on a switch.

```

# The API:
PATCH /network/ethernet/switches{name}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ethernet/switches/sconqa-
corduroyl-03" -H "accept: application/json" -H "Content-Type:
application/hal+json" -d "{ \"snmp\": { \"version\": \"snmpv2c\",
\"user\": \"cshml!\"} }"

# The response:
{}

```

## Retrieve Ethernet switches attached to a chassis

GET /network/ethernet/switches

**Introduced In:** 9.8

Retrieves the ethernet switches attached to the chassis.

### Related ONTAP commands

- `system switch ethernet show`

### Learn more

- [DOC /network/ethernet/switches](#)

### Parameters

Name	Type	In	Required	Description
snmp.version	string	query	False	Filter by snmp.version
snmp.user	string	query	False	Filter by snmp.user
serial_number	string	query	False	Filter by serial_number
address	string	query	False	Filter by address
name	string	query	False	Filter by name
model	string	query	False	Filter by model

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

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

## Response

Status: 200, Ok

Name	Type	Description
_links	<a href="#">collection_links</a>	
num_records	integer	Number of Records
records	array[ <a href="#">switch</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "model": "string",
    "monitoring": {
      "reason": "none"
    },
    "name": "string",
    "network": "cluster",
    "serial_number": "string",
    "snmp": {
      "version": "snmpv1"
    },
    "version": "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	

collection\_links

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

self\_link

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

monitoring

Name	Type	Description
enabled	boolean	Enable Health Monitoring.
monitored	boolean	Is Monitored.
reason	string	Reason For Not Monitoring.

snmp

Name	Type	Description
user	string	Community String or SNMPv3 Username.
version	string	SNMP Version.

switch

Ethernet Switch REST API

Name	Type	Description
_links	<a href="#">self_link</a>	
address	string	IP Address.



Name	Type	Description
discovered	boolean	Discovered By ONTAP CDP/LLDP <ul style="list-style-type: none"> <li>• readOnly: 1</li> <li>• Introduced in: 9.8</li> </ul>
model	string	Model Number.
monitoring	<a href="#">monitoring</a>	
name	string	Name.
network	string	Switch Network.
serial_number	string	Serial Number.
snmp	<a href="#">snmp</a>	
version	string	Software Version.

#### 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 Ethernet switch details

GET /network/ethernet/switches/{name}

## Introduced In: 9.8

Retrieves the details of an ethernet switch.

### Related ONTAP commands

- `system switch ethernet show`

### Learn more

- [DOC /network/ethernet/switches](#)

### Parameters

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

### Response

Status: 200, Ok

Name	Type	Description
_links	<a href="#">self_link</a>	
address	string	IP Address.
discovered	boolean	Discovered By ONTAP CDP/LLDP <ul style="list-style-type: none"><li>• readOnly: 1</li><li>• Introduced in: 9.8</li></ul>
model	string	Model Number.
monitoring	<a href="#">monitoring</a>	
name	string	Name.
network	string	Switch Network.
serial_number	string	Serial Number.
snmp	<a href="#">snmp</a>	
version	string	Software Version.

## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "model": "string",
  "monitoring": {
    "reason": "none"
  },
  "name": "string",
  "network": "cluster",
  "serial_number": "string",
  "snmp": {
    "version": "snmpv1"
  },
  "version": "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	

self\_link

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

monitoring

Name	Type	Description
enabled	boolean	Enable Health Monitoring.
monitored	boolean	Is Monitored.
reason	string	Reason For Not Monitoring.

snmp

Name	Type	Description
user	string	Community String or SNMPv3 Username.
version	string	SNMP Version.

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 an Ethernet switch

PATCH /network/ethernet/switches/{name}

**Introduced In:** 9.8

Update Ethernet Switch REST API

#### Parameters

Name	Type	In	Required	Description
name	string	path	True	Switch Name

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

### Request Body

Name	Type	Description
_links	<a href="#">self_link</a>	
address	string	IP Address.
discovered	boolean	<p>Discovered By ONTAP CDP/LLDP</p> <ul style="list-style-type: none"> <li>• readOnly: 1</li> <li>• Introduced in: 9.8</li> </ul>
model	string	Model Number.
monitoring	<a href="#">monitoring</a>	

Name	Type	Description
name	string	Name.
network	string	Switch Network.
serial_number	string	Serial Number.
snmp	snmp	
version	string	Software Version.

### Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "model": "string",
  "monitoring": {
    "reason": "none"
  },
  "name": "string",
  "network": "cluster",
  "serial_number": "string",
  "snmp": {
    "version": "snmpv1"
  },
  "version": "string"
}
```

### Response

Status: 202, Accepted

Name	Type	Description
job	job_link	



## Example response

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

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

self\_link

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

monitoring

Name	Type	Description
enabled	boolean	Enable Health Monitoring.
monitored	boolean	Is Monitored.
reason	string	Reason For Not Monitoring.

snmp

Name	Type	Description
user	string	Community String or SNMPv3 Username.
version	string	SNMP Version.

switch

Ethernet Switch REST API

Name	Type	Description
_links	<a href="#">self_link</a>	
address	string	IP Address.
discovered	boolean	Discovered By ONTAP CDP/LLDP <ul style="list-style-type: none"><li>• readOnly: 1</li><li>• Introduced in: 9.8</li></ul>
model	string	Model Number.

Name	Type	Description
monitoring	<a href="#">monitoring</a>	
name	string	Name.
network	string	Switch Network.
serial_number	string	Serial Number.
snmp	<a href="#">snmp</a>	
version	string	Software Version.

#### \_links

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

#### job\_link

Name	Type	Description
<u>_links</u>	<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

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

## Manage FC network interfaces

### Network FC interfaces endpoint overview

#### Overview

Fibre Channel (FC) interfaces are the logical endpoints for FC network connections to an SVM. An FC interface provides FC access to storage within the interface SVM using either Fibre Channel Protocol or NVMe over FC (NVMe/FC).

The Fibre Channel interface REST API allows you to create, delete, update, and discover FC interfaces, and obtain status information for FC interfaces.

An FC interface is created on an FC port which is located on a cluster node. The FC port must be specified to identify the location of the interface for a POST or PATCH request that relocates an interface. You can identify the port by supplying either the node and port names or the port UUID.

#### Performance monitoring

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

#### Examples

##### Creating an FC interface using the port node and name to identify the location

This example uses the `return_records` query parameter to retrieve the newly created FC interface in the POST response.

```
# The API:
POST /api/network/fc/interfaces

# The call:
curl -X POST 'https://<mgmt-
ip>/api/network/fc/interfaces?return_records=true' -H 'accept:
application/hal+json' -d '{ "svm": { "name": "svm1" }, "name": "lif1",
"location": { "home_port": { "name": "0a", "home_node": { "name": "node1"
} } }, "data_protocol": "fcp" }'

# The response:
{
```

```

"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "cf300f5c-db83-11e8-bd46-005056bba0e0",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/cf300f5c-db83-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "f6045b92-dec7-11e8-a733-005056bba0e0",
    "name": "lif1",
    "location": {
      "home_node": {
        "uuid": "bafe9b9f-db81-11e8-bd46-005056bba0e0",
        "name": "node1",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/bafe9b9f-db81-11e8-bd46-005056bba0e0"
          }
        }
      },
      "home_port": {
        "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-005056bba0e0"
          }
        }
      },
      "node": {
        "uuid": "bafe9b9f-db81-11e8-bd46-005056bba0e0",
        "name": "node1",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/bafe9b9f-db81-11e8-bd46-005056bba0e0"
          }
        }
      }
    }
  }
]

```

```

    }
  },
  "port": {
    "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
    "name": "0a",
    "node": {
      "name": "node1"
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-005056bba0e0"
      }
    }
  },
  "enabled": true,
  "state": "down",
  "data_protocol": "fcp",
  "wwpn": "20:04:00:50:56:bb:a0:e0",
  "wwnn": "20:00:00:50:56:bb:a0:e0",
  "port_address": "9da2cb1",
  "_links": {
    "self": {
      "href": "/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-005056bba0e0"
    }
  }
}
]
}

```

### Creating an FC interface using the port UUID to identify the location

This example uses the `return_records` query parameter to retrieve the newly created FC interface in the POST response.

```

# The API:
POST /api/network/fc/interfaces

# The call:
curl -X POST 'https://<mgmt-
ip>/api/network/fc/interfaces?return_records=true' -H 'accept:
application/hal+json' -d '{ "svm": { "name": "svm3" }, "name": "lif2",

```

```

"location": { "home_port": { "uuid": "24bb636a-db83-11e8-9a49-
005056bb1ec6" } }, "data_protocol": "fc_nvme" }'

# The response:
{
"num_records": 1,
"records": [
  {
    "svm": {
      "uuid": "a5060466-dbab-11e8-bd46-005056bba0e0",
      "name": "svm3",
      "_links": {
        "self": {
          "href": "/api/svm/svms/a5060466-dbab-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "cdeb5591-dec9-11e8-a733-005056bba0e0",
    "name": "lif2",
    "location": {
      "home_node": {
        "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
        "name": "node3",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-
005056bb1ec6"
          }
        }
      },
      "home_port": {
        "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
        "name": "1b",
        "node": {
          "name": "node3"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
          }
        }
      },
      "node": {
        "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
        "name": "node3",

```

```

    "_links": {
      "self": {
        "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-
005056bb1ec6"
      }
    },
    "port": {
      "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
      "name": "1b",
      "node": {
        "name": "node3"
      },
      "_links": {
        "self": {
          "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
        }
      }
    },
    "enabled": true,
    "state": "down",
    "data_protocol": "fc_nvme",
    "wwpn": "20:05:00:50:56:bb:a0:e0",
    "wwnn": "20:02:00:50:56:bb:a0:e0",
    "port_address": "612e202b",
    "_links": {
      "self": {
        "href": "/api/network/fc/interfaces/cdeb5591-dec9-11e8-a733-
005056bba0e0"
      }
    }
  }
]
}

```

### Retrieving all properties for all FC interfaces

This example uses the `fields` query parameter to retrieve all properties.

```

# The API:
GET /api/network/fc/interfaces

```



```

# The call:
curl -X GET 'https://<mgmt-ip>/api/network/fc/interfaces?fields=*' -H
'accept: application/hal+json'

# The response:
{
"records": [
  {
    "svm": {
      "uuid": "a5060466-dbab-11e8-bd46-005056bba0e0",
      "name": "svm3",
      "_links": {
        "self": {
          "href": "/api/svm/svms/a5060466-dbab-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "cdeb5591-dec9-11e8-a733-005056bba0e0",
    "name": "lif2",
    "location": {
      "home_node": {
        "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
        "name": "node3",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-
005056bb1ec6"
          }
        }
      },
      "home_port": {
        "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
        "name": "1b",
        "node": {
          "name": "node3"
        },
        "_links": {
          "self": {
            "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-
005056bb1ec6"
          }
        }
      },
      "node": {
        "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
        "name": "node3",

```

```

    "_links": {
      "self": {
        "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-005056bb1ec6"
      }
    },
    "port": {
      "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
      "name": "1b",
      "node": {
        "name": "node3"
      },
      "_links": {
        "self": {
          "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-005056bb1ec6"
        }
      }
    },
    "enabled": true,
    "state": "down",
    "data_protocol": "fc_nvme",
    "wwpn": "20:05:00:50:56:bb:a0:e0",
    "wwnn": "20:02:00:50:56:bb:a0:e0",
    "port_address": "612e202b",
    "_links": {
      "self": {
        "href": "/api/network/fc/interfaces/cdeb5591-dec9-11e8-a733-005056bba0e0"
      }
    }
  },
  {
    "svm": {
      "uuid": "cf300f5c-db83-11e8-bd46-005056bba0e0",
      "name": "svm1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/cf300f5c-db83-11e8-bd46-005056bba0e0"
        }
      }
    },
    "uuid": "f6045b92-dec7-11e8-a733-005056bba0e0",
    "name": "lif1",

```

```
"location": {
  "home_node": {
    "uuid": "bafe9b9f-db81-11e8-bd46-005056bba0e0",
    "name": "node1",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/bafe9b9f-db81-11e8-bd46-005056bba0e0"
      }
    }
  },
  "home_port": {
    "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
    "name": "0a",
    "node": {
      "name": "node1"
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-005056bba0e0"
      }
    }
  },
  "node": {
    "uuid": "bafe9b9f-db81-11e8-bd46-005056bba0e0",
    "name": "node1",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/bafe9b9f-db81-11e8-bd46-005056bba0e0"
      }
    }
  },
  "port": {
    "uuid": "300c1ae3-db82-11e8-bd46-005056bba0e0",
    "name": "0a",
    "node": {
      "name": "node1"
    },
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/300c1ae3-db82-11e8-bd46-005056bba0e0"
      }
    }
  }
}
```

```

    }
  },
  "enabled": true,
  "state": "down",
  "data_protocol": "fc",
  "wwpn": "20:04:00:50:56:bb:a0:e0",
  "wwnn": "20:00:00:50:56:bb:a0:e0",
  "port_address": "9da2cb1",
  "_links": {
    "self": {
      "href": "/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-005056bba0e0"
    }
  }
},
"num_records": 2,
"_links": {
  "self": {
    "href": "/api/network/fc/interfaces?fields="
  }
}
}
}

```

---

### Retrieving a list of selected FC interfaces

This example uses property query parameters to retrieve FC interfaces configured for the FC Protocol that are set to *up*.

```
# The API:
GET /api/network/fc/interfaces

# The call:
curl -X GET 'https://<mgmt-
ip>/api/network/fc/interfaces?data_protocol=fcp&state=up' -H 'accept:
application/hal+json'

# The response:
{
  "records": [
    {
      "svm": {
        "uuid": "cf300f5c-db83-11e8-bd46-005056bba0e0",
        "name": "svm1",
        "_links": {
          "self": {
            "href": "/api/svm/svms/cf300f5c-db83-11e8-bd46-005056bba0e0"
          }
        }
      },
      "uuid": "f6045b92-dec7-11e8-a733-005056bba0e0",
      "name": "lif1",
      "state": "up",
      "data_protocol": "fcp",
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-
005056bba0e0"
        }
      }
    },
    {
      "num_records": 1,
      "_links": {
        "self": {
          "href": "/api/network/fc/interfaces?data_protocol=fcp&state=up"
        }
      }
    }
  ]
}
```

## Retrieving a specific FC interface

```
# The API:
GET /api/network/fc/interfaces/{uuid}

# The call:
curl -X GET 'https://<mgmt-ip>/api/network/fc/interfaces/cdeb5591-dec9-11e8-a733-005056bba0e0' -H 'accept: application/hal+json'

# The response:
{
  "svm": {
    "uuid": "a5060466-dbab-11e8-bd46-005056bba0e0",
    "name": "svm3",
    "_links": {
      "self": {
        "href": "/api/svm/svms/a5060466-dbab-11e8-bd46-005056bba0e0"
      }
    }
  },
  "uuid": "cdeb5591-dec9-11e8-a733-005056bba0e0",
  "name": "lif2",
  "location": {
    "home_node": {
      "uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
      "name": "node3",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-005056bb1ec6"
        }
      }
    },
    "home_port": {
      "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
      "name": "1b",
      "node": {
        "name": "node3"
      },
      "_links": {
        "self": {
          "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-005056bb1ec6"
        }
      }
    },
    "node": {
```

```
"uuid": "e85aa147-db83-11e8-9a48-005056bb1ec6",
"name": "node3",
"_links": {
  "self": {
    "href": "/api/cluster/nodes/e85aa147-db83-11e8-9a48-005056bb1ec6"
  }
},
"port": {
  "uuid": "24bb636a-db83-11e8-9a49-005056bb1ec6",
  "name": "1b",
  "node": {
    "name": "node3"
  },
  "_links": {
    "self": {
      "href": "/api/network/fc/ports/24bb636a-db83-11e8-9a49-005056bb1ec6"
    }
  }
},
"enabled": true,
"state": "down",
"data_protocol": "fc_nvme",
"wwpn": "20:05:00:50:56:bb:a0:e0",
"wwnn": "20:02:00:50:56:bb:a0:e0",
"port_address": "612e202b",
"metric": {
  "timestamp": "2019-04-09T05:50:15Z",
  "duration": "PT15S",
  "status": "ok",
  "latency": {
    "other": 0,
    "total": 0,
    "read": 0,
    "write": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
```

```
    "write": 0,
    "total": 0
  }
},
"statistics": {
  "timestamp": "2019-04-09T05:50:42Z",
  "status": "ok",
  "latency_raw": {
    "other": 38298,
    "total": 38298,
    "read": 0,
    "write": 0
  },
  "iops_raw": {
    "read": 0,
    "write": 0,
    "other": 3,
    "total": 3
  },
  "throughput_raw": {
    "read": 0,
    "write": 0,
    "total": 0
  }
},
"_links": {
  "self": {
    "href": "/api/network/fc/interfaces/cdeb5591-dec9-11e8-a733-005056bba0e0"
  }
}
}
```

## Disabling an FC interface

When updating certain properties or deleting an FC interface, the interface must first be disabled using the following:



```
# The API:
PATCH /api/network/fc/interfaces/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-005056bba0e0' -H 'accept: application/hal+json' -d '{ "enabled": false }'
```

### Moving an FC interface to a new node and port

To move an FC interface to another node or port, the destination FC port must be specified in a PATCH request. Either the port UUID or node and port names can be used to identify the port.

Note that only FC interfaces configured for the FC Protocol can be moved. FC interfaces configured for NVMe/FC cannot be moved. The interface must also be set to the disabled state before being moved.

```
# The API:
PATCH /api/network/fc/interfaces/{uuid}

# The call:
curl -X PATCH 'https://<mgmt-ip>/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-005056bba0e0' -H 'accept: application/hal+json' -d '{ "location": { "home_port": { "uuid": "a1dc7aa5-db83-11e8-9ef7-005056bbbbcc" } } }'
```

### Deleting an FC interface

The FC interface must be disabled before being deleted.

```
# The API:
DELETE /api/network/fc/interfaces/{uuid}

# The call:
curl -X DELETE 'https://<mgmt-ip>/api/network/fc/interfaces/f6045b92-dec7-11e8-a733-005056bba0e0' -H 'accept: application/hal+json'
```

### Retrieve FC interfaces

```
GET /network/fc/interfaces
```

**Introduced In:** 9.6

Retrieves FC interfaces.

### Related ONTAP commands

- `network interface show`
- `vserver fcp interface show`

### Learn more

- [DOC /network/fc/interfaces](#)

### Parameters

Name	Type	In	Required	Description
<code>metric.duration</code>	string	query	False	Filter by <code>metric.duration</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.timestamp</code>	string	query	False	Filter by <code>metric.timestamp</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.latency.total</code>	integer	query	False	Filter by <code>metric.latency.total</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.latency.write</code>	integer	query	False	Filter by <code>metric.latency.write</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.latency.other</code>	integer	query	False	Filter by <code>metric.latency.other</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.latency.read</code>	integer	query	False	Filter by <code>metric.latency.read</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>

Name	Type	In	Required	Description
metric.status	string	query	False	Filter by metric.status  • Introduced in: 9.8
metric.iops.total	integer	query	False	Filter by metric.iops.total  • Introduced in: 9.8
metric.iops.write	integer	query	False	Filter by metric.iops.write  • Introduced in: 9.8
metric.iops.other	integer	query	False	Filter by metric.iops.other  • Introduced in: 9.8
metric.iops.read	integer	query	False	Filter by metric.iops.read  • Introduced in: 9.8
metric.throughput.read	integer	query	False	Filter by metric.throughput.read  • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total  • Introduced in: 9.8

Name	Type	In	Required	Description
metric.throughput.write	integer	query	False	Filter by metric.throughput.write  • Introduced in: 9.8
port_address	string	query	False	Filter by port_address
location.is_home	boolean	query	False	Filter by location.is_home  • Introduced in: 9.8
location.home_node.uuid	string	query	False	Filter by location.home_node.uuid  • Introduced in: 9.8
location.home_node.name	string	query	False	Filter by location.home_node.name  • Introduced in: 9.8
location.home_port.name	string	query	False	Filter by location.home_port.name  • Introduced in: 9.8
location.home_port.uuid	string	query	False	Filter by location.home_port.uuid  • Introduced in: 9.8

Name	Type	In	Required	Description
location.home_port.node.name	string	query	False	Filter by location.home_port.node.name  • Introduced in: 9.8
location.port.name	string	query	False	Filter by location.port.name
location.port.uuid	string	query	False	Filter by location.port.uuid
location.port.node.name	string	query	False	Filter by location.port.node.name
location.node.uuid	string	query	False	Filter by location.node.uuid
location.node.name	string	query	False	Filter by location.node.name
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read  • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total  • Introduced in: 9.8
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write  • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.timestamp	string	query	False	Filter by statistics.timestamp  • Introduced in: 9.8
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total  • Introduced in: 9.8
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write  • Introduced in: 9.8
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other  • Introduced in: 9.8
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read  • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status  • Introduced in: 9.8
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total  • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write  • Introduced in: 9.8
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other  • Introduced in: 9.8
statistics.latency_raw.read	integer	query	False	Filter by statistics.latency_raw.read  • Introduced in: 9.8
enabled	boolean	query	False	Filter by enabled
name	string	query	False	Filter by name
svm.uuid	string	query	False	Filter by svm.uuid
svm.name	string	query	False	Filter by svm.name
wwpn	string	query	False	Filter by wwpn
wwnn	string	query	False	Filter by wwnn
uuid	string	query	False	Filter by uuid
data_protocol	string	query	False	Filter by data_protocol
comment	string	query	False	Filter by comment
state	string	query	False	Filter by state
fields	array[string]	query	False	Specify the fields to return.

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

## Response

Status: 200, Ok

Name	Type	Description
_links	<a href="#">_links</a>	
num_records	integer	Number of records.
records	array[ <a href="#">fc_interface</a> ]	



## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "comment": "string",
    "data_protocol": "fcp",
    "location": {
      "home_node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "home_port": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      }
    }
  }
}
```

```

    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "port": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "0a",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"name": "fc_lif1",
"port_address": "5060F",
"state": "up",
"statistics": {

```

```

    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
  "wwnn": "20:00:00:50:56:b4:13:01",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}
}

```

## 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>	

home\_node

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

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

fc\_port\_reference

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the FC port.
node	<a href="#">node</a>	The node on which the FC port is located.

Name	Type	Description
uuid	string	The unique identifier of the FC port.

node

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

location

The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.

The location of an FC interface can be set using "location.home\_node" and "location.home\_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home\_node" and "location.home\_port" in instances where the FC interface failed over due to an offline node.

Name	Type	Description
home_node	<a href="#">home_node</a>	
home_port	<a href="#">fc_port_reference</a>	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
is_home	boolean	Indicates whether or not the FC interface currently resides on the home node.
node	<a href="#">node</a>	
port	<a href="#">fc_port_reference</a>	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

iops

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

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

#### latency

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

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

#### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

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

metric

Performance numbers, such as IOPS latency and throughput

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:
iops	<a href="#">iops</a>	The rate of I/O operations observed at the storage object.
latency	<a href="#">latency</a>	The round trip latency in microseconds observed at the storage object.
status	string	Any errors associated with the sample. For example, if the aggregation of data over multiple nodes fails then any of the partial errors might be returned, "ok" on success, or "error" on any 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.



Name	Type	Description
throughput	throughput	The rate of throughput bytes per second observed at the storage object.
timestamp	string	The timestamp of the performance data.

#### iops\_raw

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

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

#### latency\_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

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

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

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

Name	Type	Description
iops_raw	<a href="#">iops_raw</a>	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	<a href="#">latency_raw</a>	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

#### svm

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

#### fc\_interface

A Fibre Channel (FC) interface is the logical endpoint for FC network connections to an SVM. An FC interface provides FC access to storage within the interface SVM using either Fibre Channel Protocol or NVMe over Fibre Channel (NVMe/FC).

An FC interface is created on an FC port which is located on a cluster node. The FC port must be specified to identify the location of the interface for a POST or PATCH operation that relocates an interface. You can identify the port by supplying either the node and port names or the port UUID.

Name	Type	Description
_links	<a href="#">_links</a>	
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to <i>true</i> (enabled) in POST.
location	<a href="#">location</a>	<p>The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.</p> <p>The location of an FC interface can be set using "location.home_node" and "location.home_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home_node" and "location.home_port" in instances where the FC interface failed over due to an offline node.</p>
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput

Name	Type	Description
name	string	The name of the FC interface. Required in POST; optional in PATCH.
port_address	string	<p>The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a hexadecimal encoded numeric value.</p>
state	string	<p>The current operational state of the FC interface. The state is set to <i>down</i> if the interface is not enabled.</p> <p>If the node hosting the port is down or unavailable, no state value is returned.</p>
statistics	<a href="#">statistics</a>	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	<a href="#">svm</a>	
uuid	string	The unique identifier of the FC interface. Required in the URL.

Name	Type	Description
wwnn	string	<p>The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM.</p> <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:01</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>
wwpn	string	<p>The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created.</p> <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:a8</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>

#### 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.

## Create an FC interface

POST /network/fc/interfaces

**Introduced In:** 9.6

Creates an FC interface.

### Required properties

- `svm.uuid` or `svm.name` - Existing SVM in which to create the FC interface.
- `name` - Name of the FC interface.
- `location.port.uuid` or both `location.port.name` and `location.port.node.name` - FC port on which to create the FC interface.
- `data_protocol` - Data protocol for the FC interface.

### Default property values

If not specified in POST, the following default property values are assigned.

- `enabled` - *true*

### Related ONTAP commands

- `network interface create`

### Learn more

- [DOC /network/fc/interfaces](#)

### Parameters

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

### Request Body

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

Name	Type	Description
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to <i>true</i> (enabled) in POST.
location	<a href="#">location</a>	<p>The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.</p> <p>The location of an FC interface can be set using "location.home_node" and "location.home_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home_node" and "location.home_port" in instances where the FC interface failed over due to an offline node.</p>
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput
name	string	The name of the FC interface. Required in POST; optional in PATCH.



Name	Type	Description
port_address	string	<p>The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a hexadecimal encoded numeric value.</p>
state	string	<p>The current operational state of the FC interface. The state is set to <i>down</i> if the interface is not enabled.</p> <p>If the node hosting the port is down or unavailable, no state value is returned.</p>
statistics	<a href="#">statistics</a>	<p>These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.</p>
svm	<a href="#">svm</a>	
uuid	string	<p>The unique identifier of the FC interface. Required in the URL.</p>
wwnn	string	<p>The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM.</p> <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:01</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>

Name	Type	Description
wwpn	string	<p>The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created.</p> <ul style="list-style-type: none"><li>• example: 20:00:00:50:56:b4:13:a8</li><li>• readOnly: 1</li><li>• Introduced in: 9.6</li></ul>

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "data_protocol": "fcp",
  "location": {
    "home_node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  }
}
```

```

    },
    "name": "0a",
    "node": {
      "name": "node1"
    },
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
},
"duration": "PT15S",
"iops": {
  "read": 200,
  "total": 1000,
  "write": 100
},
"latency": {
  "read": 200,
  "total": 1000,
  "write": 100
},
"status": "ok",
"throughput": {
  "read": 200,
  "total": 1000,
  "write": 100
},
"timestamp": "2017-01-25T11:20:13Z"
},
"name": "fc_lif1",
"port_address": "5060F",
"state": "up",
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
},
"latency_raw": {
  "read": 200,
  "total": 1000,
  "write": 100
}

```

```

    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
  "wvnn": "20:00:00:50:56:b4:13:01",
  "wvwn": "20:00:00:50:56:b4:13:a8"
}

```

## Response

Status: 201, Created

Name	Type	Description
_links	<a href="#">_links</a>	
num_records	integer	Number of records.
records	<a href="#">array[fc_interface]</a>	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "comment": "string",
    "data_protocol": "fcp",
    "location": {
      "home_node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "node1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "home_port": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "0a",
        "node": {
          "name": "node1"
        },
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "node": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        }
      }
    }
  }
}
```

```

    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "port": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "0a",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"name": "fc_lif1",
"port_address": "5060F",
"state": "up",
"statistics": {

```

```

    "iops_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
  "wwnn": "20:00:00:50:56:b4:13:01",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}
}

```

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1966140	An interface with the same name already exists.
1966217	The specified port is not valid on the node provided.
2621462	The supplied SVM does not exist.



Error Code	Description
2621706	The specified <code>svm.uuid</code> and <code>svm.name</code> do not refer to the same SVM.
2621707	No SVM was specified. Either <code>svm.name</code> or <code>svm.uuid</code> must be supplied.
5373966	A Fibre Channel interface with the <code>fc</code> protocol cannot be created in an SVM that is configured for NVMe.
5374102	The specified Fibre Channel interface cannot be created because the Fibre Channel adapter is down. Bring the adapter up and try again.
5374871	The Fibre Channel port identified by the specified UUID does not refer to the same port as that identified by the specified node name and/or port name.
5374872	If either <code>location.port.node.name</code> or <code>location.port.name</code> is supplied, both properties must be supplied.
5374873	The Fibre Channel port must be specified using either <code>location.port.uuid</code> or <code>location.port.node.name</code> and <code>location.port.name</code> .
72089652	An NVMe service must be created before creating a Fibre Channel interface using the NVMe over FC data protocol.
72089672	The specified Fibre Channel port does not support the NVMe over FC data protocol.
72089900	A Fibre Channel interface with the <code>fc_nvme</code> protocol cannot be created in an SVM that is configured for a SAN protocol.

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>	

home\_node

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

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

fc\_port\_reference

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the FC port.
node	<a href="#">node</a>	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

node

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

#### location

The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.

The location of an FC interface can be set using "location.home\_node" and "location.home\_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home\_node" and "location.home\_port" in instances where the FC interface failed over due to an offline node.

Name	Type	Description
home_node	<a href="#">home_node</a>	
home_port	<a href="#">fc_port_reference</a>	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
is_home	boolean	Indicates whether or not the FC interface currently resides on the home node.
node	<a href="#">node</a>	
port	<a href="#">fc_port_reference</a>	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

#### iops

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

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### latency

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

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

### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### metric

Performance numbers, such as IOPS latency and throughput

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

## iops\_raw

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

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

## latency\_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

## throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

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

Name	Type	Description
iops_raw	<a href="#">iops_raw</a>	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	<a href="#">latency_raw</a>	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.



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

#### svm

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

#### fc\_interface

A Fibre Channel (FC) interface is the logical endpoint for FC network connections to an SVM. An FC interface provides FC access to storage within the interface SVM using either Fibre Channel Protocol or NVMe over Fibre Channel (NVMe/FC).

An FC interface is created on an FC port which is located on a cluster node. The FC port must be specified to identify the location of the interface for a POST or PATCH operation that relocates an interface. You can identify the port by supplying either the node and port names or the port UUID.

Name	Type	Description
_links	<a href="#">_links</a>	
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to <i>true</i> (enabled) in POST.
location	<a href="#">location</a>	<p>The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.</p> <p>The location of an FC interface can be set using "location.home_node" and "location.home_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home_node" and "location.home_port" in instances where the FC interface failed over due to an offline node.</p>
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput

Name	Type	Description
name	string	The name of the FC interface. Required in POST; optional in PATCH.
port_address	string	<p>The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a hexadecimal encoded numeric value.</p>
state	string	<p>The current operational state of the FC interface. The state is set to <i>down</i> if the interface is not enabled.</p> <p>If the node hosting the port is down or unavailable, no state value is returned.</p>
statistics	<a href="#">statistics</a>	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	<a href="#">svm</a>	
uuid	string	The unique identifier of the FC interface. Required in the URL.

Name	Type	Description
wwnn	string	The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM. <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:01</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>
wwpn	string	The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created. <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:a8</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>

#### \_links

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

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

## Delete an FC interface

DELETE /network/fc/interfaces/{uuid}

**Introduced In:** 9.6

Deletes an FC interface.

### Related ONTAP commands

- `network interface delete`

### Learn more

- [DOC /network/fc/interfaces](#)

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC interface.

### Response

Status: 200, Ok

### Error

Status: Default

### ONTAP Error Response Codes

Error Code	Description
53280992	The FC interface could not be deleted because it is enabled.

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

## Example error

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

## Definitions

### See Definitions

#### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

#### error

Name	Type	Description
arguments	array[ <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 an FC interface

GET /network/fc/interfaces/{uuid}

Introduced In: 9.6

Retrieves an FC interface.

### 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

- `network interface show`
- `vserver fcp interface show`

### Learn more

- [DOC /network/fc/interfaces](#)

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC interface.
fields	array[string]	query	False	Specify the fields to return.

### Response

```
Status: 200, Ok
```

Name	Type	Description
<code>_links</code>	<a href="#">_links</a>	
<code>comment</code>	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
<code>data_protocol</code>	string	The data protocol for which the FC interface is configured. Required in POST.

Name	Type	Description
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to <i>true</i> (enabled) in POST.
location	<a href="#">location</a>	<p>The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.</p> <p>The location of an FC interface can be set using "location.home_node" and "location.home_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home_node" and "location.home_port" in instances where the FC interface failed over due to an offline node.</p>
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput
name	string	The name of the FC interface. Required in POST; optional in PATCH.



Name	Type	Description
port_address	string	<p>The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a hexadecimal encoded numeric value.</p>
state	string	<p>The current operational state of the FC interface. The state is set to <i>down</i> if the interface is not enabled.</p> <p>If the node hosting the port is down or unavailable, no state value is returned.</p>
statistics	<a href="#">statistics</a>	<p>These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.</p>
svm	<a href="#">svm</a>	
uuid	string	<p>The unique identifier of the FC interface. Required in the URL.</p>
wwnn	string	<p>The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM.</p> <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:01</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>

Name	Type	Description
wwpn	string	<p>The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created.</p> <ul style="list-style-type: none"><li>• example: 20:00:00:50:56:b4:13:a8</li><li>• readOnly: 1</li><li>• Introduced in: 9.6</li></ul>

## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "data_protocol": "fcp",
  "location": {
    "home_node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  }
}
```

```

    },
    "name": "0a",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"name": "fc_lif1",
"port_address": "5060F",
"state": "up",
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  }
}

```

```

    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
  "wwnn": "20:00:00:50:56:b4:13:01",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}

```

## 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>	

home\_node

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

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

fc\_port\_reference

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the FC port.
node	<a href="#">node</a>	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

node

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

#### location

The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.

The location of an FC interface can be set using "location.home\_node" and "location.home\_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home\_node" and "location.home\_port" in instances where the FC interface failed over due to an offline node.

Name	Type	Description
home_node	<a href="#">home_node</a>	
home_port	<a href="#">fc_port_reference</a>	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
is_home	boolean	Indicates whether or not the FC interface currently resides on the home node.
node	<a href="#">node</a>	
port	<a href="#">fc_port_reference</a>	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

#### iops

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

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.



Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### latency

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

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

### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### metric

Performance numbers, such as IOPS latency and throughput

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

## iops\_raw

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

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

## latency\_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

## throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

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

Name	Type	Description
iops_raw	<a href="#">iops_raw</a>	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	<a href="#">latency_raw</a>	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

#### svm

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

#### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

## Update an FC interface

PATCH `/network/fc/interfaces/{uuid}`

**Introduced In:** 9.6

Updates an FC interface.

### Related ONTAP commands

- `network interface modify`

### Learn more

- [DOC /network/fc/interfaces](#)

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC interface.

### Request Body

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

Name	Type	Description
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to <i>true</i> (enabled) in POST.
location	location	<p>The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.</p> <p>The location of an FC interface can be set using "location.home_node" and "location.home_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home_node" and "location.home_port" in instances where the FC interface failed over due to an offline node.</p>
metric	metric	Performance numbers, such as IOPS latency and throughput
name	string	The name of the FC interface. Required in POST; optional in PATCH.

Name	Type	Description
port_address	string	<p>The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a hexadecimal encoded numeric value.</p>
state	string	<p>The current operational state of the FC interface. The state is set to <i>down</i> if the interface is not enabled.</p> <p>If the node hosting the port is down or unavailable, no state value is returned.</p>
statistics	<a href="#">statistics</a>	<p>These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.</p>
svm	<a href="#">svm</a>	
uuid	string	<p>The unique identifier of the FC interface. Required in the URL.</p>
wwnn	string	<p>The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM.</p> <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:01</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>



Name	Type	Description
wwpn	string	<p>The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created.</p> <ul style="list-style-type: none"><li>• example: 20:00:00:50:56:b4:13:a8</li><li>• readOnly: 1</li><li>• Introduced in: 9.6</li></ul>

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "comment": "string",
  "data_protocol": "fcp",
  "location": {
    "home_node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "home_port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "0a",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "node": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "node1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    }
  }
}
```

```

    },
    "name": "0a",
    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "iops": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"name": "fc_lif1",
"port_address": "5060F",
"state": "up",
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  }
}

```

```

    },
    "status": "ok",
    "throughput_raw": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "bce9827d-4d8f-60af-c771-6e8e9af2c6f0",
  "wwnn": "20:00:00:50:56:b4:13:01",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}

```

## Response

Status: 200, Ok

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1966140	An interface with the same name already exists.
1966217	The specified port is not valid on the node provided.
1966238	The node or port of an active SAN data interface cannot be changed.
1966702	The destination node is not healthy.
5374579	The SAN Kernel Agent on the node is unavailable.

Error Code	Description
5374870	A partial failure occurred; renaming the interface failed. Correct the error and resubmit the request.
5374871	The Fibre Channel port identified by the specified UUID does not refer to the same port as that identified by the specified node name and/or port name.
5374872	If either <code>location.port.node.name</code> or <code>location.port.name</code> is supplied, both properties must be supplied.
72089674	You cannot move a Fibre Channel interface configured for the NVMe over FC data protocol.

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>	

home\_node

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

node

The node on which the FC port is located.

Name	Type	Description
name	string	The name of the node on which the FC port is located.

fc\_port\_reference

An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the FC port.
node	<a href="#">node</a>	The node on which the FC port is located.
uuid	string	The unique identifier of the FC port.

node

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

#### location

The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.

The location of an FC interface can be set using "location.home\_node" and "location.home\_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home\_node" and "location.home\_port" in instances where the FC interface failed over due to an offline node.

Name	Type	Description
home_node	<a href="#">home_node</a>	
home_port	<a href="#">fc_port_reference</a>	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.
is_home	boolean	Indicates whether or not the FC interface currently resides on the home node.
node	<a href="#">node</a>	
port	<a href="#">fc_port_reference</a>	An FC port is the physical port of an FC adapter on a cluster node that can be connected to an FC network.

#### iops

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

Name	Type	Description
other	integer	Performance metric for other I/O operations. Other I/O operations can be metadata operations, such as directory lookups and so on.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### latency

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

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

### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### metric



Performance numbers, such as IOPS latency and throughput

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

## iops\_raw

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

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

## latency\_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

## throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

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

Name	Type	Description
iops_raw	<a href="#">iops_raw</a>	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	<a href="#">latency_raw</a>	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

#### svm

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

#### fc\_interface

A Fibre Channel (FC) interface is the logical endpoint for FC network connections to an SVM. An FC interface provides FC access to storage within the interface SVM using either Fibre Channel Protocol or NVMe over Fibre Channel (NVMe/FC).

An FC interface is created on an FC port which is located on a cluster node. The FC port must be specified to identify the location of the interface for a POST or PATCH operation that relocates an interface. You can identify the port by supplying either the node and port names or the port UUID.

Name	Type	Description
_links	<a href="#">_links</a>	
comment	string	A user configurable comment. Optional in POST; valid in PATCH. To clear a prior comment, set the property to an empty string in PATCH.
data_protocol	string	The data protocol for which the FC interface is configured. Required in POST.
enabled	boolean	The administrative state of the FC interface. The FC interface can be disabled to block all FC communication with the SVM through this interface. Optional in POST and PATCH; defaults to <i>true</i> (enabled) in POST.
location	<a href="#">location</a>	<p>The location of the FC interface is defined by the location of its port. An FC port is identified by its UUID, or a combination of its node name and port name. Either the UUID or the node name and port name are required for POST. To move an interface, supply either the UUID or the node name and port name in a PATCH.</p> <p>The location of an FC interface can be set using "location.home_node" and "location.home_port" during a POST or PATCH. "location.node" and "location.port" refer to the current location of the FC interface. This can be different from "location.home_node" and "location.home_port" in instances where the FC interface failed over due to an offline node.</p>
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput

Name	Type	Description
name	string	The name of the FC interface. Required in POST; optional in PATCH.
port_address	string	<p>The port address of the FC interface. Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the address given by a switch to the FC interface when the SVM performs a port login (PLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a hexadecimal encoded numeric value.</p>
state	string	<p>The current operational state of the FC interface. The state is set to <i>down</i> if the interface is not enabled.</p> <p>If the node hosting the port is down or unavailable, no state value is returned.</p>
statistics	<a href="#">statistics</a>	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
svm	<a href="#">svm</a>	
uuid	string	The unique identifier of the FC interface. Required in the URL.

Name	Type	Description
wwnn	string	The world wide node name (WWNN) of the FC interface SVM. The WWNN is generated by ONTAP when Fibre Channel Protocol or the NVMe service is created for the FC interface SVM. <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:01</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>
wwpn	string	The world wide port name (WWPN) of the FC interface. The WWPN is generated by ONTAP when the FC interface is created. <ul style="list-style-type: none"> <li>• example: 20:00:00:50:56:b4:13:a8</li> <li>• readOnly: 1</li> <li>• Introduced in: 9.6</li> </ul>

#### 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 FC interface historical performance metrics

GET /network/fc/interfaces/{uuid}/metrics

**Introduced In:** 9.8

Retrieves historical performance metrics for an FC interface.

### Parameters

Name	Type	In	Required	Description
timestamp	string	query	False	Filter by timestamp
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
latency.read	integer	query	False	Filter by latency.read
status	string	query	False	Filter by status
duration	string	query	False	Filter by duration
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
iops.read	integer	query	False	Filter by iops.read
uuid	string	path	True	Unique identifier of the FC interface.



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",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z",
    "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>	

iops

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

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

latency

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

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

### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### records

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
<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:
iops	<a href="#">iops</a>	The rate of I/O operations observed at the storage object.

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

#### 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 FC port information

### Network FC ports endpoint overview

#### Overview

Fibre Channel (FC) ports are the physical ports of FC adapters on ONTAP cluster nodes that can be connected to FC networks to provide FC network connectivity. An FC port defines the location of an FC interface within the ONTAP cluster.

The Fibre Channel port REST API allows you to discover FC ports, obtain status information for FC ports, and configure FC port properties. POST and DELETE requests are not supported. You must physically add and remove FC adapters to ONTAP nodes to create and remove ports from the ONTAP cluster.

#### Performance monitoring

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

#### Examples

##### Retrieving all FC ports

```
# The API:
GET /api/network/fc/ports

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

# The response:
{
  "records": [
    {
```



```

    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-629ceb62a497"
        }
      }
    },
    "uuid": "931b20f8-b047-11e8-9af3-005056bb838e",
    "name": "0a",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b20f8-b047-11e8-9af3-005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-629ceb62a497"
        }
      }
    },
    "uuid": "931b23f7-b047-11e8-9af3-005056bb838e",
    "name": "0b",
    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b23f7-b047-11e8-9af3-005056bb838e"
      }
    }
  },
  {
    "node": {
      "name": "node1",
      "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
      "_links": {
        "self": {
          "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-

```

```

629ceb62a497"
  }
}
},
"uuid": "931b25ba-b047-11e8-9af3-005056bb838e",
"name": "0c",
"_links": {
  "self": {
    "href": "/api/network/fc/ports/931b25ba-b047-11e8-9af3-
005056bb838e"
  }
}
},
{
  "node": {
    "name": "node1",
    "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
      }
    }
  },
  "uuid": "931b2748-b047-11e8-9af3-005056bb838e",
  "name": "0d",
  "_links": {
    "self": {
      "href": "/api/network/fc/ports/931b2748-b047-11e8-9af3-
005056bb838e"
    }
  }
},
{
  "node": {
    "name": "node1",
    "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
      }
    }
  },
  "uuid": "931b28c2-b047-11e8-9af3-005056bb838e",
  "name": "0e",

```

```

    "_links": {
      "self": {
        "href": "/api/network/fc/ports/931b28c2-b047-11e8-9af3-005056bb838e"
      }
    },
    {
      "node": {
        "name": "node1",
        "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-629ceb62a497"
          }
        }
      },
      "uuid": "931b2a7b-b047-11e8-9af3-005056bb838e",
      "name": "0f",
      "_links": {
        "self": {
          "href": "/api/network/fc/ports/931b2a7b-b047-11e8-9af3-005056bb838e"
        }
      }
    },
    {
      "node": {
        "name": "node1",
        "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-629ceb62a497"
          }
        }
      },
      "uuid": "931b2e2b-b047-11e8-9af3-005056bb838e",
      "name": "1b",
      "_links": {
        "self": {
          "href": "/api/network/fc/ports/931b2e2b-b047-11e8-9af3-005056bb838e"
        }
      }
    }
  }
}

```

```

    }
  ],
  "num_records": 8,
  "_links": {
    "self": {
      "href": "/api/network/fc/ports"
    }
  }
}
}

```

### Retrieving all FC ports with state *online*

The `state` query parameter is used to perform the query.

```

# The API:
GET /api/network/fc/ports

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/ports?state=online" -H
"accept: application/hal+json"

# The response:
{
  "records": [
    {
      "node": {
        "name": "node1",
        "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
        "_links": {
          "self": {
            "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-
629ceb62a497"
          }
        }
      },
      "uuid": "931b20f8-b047-11e8-9af3-005056bb838e",
      "name": "0a",
      "state": "online",
      "_links": {
        "self": {
          "href": "/api/network/fc/ports/931b20f8-b047-11e8-9af3-
005056bb838e"
        }
      }
    }
  ]
}

```

```

},
{
  "node": {
    "name": "node1",
    "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-629ceb62a497"
      }
    }
  },
  "uuid": "931b23f7-b047-11e8-9af3-005056bb838e",
  "name": "0b",
  "state": "online",
  "_links": {
    "self": {
      "href": "/api/network/fc/ports/931b23f7-b047-11e8-9af3-005056bb838e"
    }
  }
},
{
  "node": {
    "name": "node1",
    "uuid": "3c768e01-1abc-4b3b-b7c0-629ceb62a497",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/3c768e01-1abc-4b3b-b7c0-629ceb62a497"
      }
    }
  },
  "uuid": "931b25ba-b047-11e8-9af3-005056bb838e",
  "name": "0c",
  "state": "online",
  "_links": {
    "self": {
      "href": "/api/network/fc/ports/931b25ba-b047-11e8-9af3-005056bb838e"
    }
  }
}
],
"num_records": 3,
"_links": {

```

```
"self": {
  "href": "/api/network/fc/ports?state=online"
}
}
```

## Retrieving an FC port

```
# The API:
GET /api/network/fc/ports/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/fc/ports/931b20f8-b047-11e8-9af3-005056bb838e" -H "accept: application/hal+json"

# The response:
{
  "node": {
    "name": "node1",
    "uuid": "5a534a72-b047-11e8-9af3-005056bb838e",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/5a534a72-b047-11e8-9af3-005056bb838e"
      }
    }
  },
  "uuid": "931b20f8-b047-11e8-9af3-005056bb838e",
  "name": "0a",
  "description": "Fibre Channel Target Adapter 0a (ACME Fibre Channel Adapter, rev. 1.0.0, 8G)",
  "enabled": true,
  "fabric": {
    "connected": true,
    "connected_speed": 8,
    "name": "55:0e:b1:a0:20:40:80:00",
    "port_address": "52100",
    "switch_port": "ssan-g620-03:1"
  },
  "physical_protocol": "fibre_channel",
  "speed": {
    "maximum": "8",
    "configured": "auto"
  },
  "state": "online",
```

```
"supported_protocols": [
  "fcp"
],
"transceiver": {
  "form_factor": "SFP",
  "manufacturer": "ACME",
  "capabilities": [
    4,
    8
  ],
  "part_number": "1000"
},
"wwnn": "50:0a:09:80:bb:83:8e:00",
"wwpn": "50:0a:09:82:bb:83:8e:00",
"metric": {
  "timestamp": "2019-04-09T05:50:15Z",
  "duration": "PT15S",
  "status": "ok",
  "latency": {
    "other": 0,
    "total": 0,
    "read": 0,
    "write": 0
  },
  "iops": {
    "read": 0,
    "write": 0,
    "other": 0,
    "total": 0
  },
  "throughput": {
    "read": 0,
    "write": 0,
    "total": 0
  }
},
"statistics": {
  "timestamp": "2019-04-09T05:50:42Z",
  "status": "ok",
  "latency_raw": {
    "other": 38298,
    "total": 38298,
    "read": 0,
    "write": 0
  },
  "iops_raw": {
```

```

    "read": 0,
    "write": 0,
    "other": 3,
    "total": 3
  },
  "throughput_raw": {
    "read": 0,
    "write": 0,
    "total": 0
  }
},
"_links": {
  "self": {
    "href": "/api/network/fc/ports/931b20f8-b047-11e8-9af3-005056bb838e"
  }
}
}

```

### Disabling an FC port

If an active FC interface exists on an FC port, the port cannot be disabled.

```

# The API:
PATCH /api/network/fc/ports/{uuid}

# The call:
curl -X PATCH "http://<mgmt-ip>/api/network/fc/ports/931b20f8-b047-11e8-9af3-005056bb838e" -H "accept: application/hal+json" -d '{ "enabled": false }'

```

## Retrieve FC ports

GET /network/fc/ports

**Introduced In:** 9.6

Retrieves FC ports.

### 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.

- `fabric.name`



- `statistics.*`

- `metric.*`

## Related ONTAP commands

- `network fcp adapter show`

## Learn more

- [DOC /network/fc/ports](#)

## Parameters

Name	Type	In	Required	Description
<code>physical_protocol</code>	string	query	False	Filter by <code>physical_protocol</code>
<code>metric.duration</code>	string	query	False	Filter by <code>metric.duration</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.timestamp</code>	string	query	False	Filter by <code>metric.timestamp</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.latency.total</code>	integer	query	False	Filter by <code>metric.latency.total</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.latency.write</code>	integer	query	False	Filter by <code>metric.latency.write</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>
<code>metric.latency.other</code>	integer	query	False	Filter by <code>metric.latency.other</code> <ul style="list-style-type: none"><li>• Introduced in: 9.8</li></ul>

Name	Type	In	Required	Description
metric.latency.read	integer	query	False	Filter by metric.latency.read  • Introduced in: 9.8
metric.status	string	query	False	Filter by metric.status  • Introduced in: 9.8
metric.iops.total	integer	query	False	Filter by metric.iops.total  • Introduced in: 9.8
metric.iops.write	integer	query	False	Filter by metric.iops.write  • Introduced in: 9.8
metric.iops.other	integer	query	False	Filter by metric.iops.other  • Introduced in: 9.8
metric.iops.read	integer	query	False	Filter by metric.iops.read  • Introduced in: 9.8
metric.throughput.read	integer	query	False	Filter by metric.throughput.read  • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total  • Introduced in: 9.8

Name	Type	In	Required	Description
metric.throughput.write	integer	query	False	Filter by metric.throughput.write  • Introduced in: 9.8
supported_protocols	string	query	False	Filter by supported_protocols
enabled	boolean	query	False	Filter by enabled
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read  • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total  • Introduced in: 9.8
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write  • Introduced in: 9.8
statistics.timestamp	string	query	False	Filter by statistics.timestamp  • Introduced in: 9.8
statistics.iops_raw.total	integer	query	False	Filter by statistics.iops_raw.total  • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.iops_raw.write	integer	query	False	Filter by statistics.iops_raw.write  • Introduced in: 9.8
statistics.iops_raw.other	integer	query	False	Filter by statistics.iops_raw.other  • Introduced in: 9.8
statistics.iops_raw.read	integer	query	False	Filter by statistics.iops_raw.read  • Introduced in: 9.8
statistics.status	string	query	False	Filter by statistics.status  • Introduced in: 9.8
statistics.latency_raw.total	integer	query	False	Filter by statistics.latency_raw.total  • Introduced in: 9.8
statistics.latency_raw.write	integer	query	False	Filter by statistics.latency_raw.write  • Introduced in: 9.8
statistics.latency_raw.other	integer	query	False	Filter by statistics.latency_raw.other  • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.latency_read	integer	query	False	Filter by statistics.latency_read  • Introduced in: 9.8
name	string	query	False	Filter by name
wwpn	string	query	False	Filter by wwpn
node.uuid	string	query	False	Filter by node.uuid
node.name	string	query	False	Filter by node.name
uuid	string	query	False	Filter by uuid
fabric.port_address	string	query	False	Filter by fabric.port_address
fabric.connected	boolean	query	False	Filter by fabric.connected
fabric.name	string	query	False	Filter by fabric.name
fabric.switch_port	string	query	False	Filter by fabric.switch_port
fabric.connected_speed	integer	query	False	Filter by fabric.connected_speed
interface_count	integer	query	False	Filter by interface_count  • Introduced in: 9.10
wwnn	string	query	False	Filter by wwnn
transceiver.capabilities	integer	query	False	Filter by transceiver.capabilities

Name	Type	In	Required	Description
transceiver.part_number	string	query	False	Filter by transceiver.part_number
transceiver.manufacturer	string	query	False	Filter by transceiver.manufacturer
transceiver.form_factor	string	query	False	Filter by transceiver.form_factor  • Introduced in: 9.8
description	string	query	False	Filter by description
state	string	query	False	Filter by state
speed.configured	string	query	False	Filter by speed.configured
speed.maximum	string	query	False	Filter by speed.maximum
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	Number of records.
records	array[ <a href="#">fc_port</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "description": "Fibre Channel Target Adapter 0a (ACME Fibre Channel Adapter, rev. 1.0.0, 8G)",
    "fabric": {
      "connected_speed": 16,
      "name": "string",
      "port_address": "52100A",
      "switch_port": "ssan-g620-03:33"
    },
    "interface_count": 0,
    "metric": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
```



```

    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"name": "0a",
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"physical_protocol": "fibre_channel",
"speed": {
  "configured": "auto",
  "maximum": "32"
},
"state": "online",
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"supported_protocols": {
},
"transceiver": {
  "capabilities": {
  },
  "form_factor": "sfp",

```

```
    "manufacturer": "Acme, Inc.",
    "part_number": "string"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
  "wwnn": "20:00:00:50:56:b4:13:a8",
  "wwpn": "20:00:00:50:56:b4:13:a8"
}
}
```

## 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>	

fabric

Properties of the fabric to which the FC port is attached.

Name	Type	Description
connected	boolean	Reports if the physical port has established a connection with the FC fabric.
connected_speed	integer	The negotiated data rate between the target FC port and the fabric in gigabits per second.
name	string	<p>The name of the fabric to which the port is connected. This is only available when the FC port is connected to a fabric.</p> <p>There is an added cost to retrieving this property's value. It is not populated for either a collection GET or an instance GET unless it is explicitly requested using the <code>fields</code> query parameter. See <a href="#">Requesting specific fields</a> to learn more.</p>

Name	Type	Description
port_address	string	<p>The FC port address of the host bus adapter (HBA) physical port.</p> <p>Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the FC port address given to the physical host bus adapter (HBA) port when the port performs a fabric login (FLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a six-digit hexadecimal encoded numeric value.</p>
switch_port	string	The switch port to which the FC port is connected.

#### iops

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

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

#### latency

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

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

### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
<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:
iops	<a href="#">iops</a>	The rate of I/O operations observed at the storage object.

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

#### node

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

#### speed

The physical device speed related properties of the FC port.

Name	Type	Description
configured	string	The configured speed of the FC port in gigabits per second.
maximum	string	The maximum speed supported by the FC port in gigabits per second.

#### iops\_raw

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

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

#### latency\_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

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

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

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

Name	Type	Description
iops_raw	<a href="#">iops_raw</a>	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	<a href="#">latency_raw</a>	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.



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

#### transceiver

Properties of the transceiver connected to the FC port.

Name	Type	Description
capabilities	array[integer]	The speeds of which the transceiver is capable in gigabits per second.

Name	Type	Description
form_factor	string	The form factor of the transceiver. Possible values are: <ul style="list-style-type: none"> <li>• <i>sfp</i> - Small Form Factor - Pluggable</li> <li>• <i>sff</i> - Small Form Factor</li> <li>• <i>unknown</i> - Unknown</li> </ul>
manufacturer	string	The manufacturer of the transceiver.
part_number	string	The part number of the transceiver.

### fc\_port

A Fibre Channel (FC) port is the physical port of an FC adapter on an ONTAP cluster node that can be connected to an FC network to provide FC network connectivity. An FC port defines the location of an FC interface within the ONTAP cluster.

Name	Type	Description
_links	<a href="#">_links</a>	
description	string	A description of the FC port.
enabled	boolean	The administrative state of the FC port. If this property is set to <i>false</i> , all FC connectivity to FC interfaces are blocked. Optional in PATCH.
fabric	<a href="#">fabric</a>	Properties of the fabric to which the FC port is attached.
interface_count	integer	The number of FC interfaces currently provisioned on this port. This property is not supported in an SVM context.
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput
name	string	The FC port name.
node	<a href="#">node</a>	

Name	Type	Description
physical_protocol	string	The physical network protocol of the FC port.
speed	speed	The physical device speed related properties of the FC port.
state	string	<p>The operational state of the FC port.</p> <ul style="list-style-type: none"> <li>• startup - The port is booting up.</li> <li>• link_not_connected - The port has finished initialization, but a link with the fabric is not established.</li> <li>• online - The port is initialized and a link with the fabric has been established.</li> <li>• link_disconnected - The link was present at one point on this port but is currently not established.</li> <li>• offlined_by_user - The port is administratively disabled.</li> <li>• offlined_by_system - The port is set to offline by the system. This happens when the port encounters too many errors.</li> <li>• node_offline - The state information for the port cannot be retrieved. The node is offline or inaccessible.</li> </ul>
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
supported_protocols	array[string]	The network protocols supported by the FC port.
transceiver	transceiver	Properties of the transceiver connected to the FC port.

Name	Type	Description
uuid	string	The unique identifier of the FC port.
wwnn	string	The base world wide node name (WWNN) for the FC port.
wwpn	string	The base world wide port name (WWPN) for the FC port.

#### 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 an FC port

GET /network/fc/ports/{uuid}

**Introduced In:** 9.6

Retrieves an FC port.

### 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.

- `fabric.name`

- `statistics.*`
- `metric.*`

### Related ONTAP commands

- `network fcp adapter show`

### Learn more

- [DOC /network/fc/ports](#)

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC port.
fields	array[string]	query	False	Specify the fields to return.

### Response

Status: 200, Ok

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
description	string	A description of the FC port.
enabled	boolean	The administrative state of the FC port. If this property is set to <i>false</i> , all FC connectivity to FC interfaces are blocked. Optional in PATCH.
fabric	<a href="#">fabric</a>	Properties of the fabric to which the FC port is attached.
interface_count	integer	The number of FC interfaces currently provisioned on this port. This property is not supported in an SVM context.
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput
name	string	The FC port name.

Name	Type	Description
node	<a href="#">node</a>	
physical_protocol	string	The physical network protocol of the FC port.
speed	<a href="#">speed</a>	The physical device speed related properties of the FC port.
state	string	<p>The operational state of the FC port.</p> <ul style="list-style-type: none"> <li>• startup - The port is booting up.</li> <li>• link_not_connected - The port has finished initialization, but a link with the fabric is not established.</li> <li>• online - The port is initialized and a link with the fabric has been established.</li> <li>• link_disconnected - The link was present at one point on this port but is currently not established.</li> <li>• offlined_by_user - The port is administratively disabled.</li> <li>• offlined_by_system - The port is set to offline by the system. This happens when the port encounters too many errors.</li> <li>• node_offline - The state information for the port cannot be retrieved. The node is offline or inaccessible.</li> </ul>
statistics	<a href="#">statistics</a>	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
supported_protocols	array[string]	The network protocols supported by the FC port.
transceiver	<a href="#">transceiver</a>	Properties of the transceiver connected to the FC port.

<b>Name</b>	<b>Type</b>	<b>Description</b>
uuid	string	The unique identifier of the FC port.
wwnn	string	The base world wide node name (WWNN) for the FC port.
wwpn	string	The base world wide port name (WWPN) for the FC port.

## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "Fibre Channel Target Adapter 0a (ACME Fibre Channel
Adapter, rev. 1.0.0, 8G)",
  "fabric": {
    "connected_speed": 16,
    "name": "string",
    "port_address": "52100A",
    "switch_port": "ssan-g620-03:33"
  },
  "interface_count": 0,
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "name": "0a",
  "node": {
    "_links": {
      "self": {
```



```

    "href": "/api/resourcelink"
  }
},
"name": "node1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"physical_protocol": "fibre_channel",
"speed": {
  "configured": "auto",
  "maximum": "32"
},
"state": "online",
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"supported_protocols": {
},
"transceiver": {
  "capabilities": {
  },
  "form_factor": "sfp",
  "manufacturer": "Acme, Inc.",
  "part_number": "string"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"wwnn": "20:00:00:50:56:b4:13:a8",
"wwpn": "20:00:00:50:56:b4:13:a8"
}

```

## 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>	

fabric

Properties of the fabric to which the FC port is attached.

Name	Type	Description
connected	boolean	Reports if the physical port has established a connection with the FC fabric.
connected_speed	integer	The negotiated data rate between the target FC port and the fabric in gigabits per second.
name	string	<p>The name of the fabric to which the port is connected. This is only available when the FC port is connected to a fabric.</p> <p>There is an added cost to retrieving this property's value. It is not populated for either a collection GET or an instance GET unless it is explicitly requested using the <code>fields</code> query parameter. See <a href="#">Requesting specific fields</a> to learn more.</p>

Name	Type	Description
port_address	string	<p>The FC port address of the host bus adapter (HBA) physical port.</p> <p>Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the FC port address given to the physical host bus adapter (HBA) port when the port performs a fabric login (FLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a six-digit hexadecimal encoded numeric value.</p>
switch_port	string	The switch port to which the FC port is connected.

#### iops

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

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

#### latency

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

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

### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
<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:
iops	<a href="#">iops</a>	The rate of I/O operations observed at the storage object.

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

#### node

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

#### speed

The physical device speed related properties of the FC port.

Name	Type	Description
configured	string	The configured speed of the FC port in gigabits per second.
maximum	string	The maximum speed supported by the FC port in gigabits per second.

#### iops\_raw

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

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

#### latency\_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

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

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

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

Name	Type	Description
iops_raw	<a href="#">iops_raw</a>	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	<a href="#">latency_raw</a>	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.



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

#### transceiver

Properties of the transceiver connected to the FC port.

Name	Type	Description
capabilities	array[integer]	The speeds of which the transceiver is capable in gigabits per second.

Name	Type	Description
form_factor	string	The form factor of the transceiver. Possible values are: <ul style="list-style-type: none"> <li>• <i>sfp</i> - Small Form Factor - Pluggable</li> <li>• <i>sff</i> - Small Form Factor</li> <li>• <i>unknown</i> - Unknown</li> </ul>
manufacturer	string	The manufacturer of the transceiver.
part_number	string	The part number of the transceiver.

#### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

#### error

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

## Update an FC port

PATCH /network/fc/ports/{uuid}

**Introduced In:** 9.6

Updates an FC port.

## Related ONTAP commands

- `network fcp adapter modify`

## Learn more

- [DOC /network/fc/ports](#)

## Parameters

Name	Type	In	Required	Description
uuid	string	path	True	The unique identifier for the FC port.

## Request Body

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
description	string	A description of the FC port.
enabled	boolean	The administrative state of the FC port. If this property is set to <i>false</i> , all FC connectivity to FC interfaces are blocked. Optional in PATCH.
fabric	<a href="#">fabric</a>	Properties of the fabric to which the FC port is attached.
interface_count	integer	The number of FC interfaces currently provisioned on this port. This property is not supported in an SVM context.
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput
name	string	The FC port name.
node	<a href="#">node</a>	
physical_protocol	string	The physical network protocol of the FC port.
speed	<a href="#">speed</a>	The physical device speed related properties of the FC port.

Name	Type	Description
state	string	<p>The operational state of the FC port.</p> <ul style="list-style-type: none"> <li>• startup - The port is booting up.</li> <li>• link_not_connected - The port has finished initialization, but a link with the fabric is not established.</li> <li>• online - The port is initialized and a link with the fabric has been established.</li> <li>• link_disconnected - The link was present at one point on this port but is currently not established.</li> <li>• offlined_by_user - The port is administratively disabled.</li> <li>• offlined_by_system - The port is set to offline by the system. This happens when the port encounters too many errors.</li> <li>• node_offline - The state information for the port cannot be retrieved. The node is offline or inaccessible.</li> </ul>
statistics	<a href="#">statistics</a>	<p>These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.</p>
supported_protocols	array[string]	<p>The network protocols supported by the FC port.</p>
transceiver	<a href="#">transceiver</a>	<p>Properties of the transceiver connected to the FC port.</p>
uuid	string	<p>The unique identifier of the FC port.</p>
wwnn	string	<p>The base world wide node name (WWNN) for the FC port.</p>
wwpn	string	<p>The base world wide port name (WWPN) for the FC port.</p>

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "description": "Fibre Channel Target Adapter 0a (ACME Fibre Channel
Adapter, rev. 1.0.0, 8G)",
  "fabric": {
    "connected_speed": 16,
    "name": "string",
    "port_address": "52100A",
    "switch_port": "ssan-g620-03:33"
  },
  "interface_count": 0,
  "metric": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "duration": "PT15S",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "name": "0a",
  "node": {
    "_links": {
      "self": {
```

```

    "href": "/api/resourcelink"
  }
},
"name": "node1",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"physical_protocol": "fibre_channel",
"speed": {
  "configured": "auto",
  "maximum": "32"
},
"state": "online",
"statistics": {
  "iops_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "latency_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"supported_protocols": {
},
"transceiver": {
  "capabilities": {
  },
  "form_factor": "sfp",
  "manufacturer": "Acme, Inc.",
  "part_number": "string"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412",
"wwnn": "20:00:00:50:56:b4:13:a8",
"wwpn": "20:00:00:50:56:b4:13:a8"
}

```

## Response

Status: 200, Ok

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
5374085	The node where the Fibre Channel port is located is offline.
5374087	The Fibre Channel port has active Fibre Channel interfaces and cannot be disabled.

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

## 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>	

fabric

Properties of the fabric to which the FC port is attached.

Name	Type	Description
connected	boolean	Reports if the physical port has established a connection with the FC fabric.
connected_speed	integer	The negotiated data rate between the target FC port and the fabric in gigabits per second.
name	string	<p>The name of the fabric to which the port is connected. This is only available when the FC port is connected to a fabric.</p> <p>There is an added cost to retrieving this property's value. It is not populated for either a collection GET or an instance GET unless it is explicitly requested using the <code>fields</code> query parameter. See <a href="#">Requesting specific fields</a> to learn more.</p>



Name	Type	Description
port_address	string	<p>The FC port address of the host bus adapter (HBA) physical port.</p> <p>Each FC port in an FC switched fabric has its own unique FC port address for routing purposes. The FC port address is assigned by a switch in the fabric when that port logs in to the fabric. This property refers to the FC port address given to the physical host bus adapter (HBA) port when the port performs a fabric login (FLOGI).</p> <p>This is useful for obtaining statistics and diagnostic information from FC switches.</p> <p>This is a six-digit hexadecimal encoded numeric value.</p>
switch_port	string	The switch port to which the FC port is connected.

#### iops

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

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

#### latency

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

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

### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### metric

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
<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:
iops	<a href="#">iops</a>	The rate of I/O operations observed at the storage object.

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

#### node

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

#### speed

The physical device speed related properties of the FC port.

Name	Type	Description
configured	string	The configured speed of the FC port in gigabits per second.
maximum	string	The maximum speed supported by the FC port in gigabits per second.

#### iops\_raw

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

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

#### latency\_raw

The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

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

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

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

Name	Type	Description
iops_raw	<a href="#">iops_raw</a>	The number of I/O operations observed at the storage object. This should be used along with delta time to calculate the rate of I/O operations per unit of time.
latency_raw	<a href="#">latency_raw</a>	The raw latency in microseconds observed at the storage object. This should be divided by the raw IOPS value to calculate the average latency per I/O operation.

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

#### transceiver

Properties of the transceiver connected to the FC port.

Name	Type	Description
capabilities	array[integer]	The speeds of which the transceiver is capable in gigabits per second.

Name	Type	Description
form_factor	string	The form factor of the transceiver. Possible values are: <ul style="list-style-type: none"> <li>• <i>sfp</i> - Small Form Factor - Pluggable</li> <li>• <i>sff</i> - Small Form Factor</li> <li>• <i>unknown</i> - Unknown</li> </ul>
manufacturer	string	The manufacturer of the transceiver.
part_number	string	The part number of the transceiver.

### fc\_port

A Fibre Channel (FC) port is the physical port of an FC adapter on an ONTAP cluster node that can be connected to an FC network to provide FC network connectivity. An FC port defines the location of an FC interface within the ONTAP cluster.

Name	Type	Description
_links	<a href="#">_links</a>	
description	string	A description of the FC port.
enabled	boolean	The administrative state of the FC port. If this property is set to <i>false</i> , all FC connectivity to FC interfaces are blocked. Optional in PATCH.
fabric	<a href="#">fabric</a>	Properties of the fabric to which the FC port is attached.
interface_count	integer	The number of FC interfaces currently provisioned on this port. This property is not supported in an SVM context.
metric	<a href="#">metric</a>	Performance numbers, such as IOPS latency and throughput
name	string	The FC port name.
node	<a href="#">node</a>	

Name	Type	Description
physical_protocol	string	The physical network protocol of the FC port.
speed	speed	The physical device speed related properties of the FC port.
state	string	<p>The operational state of the FC port.</p> <ul style="list-style-type: none"> <li>• startup - The port is booting up.</li> <li>• link_not_connected - The port has finished initialization, but a link with the fabric is not established.</li> <li>• online - The port is initialized and a link with the fabric has been established.</li> <li>• link_disconnected - The link was present at one point on this port but is currently not established.</li> <li>• offlined_by_user - The port is administratively disabled.</li> <li>• offlined_by_system - The port is set to offline by the system. This happens when the port encounters too many errors.</li> <li>• node_offline - The state information for the port cannot be retrieved. The node is offline or inaccessible.</li> </ul>
statistics	statistics	These are raw performance numbers, such as IOPS latency and throughput. These numbers are aggregated across all nodes in the cluster and increase with the uptime of the cluster.
supported_protocols	array[string]	The network protocols supported by the FC port.
transceiver	transceiver	Properties of the transceiver connected to the FC port.



Name	Type	Description
uuid	string	The unique identifier of the FC port.
wwnn	string	The base world wide node name (WWNN) for the FC port.
wwpn	string	The base world wide port name (WWPN) for the FC port.

#### 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 FC port historical performance metrics

GET /network/fc/ports/{uuid}/metrics

**Introduced In:** 9.8

Retrieves historical performance metrics for an FC port

### Parameters

Name	Type	In	Required	Description
throughput.read	integer	query	False	Filter by throughput.read

Name	Type	In	Required	Description
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
iops.total	integer	query	False	Filter by iops.total
iops.write	integer	query	False	Filter by iops.write
iops.other	integer	query	False	Filter by iops.other
iops.read	integer	query	False	Filter by iops.read
duration	string	query	False	Filter by duration
status	string	query	False	Filter by status
timestamp	string	query	False	Filter by timestamp
latency.total	integer	query	False	Filter by latency.total
latency.write	integer	query	False	Filter by latency.write
latency.other	integer	query	False	Filter by latency.other
latency.read	integer	query	False	Filter by latency.read
uuid	string	path	True	Unique identifier of the FC port.

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",
    "iops": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "latency": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z",
    "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>	

iops

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

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

latency

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

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

### throughput

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

### records

Performance numbers, such as IOPS latency and throughput

Name	Type	Description
<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:
iops	<a href="#">iops</a>	The rate of I/O operations observed at the storage object.



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

#### 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.

## Manage HTTP proxy configuration

### Network http-proxy endpoint overview

#### Overview

Configuration of an HTTP proxy for an SVM or a Cluster IPspace.

#### Retrieve HTTP proxy information

The HTTP proxy GET operation retrieves all configurations for an SVM or a Cluster IPspace via '/api/cluster'.

#### Examples

Retrieving all fields for all HTTP proxy configurations

```
# The API:
/api/network/http-proxy

# The call:
curl -X GET "https://<mgmt-ip>/api/network/http-
proxy?fields=*&return_records=true&return_timeout=15" -H "accept:
application/json"

# The response:
{
  "records": [
    {
      "uuid": "4133a1fc-7228-11e9-b40c-005056bb4f0c",
      "svm": {
        "name": "vs1",
        "uuid": "4133a1fc-7228-11e9-b40c-005056bb4f0c"
      },
      "server": "server1.example.com",
      "port": 3128,
      "authentication_enabled": false
    },
    {
      "uuid": "96219ce3-7214-11e9-828c-005056bb4f0c",
      "svm": {
        "name": "cluster-1",
        "uuid": "96219ce3-7214-11e9-828c-005056bb4f0c"
      },
      "ipspace": {
        "uuid": "7433520f-7214-11e9-828c-005056bb4f0c",
        "name": "Default"
      },
      "server": "1.1.1.",
      "port": 3128,
      "authentication_enabled": true
    }
  ],
  "num_records": 2
}
```

#### Retrieving the HTTP proxy configuration for a specific SVM

```

# The API:
/api/network/http-proxy/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/http-proxy/96219ce3-7214-11e9-828c-005056bb4f0c" -H "accept: application/json"

# The response
{
  "uuid": "96219ce3-7214-11e9-828c-005056bb4f0c",
  "svm": {
    "name": "cluster-1",
    "uuid": "96219ce3-7214-11e9-828c-005056bb4f0c"
  },
  "ipspace": {
    "uuid": "7433520f-7214-11e9-828c-005056bb4f0c",
    "name": "Default"
  },
  "server": "1.1.1.1",
  "port": 3128,
  "authentication_enabled": false
}

```

## Creating an HTTP proxy configuration

You can use the HTTP proxy POST operation to create an HTTP proxy configuration for the specified SVM.

### Examples

#### Creating an HTTP proxy configuration for a particular SVM

```

# The API:
/api/network/http-proxy

# The call:
curl -X POST "https://<mgmt-ip>/api/network/http-proxy" -H "accept: application/json" -H "Content-Type: application/json" -d "{  \"port\": 3128,  \"server\": \"1.1.1.1\",  \"svm\": {    \"name\": \"cluster-1\"  }}"

```

#### Creating an HTTP proxy configuration for a particular IPspace

```
# The API:
/api/network/http-proxy

# The call:
curl -X POST "https://<mgmt-ip>/api/network/http-proxy" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"ipSpace\":
{ \"name\": \"Default\" }, \"port\": 3128, \"server\": \"1.1.1.1\"}"
```

### Creating an HTTP proxy configuration with authentication enabled

```
# The API:
/api/network/http-proxy

# The call:
curl -X POST "https://<mgmt-ip>/api/network/http-proxy" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"ipSpace\":
{ \"name\": \"Default\" }, \"port\": 3128, \"server\": \"1.1.1.1\",
\"authentication_enabled\":true, \"username\":\"test\",
\"password\":\"test\"}"
```

### Update an HTTP proxy configuration for a specified SVM

You can use the HTTP proxy PATCH operation to update the HTTP proxy configuration for the specified SVM.

#### Example

The following example shows how a PATCH operation is used to update an HTTP proxy configuration for a specific SVM:

```
# The API:
/api/network/http-proxy/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/http-proxy/96219ce3-7214-
11e9-828c-005056bb4f0c" -H "accept: application/json" -H "Content-Type:
application/json" -d "{ \"port\": 3128, \"server\":
\"server2.example.com\"}"
```

### Delete an HTTP proxy configuration for a specified SVM

You can use the HTTP proxy DELETE operation to delete the HTTP proxy configuration for the specified SVM.

#### Example

The following example shows how a DELETE operation is used to delete an HTTP proxy configuration for a

specific SVM:

```
# The API:
/api/network/http-proxy/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/http-proxy/96219ce3-7214-11e9-828c-005056bb4f0c" -H "accept: application/json"
```

## Retrieve HTTP proxy configurations for all SVMs and cluster IPspaces

GET /network/http-proxy

**Introduced In:** 9.7

Retrieves the HTTP proxy configurations of all the SVMs and Cluster IPspaces.

### Related ONTAP commands

- `vserver http-proxy show`

### Parameters

Name	Type	In	Required	Description
ipspace.uuid	string	query	False	Filter by ipspace.uuid
ipspace.name	string	query	False	Filter by ipspace.name
authentication_enabled	boolean	query	False	Filter by authentication_enabled  • Introduced in: 9.9
server	string	query	False	Filter by server
svm.uuid	string	query	False	Filter by svm.uuid
svm.name	string	query	False	Filter by svm.name
uuid	string	query	False	Filter by uuid
scope	string	query	False	Filter by scope

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

## Response

Status: 200, Ok

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

Name	Type	Description
num_records	integer	Number of HTTP proxy records
records	array[ <a href="#">network_http_proxy</a> ]	



## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ipospace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "exchange",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": 3128,
    "scope": "svm",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "string"
  }
}
```

## Error

Status: Default, Error

Name	Type	Description
error	error	

### Example error

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

### Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

\_links

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

ipSPACE

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

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

svm

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

network\_http\_proxy

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

Name	Type	Description
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to "svm" for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	<a href="#">svm</a>	
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

#### 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.

## Create an HTTP proxy configuration for an SVM or cluster IPspace

POST /network/http-proxy

**Introduced In:** 9.7

Creates an HTTP proxy configuration for an SVM or a Cluster IPspace. Important notes:

- IPv6 must be enabled if IPv6 family addresses are specified in the "server" field.
- The server and the port combination specified using the "server" and "port" fields is validated during this operation. The validation will fail in the following scenarios:
  - The HTTP proxy service is not configured on the server.
  - The HTTP proxy service is not running on the specified port.
  - The server is unreachable.

### Required properties

- SVM-scoped HTTP proxy
  - `svm.uuid` or `svm.name` - Existing SVM in which to create the HTTP proxy.
- Cluster-scoped HTTP proxy
  - `ipspace.uuid` or `ipspace.name` - Existing Cluster IPspace in which to create the HTTP proxy.
- `server` - HTTP proxy server FQDN or IP address.
- `port` - HTTP proxy server port.

### Optional properties

- `authentication_enabled` - Specifies if authentication is required for the HTTP proxy server.
- `username` - Username used to authenticate with the HTTP proxy server.
- `password` - Password used to authenticate with the HTTP proxy server.

### Related ONTAP commands

- `vserver http-proxy create`

## Parameters

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

## Request Body

Name	Type	Description
_links	<a href="#">_links</a>	
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to "svm" for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	<a href="#">svm</a>	
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipospace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "port": 3128,
  "scope": "svm",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string"
}
```

## Response

Status: 201, Created

Name	Type	Description
_links	<a href="#">_links</a>	
num_records	integer	Number of HTTP proxy records
records	array[ <a href="#">network_http_proxy</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ipospace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "exchange",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "port": 3128,
    "scope": "svm",
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "string"
  }
}
```

## Error



Status: Default

## ONTAP Error Response Codes

Error Code	Description
26214473	HTTP proxy configuration is not valid.
26214476	The "IPspace" parameter should not be specified in the SVM context.
26214477	The specified IPspace does not exist.
23724130	Cannot use an IPv6 name server address because there are no IPv6 interfaces.
26214481	Username and password cannot be empty when HTTP proxy authentication is enabled.
26214482	Username and password cannot be specified when HTTP proxy authentication is disabled.

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>	

ipospace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

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

svm

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

network\_http\_proxy

Name	Type	Description
_links	<a href="#">_links</a>	
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipospace	<a href="#">ipospace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

Name	Type	Description
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to "svm" for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	<a href="#">svm</a>	
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

#### \_links

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

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

## Delete HTTP proxy configuration for an SVM or cluster IPspace

DELETE /network/http-proxy/{uuid}

**Introduced In:** 9.7

Deletes the HTTP proxy configuration of the specified SVM or Cluster IPspace.

### Related ONTAP commands

- `vserver http-proxy delete`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	HTTP proxy UUID

### Response

Status: 200, Ok

### Error

Status: Default

### ONTAP Error Response Codes

Error Code	Description
138281013	The HTTP proxy cannot be deleted while in use by a cloud agent connection.

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

## Example error

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

## Definitions

### See Definitions

#### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

#### error

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

## Display HTTP proxy server, port, and IPspace information for an SVM or cluster IPspace

GET /network/http-proxy/{uuid}

Introduced In: 9.7

Displays the HTTP proxy server, port, and IPspace of the specified SVM or Cluster IPspace.

## Related ONTAP commands

- `vserver http-proxy show`

## Parameters

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

## Response

Status: 200, Ok

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to "svm" for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	<a href="#">svm</a>	

Name	Type	Description
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

### Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "port": 3128,
  "scope": "svm",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string"
}
```

### Error

Status: Default, Error

Name	Type	Description
error	error	

### Example error

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

### Definitions



## See Definitions

href

Name	Type	Description
href	string	

\_links

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

ipospace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

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

svm

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[ <a href="#">error_arguments</a> ]	Message arguments

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

## Update proxy server, port, username, and password parameters

PATCH /network/http-proxy/{uuid}

**Introduced In:** 9.7

Updates the proxy server, port, username, and password parameters. Important notes:

- IPv6 must be enabled if IPv6 family addresses are specified in the "server" field.
- The server and the port combination specified using the "server" and "port" fields is validated during this operation. The validation will fail in the following scenarios:
  - The HTTP proxy service is not configured on the server.
  - The HTTP proxy service is not running on the specified port.
  - The server is unreachable.

### Related ONTAP commands

- `vserver http-proxy modify`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	HTTP proxy UUID

### Request Body

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

Name	Type	Description
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to "svm" for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	svm	
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipospace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "port": 3128,
  "scope": "svm",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "string"
}
```

## Response

Status: 200, Ok

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
26214473	The HTTP proxy configuration is not valid.
23724130	Cannot use an IPv6 name server address because there are no IPv6 interfaces.
26214481	Username and password cannot be empty when HTTP proxy authentication is enabled.
26214482	Username and password cannot be specified when HTTP proxy authentication is disabled.

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>	

ipospace

Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

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

svm

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

network\_http\_proxy

Name	Type	Description
_links	<a href="#">_links</a>	
authentication_enabled	boolean	Specifies whether or not authentication with the HTTP proxy server is enabled.
ipospace	<a href="#">ipospace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name is supplied on input.

Name	Type	Description
password	string	Password to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
port	integer	The port number on which the HTTP proxy service is configured on the proxy server.
scope	string	Set to "svm" for HTTP proxy owned by an SVM. Otherwise, set to "cluster".
server	string	Fully qualified domain name (FQDN) or IP address of the HTTP proxy server.
svm	<a href="#">svm</a>	
username	string	Username to authenticate with the HTTP proxy server when authentication_enabled is set to "true".
uuid	string	The UUID that uniquely identifies the HTTP proxy.

#### 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.

# Manage BGP peer groups

## Network IP BGP peer-groups endpoint overview

### Overview

The following operations are supported:

- Creation: POST `network/ip/bgp/peer-groups`
- Collection Get: GET `network/ip/bgp/peer-groups`
- Instance Get: GET `network/ip/bgp/peer-groups/{uuid}`
- Instance Patch: PATCH `network/ip/bgp/peer-groups/{uuid}`
- Instance Delete: DELETE `network/ip/bgp/peer-groups/{uuid}`

### Retrieving network BGP sessions information

The IP BGP peer-groups GET API retrieves and displays relevant information pertaining to the BGP peer-groups configured in the cluster. The response can contain a list of multiple BGP peer-groups or a specific peer-group. Each BGP peer-group represents a BGP session configured between a local interface and a peer router.

### Examples

#### Retrieving all BGP peer-groups in the cluster

The following example shows the list of all BGP peer-groups configured in a cluster.

---



```
# The API:
/api/network/ip/bgp/peer-groups

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

# The response:
{
  "records": [
    {
      "uuid": "5f22ae9d-87b2-11e9-a3a6-005056bb81a4",
      "name": "pg1",
      "_links": {
        "self": {
          "href": "/api/network/ip/bgp/peer-groups/5f22ae9d-87b2-11e9-a3a6-
005056bb81a4"
        }
      }
    },
    {
      "uuid": "5fd08be3-87b2-11e9-952f-005056bb2170",
      "name": "pg2",
      "_links": {
        "self": {
          "href": "/api/network/ip/bgp/peer-groups/5fd08be3-87b2-11e9-952f-
005056bb2170"
        }
      }
    }
  ],
  "num_records": 2,
  "_links": {
    "self": {
      "href": "/api/network/ip/bgp/peer-groups"
    }
  }
}
```

---

### Retrieving a specific BGP peer-group

The following example shows the response when a specific BGP peer-group is requested. The system returns an error when there is no peer-group with the requested UUID.

```

# The API:
/api/network/ip/bgp/peer-groups/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/bgp/peer-groups/5fd08be3-87b2-11e9-952f-005056bb2170" -H "accept: application/hal+json"

# The response:
{
  "uuid": "5fd08be3-87b2-11e9-952f-005056bb2170",
  "name": "pg2",
  "ipspace": {
    "uuid": "84fd3375-879a-11e9-a3a6-005056bb81a4",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/84fd3375-879a-11e9-a3a6-005056bb81a4"
      }
    }
  },
  "local": {
    "interface": {
      "uuid": "5e76a305-87b2-11e9-952f-005056bb2170",
      "name": "bgp2",
      "ip": {
        "address": "10.10.10.2"
      }
    },
    "port": {
      "uuid": "f8ff73de-879a-11e9-952f-005056bb2170",
      "name": "e0h",
      "node": {
        "name": "node1"
      }
    }
  },
  "peer": {
    "address": "10.10.10.1",
    "asn": 65501
  },
  "state": "up",
  "_links": {
    "self": {
      "href": "/api/network/ip/bgp/peer-groups/5fd08be3-87b2-11e9-952f-005056bb2170"
    }
  }
}

```

```
}  
}  
}
```

### Retrieving specific fields and limiting the output using filters

The following example shows the response when a filter is applied (`location.port.node.name=node1`) and only certain fields are requested. Filtered fields are in the output in addition to the default fields and requested fields.

```
# The API:  
/api/network/ip/bgp/peer-groups  
  
# The call:  
curl -X GET "https://<mgmt-ip>/api/network/ip/bgp/peer-  
groups?local.port.node.name=node1&fields=local.interface.ip,peer" -H  
"accept: application/hal+json"  
  
# The response:  
{  
  "records": [  
    {  
      "uuid": "5f22ae9d-87b2-11e9-a3a6-005056bb81a4",  
      "name": "pg1",  
      "local": {  
        "interface": {  
          "ip": {  
            "address": "10.10.10.1"  
          }  
        },  
        "port": {  
          "node": {  
            "name": "node1"  
          }  
        }  
      },  
      "peer": {  
        "address": "10.10.10.2",  
        "asn": 65501  
      },  
      "_links": {  
        "self": {  
          "href": "/api/network/ip/bgp/peer-groups/5f22ae9d-87b2-11e9-a3a6-
```

```
005056bb81a4"
  }
}
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/ip/bgp/peer-
groups?local.port.node.name=node1&fields=local.interface.ip,peer"
  }
}
}
```

---

## Creating a BGP peer-group

The BGP peer-group POST API is used to create a peer-group as shown in the following examples.

---

### Examples

#### Creating a BGP peer-group with an existing interface

The following example shows how to create a BGP peer-group between an existing interface "bgp1" and peer router with the address "10.10.10.10". The local interface "bgp1" needs to support the management-bgp service, otherwise the system returns an error.

```

# The API:
/api/network/ip/bgp/peer-groups

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/bgp/peer-
groups?return_records=true" -d '{"name": "newPg", "ipspace.name": "Default",
"local.interface.name": "bgp1", "peer.address": "10.10.10.10"}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "e3faacc6-87cb-11e9-a3a6-005056bb81a4",
      "name": "newPg",
      "ipspace": {
        "name": "Default"
      },
      "local": {
        "interface": {
          "name": "bgp1"
        }
      },
      "peer": {
        "address": "10.10.10.10"
      },
      "_links": {
        "self": {
          "href": "/api/network/ip/bgp/peer-groups/e3faacc6-87cb-11e9-a3a6-
005056bb81a4"
        }
      }
    }
  ]
}

```

---

### Creating a BGP peer-group and provisioning a new local interface

The following example shows how to create a BGP peer-group with any local interface. If the local interface doesn't exist, the system will create it first before creating the peer-group.

---

```
# The API:
/api/network/ip/bgp/peer-groups

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/bgp/peer-
groups?return_records=true" -d'{"name": "newPg1",
"ipospace.name":"Default", "local": {"interface": {"name": "newlif"}, "ip":
{"address": "9.9.9.9", "netmask": "24"}, "port": {"name": "e0f", "node":
{"name": "node1"}}}, "peer.address":"10.10.10.10"}'

# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "c292f069-8872-11e9-a3a6-005056bb81a4",
    "name": "newPg1",
    "ipospace": {
      "name": "Default"
    },
    "local": {
      "interface": {
        "name": "newlif"
      },
      "port": {
        "name": "e0f",
        "node": {
          "name": "node1"
        }
      }
    },
    "peer": {
      "address": "10.10.10.10"
    },
    "_links": {
      "self": {
        "href": "/api/network/ip/bgp/peer-groups/c292f069-8872-11e9-a3a6-
005056bb81a4"
      }
    }
  }
]
}
```

## Updating BGP peer-groups

The BGP peer-groups PATCH API is used to update attributes of a peer-group.

### Examples

#### Updating the peer router address

The following example shows how the PATCH request changes the peer router IP address.

```
# The API:
/api/network/ip/bgp/peer-groups/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/bgp/peer-groups/80d271c9-1f43-11e9-803e-005056a7646a" -H "accept: application/hal+json" -d
'{"peer.address": "10.10.10.20" }'
{
}
```

#### Updating the peer-group to a new name

The following example shows how the PATCH request renames the peer-group.

```
# The API:
/api/network/ip/bgp/peer-groups/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/bgp/peer-groups/80d271c9-1f43-11e9-803e-005056a7646a" -H "accept: application/hal+json" -d
'{"name": "NewName" }'
{
}
```

## Deleting BGP peer-groups

The BGP peer-groups DELETE API is used to delete an BGP peer-group.

## Example

### Deleting a BGP peer-group

The following DELETE request deletes a BGP peer-group.

```
# The API:
/api/network/ip/bgp/peer-group/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ip/bgp/peer-groups/80d271c9-
1f43-11e9-803e-005056a7646a"
{
}
```

## Retrieve all BGP peer group details for VIP

GET /network/ip/bgp/peer-groups

**Introduced In:** 9.7

Retrieves the details of all BGP peer groups for VIP.

### Related ONTAP Commands

- `network bgp peer-group show`

### Parameters

Name	Type	In	Required	Description
ipspace.uuid	string	query	False	Filter by ipspace.uuid
ipspace.name	string	query	False	Filter by ipspace.name
uuid	string	query	False	Filter by uuid
peer.address	string	query	False	Filter by peer.address



Name	Type	In	Required	Description
peer.is_next_hop	boolean	query	False	Filter by peer.is_next_hop <ul style="list-style-type: none"> <li>• Introduced in: 9.9</li> </ul>
peer.asn	integer	query	False	Filter by peer.asn
name	string	query	False	Filter by name
local.interface.ip.address	string	query	False	Filter by local.interface.ip.address
local.interface.name	string	query	False	Filter by local.interface.name
local.interface.uuid	string	query	False	Filter by local.interface.uuid
local.port.name	string	query	False	Filter by local.port.name
local.port.node.name	string	query	False	Filter by local.port.node.name
local.port.uuid	string	query	False	Filter by local.port.uuid
state	string	query	False	Filter by state
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.
return_records	boolean	query	False	The default is true for GET calls. When set to false, only the number of records is returned. <ul style="list-style-type: none"> <li>• Default value: 1</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 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="#">bgp_peer_group</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "ipSPACE": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "exchange",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "local": {
      "interface": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "ip": {
          "address": "10.10.10.7"
        },
        "name": "lif1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "ip": {
        "address": "10.10.10.7",
        "netmask": "24"
      },
      "port": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "elb",

```

```

    "node": {
      "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
},
"name": "bgpv4peer",
"peer": {
  "address": "10.10.10.7"
},
"state": "up",
"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>	

ipspace

Either the UUID or name is supplied on input.

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

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

Name	Type	Description
_links	<a href="#">_links</a>	
ip	<a href="#">ip</a>	IP information
name	string	The name of the interface.

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

ip

IP information to create a new interface.

Name	Type	Description
address	string	IPv4 or IPv6 address
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.

node

Name	Type	Description
name	string	Name of node on which the port is located.

port

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

local

Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

Name	Type	Description
interface	<a href="#">interface</a>	
ip	<a href="#">ip</a>	IP information to create a new interface.
port	<a href="#">port</a>	

## peer

Information describing the router to peer with

Name	Type	Description
address	string	Peer router address
asn	integer	Autonomous system number of peer
is_next_hop	boolean	Use peer address as next hop.

## bgp\_peer\_group

A BGP peer group between a local network interface and a router, for the purpose of announcing VIP interface locations for SVMs in this IPspace.

Name	Type	Description
ipspace	<a href="#">ipspace</a>	Either the UUID or name is supplied on input.
local	<a href="#">local</a>	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	<a href="#">peer</a>	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

## 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.

## Create a new BGP peer group for VIP

POST /network/ip/bgp/peer-groups

**Introduced In:** 9.7

Creates a new BGP peer group for VIP. Multipath-routing is turned on cluster-wide automatically if the peer group being created results in multiple paths being available for an existing or future VIP interface.

### Required properties

- `name` - Name of the peer-group to create.
- `ipspace.name` or `ipspace.uuid`
  - Required with `local.interface.name` to identify a local interface
  - Optional when `local.interface.uuid` is specified
- `local.interface.uuid` or `local.interface.name`
  - Required when specifying an existing local interface.
- `local.interface.name`, `local.ip` and `local.port`
  - Required to create a new local interface.
- `peer.address` - IP address of the peer router

### Default property values

If not specified in POST, the following default property values are assigned:

- `is_next_hop` - *false*

### Related ONTAP commands

- `network bgp peer-group create`



## Parameters

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

## Request Body

Name	Type	Description
ipspace	<a href="#">ipspace</a>	Either the UUID or name is supplied on input.
local	<a href="#">local</a>	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	<a href="#">peer</a>	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

## Example request

```
{
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local": {
    "interface": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "ip": {
      "address": "10.10.10.7",
      "netmask": "24"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "name": "bgpv4peer",
  "peer": {
    "address": "10.10.10.7"
  },
}
```

```
"state": "up",  
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"  
}
```

## Response

Status: 201, Created

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1376963	Duplicate IP address is specified.
1966133	Since masking an address with a netmask represents an entire IP subnet, the masked and unmasked IP addresses cannot be the same.
1966267	IPv6 addresses must have a prefix length of 64.
1966269	IPv4 addresses must have a netmask length between 1 and 32.
1967082	IPspace name and UUID must match if both are given.
1967155	The specified local.port.name does not match the location.port.name for the specified local.interface.
1967156	The specified local.port.node.name does not match the location.port.node.name for the specified local.interface.
1967157	The specified local.port.uuid does not match the location.port.uuid for the specified local.interface.
1967158	The specified local.interface.name does not exist in the associated IPspace. local.ip.address and local.ip.netmask are required to create a new LIF.
1967159	local.interface does not support management-bgp service.
1967160	The specified local.interface.name does not match the specified interface name of local.interface.uuid.
1967161	The specified local.interface.uuid does not exist in the specified IPspace.

Error Code	Description
1967162	Either local.interface or local.ip and local.port are required to specify a local LIF.
1967163	The specified local.port.name does not match the specified port name of local.port.uuid.
1967164	The specified local.port.node.name does not match the specified node name of local.port.uuid.
1967165	The specified local.port does not exist.
1967166	ipspace.uuid or ipspace.name must be provided with local.interface.name together to identify a LIF.
1967167	Internal error. Failed to update BGP configuration for node. Retry the command, if necessary.
1967168	Internal error. Failed to create a VIP port for IPspace on node. Retry the command, if necessary.
1967169	Internal error. BGP configuration changed during the operation. Retry the command, if necessary.
1967170	Internal error. VIP port configuration changed during the operation. Retry the command, if necessary.
1967171	Internal error. Fail to access or update BGP peer group. Retry the command, if necessary.
1967172	Peer group could not be updated because IPspace does not exist. Retry the command, if necessary.
1967173	The specified local.ip.address does not match the address for the specified local.interface.
1967174	The specified local.ip.netmask does not match the netmask for the specified local.interface.
1967176	The specified local.interface.name does not exist in the associated IPspace. local.port.name, local.port.node.name, or local.port.uuid is required to create a new LIF.
1967177	Internal error. Failed to access the local interface. Retry the command, if necessary.
1967178	The IPv6 address specified with local.ip.address is not supported because it is link-local, multicast, v4-compatible, v4-mapped, loopback or "::".
1967179	The IPv4 address specified with local.ip.address is not supported because it is multicast, loopback or 0.0.0.0.
1967187	Configuring 4 bytes peer.asn requires an effective cluster version of 9.9.1 or later.
1967188	Configuring peer address as a next hop requires an effective cluster version of 9.9.1 or later.
1967189	The parameter peer.asn can't be zero.

Error Code	Description
53281985	Internal error. Failed to update BGP peer group because BGP LIF moved during the operation. Wait a few minutes and try the command again.
53282006	BGP peer group could not be updated to use a peer address because the value provided is not a valid peer address. If necessary, try the command again with a routable host address.
53282007	BGP peer group could not be updated to use a peer address because the address represents a different address family to the address of the associated BGP LIF. If necessary, try the command again with a matching address family.
53282018	Failed to create BGP peer group because an existing peer group has already established a BGP session between LIF and peer address. If necessary, try the command again with a different BGP LIF or a different peer address.

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>	

ipspace

Either the UUID or name is supplied on input.

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

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

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

ip

IP information to create a new interface.

Name	Type	Description
address	string	IPv4 or IPv6 address
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.

#### node

Name	Type	Description
name	string	Name of node on which the port is located.

#### port

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

#### local

Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

Name	Type	Description
interface	<a href="#">interface</a>	
ip	<a href="#">ip</a>	IP information to create a new interface.
port	<a href="#">port</a>	

#### peer

Information describing the router to peer with

Name	Type	Description
address	string	Peer router address

Name	Type	Description
asn	integer	Autonomous system number of peer
is_next_hop	boolean	Use peer address as next hop.

#### bgp\_peer\_group

A BGP peer group between a local network interface and a router, for the purpose of announcing VIP interface locations for SVMs in this IPspace.

Name	Type	Description
ipSPACE	<a href="#">ipSPACE</a>	Either the UUID or name is supplied on input.
local	<a href="#">local</a>	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	<a href="#">peer</a>	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

#### 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



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

## Delete a BGP peer group for VIP

DELETE /network/ip/bgp/peer-groups/{uuid}

**Introduced In:** 9.7

Deletes a BGP peer group for VIP.

### Related ONTAP commands

- `network bgp peer-group delete`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the peer group

### Response

Status: 200, Ok

### Error

Status: Default

### ONTAP Error Response Codes

Error Code	Description
53282019	Internal error. Failed to remove BGP peer group on node. Wait a few minutes and try the command again.

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

## Example error

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

## Definitions

### See Definitions

#### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

#### error

Name	Type	Description
arguments	array[ <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 details of a BGP peer group for VIP

GET /network/ip/bgp/peer-groups/{uuid}

Introduced In: 9.7

Retrieves details of a BGP peer group for VIP.

## Related ONTAP commands

- `network bgp peer-group show`

## Parameters

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

## Response

Status: 200, Ok

Name	Type	Description
ipspace	<a href="#">ipspace</a>	Either the UUID or name is supplied on input.
local	<a href="#">local</a>	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	<a href="#">peer</a>	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

## Example response

```
{
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local": {
    "interface": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "ip": {
      "address": "10.10.10.7",
      "netmask": "24"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "name": "bgpv4peer",
  "peer": {
    "address": "10.10.10.7"
  },
}
```

```
"state": "up",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

ipspace

Either the UUID or name is supplied on input.

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

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

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

ip

IP information to create a new interface.

Name	Type	Description
address	string	IPv4 or IPv6 address
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.

#### node

Name	Type	Description
name	string	Name of node on which the port is located.

#### port

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

#### local

Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

Name	Type	Description
interface	<a href="#">interface</a>	
ip	<a href="#">ip</a>	IP information to create a new interface.
port	<a href="#">port</a>	

#### peer

Information describing the router to peer with

Name	Type	Description
address	string	Peer router address

Name	Type	Description
asn	integer	Autonomous system number of peer
is_next_hop	boolean	Use peer address as next hop.

#### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

#### error

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

## Update a BGP peer group for VIP

PATCH /network/ip/bgp/peer-groups/{uuid}

**Introduced In:** 9.7

Updates a BGP peer group for VIP.

### Related ONTAP commands

- `network bgp peer-group modify`
- `network bgp peer-group rename`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the peer group



## Request Body

Name	Type	Description
ipspace	ipspace	Either the UUID or name is supplied on input.
local	local	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	peer	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

## Example request

```
{
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "local": {
    "interface": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "ip": {
      "address": "10.10.10.7",
      "netmask": "24"
    },
    "port": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "e1b",
      "node": {
        "name": "node1"
      },
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    }
  },
  "name": "bgpv4peer",
  "peer": {
    "address": "10.10.10.7"
  },
}
```

```
"state": "up",
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Response

Status: 200, Ok

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1967171	Internal error. Fail to access or update BGP peer group. Retry the command, if necessary.
1967188	Configuring peer address as a next hop requires an effective cluster version of 9.9.1 or later.
53281998	Failed to rename the BGP peer group because that name is already assigned to a different peer group in the IPspace.
53282006	BGP peer group could not be updated to use a peer address because the value provided is not a valid peer address. If necessary, try the command again with a routable host address.
53282007	BGP peer group could not be updated to use a peer address because the address represents a different address family to the address of the associated BGP LIF. If necessary, try the command again with a matching address family.
53282018	Failed to create BGP peer group because an existing peer group has already established a BGP session between LIF and peer address. If necessary, try the command again with a different BGP LIF or a different peer address.

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

## 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>	

ipspace

Either the UUID or name is supplied on input.

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

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interface

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

ip

IP information to create a new interface.

Name	Type	Description
address	string	IPv4 or IPv6 address
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.

#### node

Name	Type	Description
name	string	Name of node on which the port is located.

#### port

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

#### local

Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.

Name	Type	Description
interface	<a href="#">interface</a>	
ip	<a href="#">ip</a>	IP information to create a new interface.
port	<a href="#">port</a>	

#### peer

Information describing the router to peer with

Name	Type	Description
address	string	Peer router address

Name	Type	Description
asn	integer	Autonomous system number of peer
is_next_hop	boolean	Use peer address as next hop.

#### bgp\_peer\_group

A BGP peer group between a local network interface and a router, for the purpose of announcing VIP interface locations for SVMs in this IPspace.

Name	Type	Description
ipSPACE	<a href="#">ipSPACE</a>	Either the UUID or name is supplied on input.
local	<a href="#">local</a>	Information describing the local interface that is being used to peer with a router using BGP. On a POST operation, an existing BGP interface is used by specifying the interface, or create a new one by specifying the port and IP address.
name	string	Name of the peer group
peer	<a href="#">peer</a>	Information describing the router to peer with
state	string	State of the peer group
uuid	string	UUID of the peer group

#### 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

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

## Manage network IP interfaces

### Network IP interfaces endpoint overview

#### Overview

The following operations are supported:

- Creation: POST `network/ip/interfaces`
- Collection Get: GET `network/ip/interfaces`
- Instance Get: GET `network/ip/interfaces/{uuid}`
- Instance Patch: PATCH `network/ip/interfaces/{uuid}`
- Instance Delete: DELETE `network/ip/interfaces/{uuid}`

#### Retrieving network interface information

The IP interfaces GET API retrieves and displays relevant information pertaining to the interfaces configured in the cluster. The response can contain a list of multiple interfaces or a specific interface. The fields returned in the response vary for different interfaces and configurations.

#### Examples

##### Retrieving all interfaces in the cluster

The following example shows the list of all interfaces configured in a cluster.

```
# The API:
/api/network/ip/interfaces

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

# The response:
{
  "records": [
```



```
{
  "uuid": "14531286-59fc-11e8-ba55-005056b4340f",
  "name": "user-cluster-01_mgmt1",
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/14531286-59fc-11e8-ba55-005056b4340f"
    }
  }
},
{
  "uuid": "145318ba-59fc-11e8-ba55-005056b4340f",
  "name": "user-cluster-01_clus2",
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/145318ba-59fc-11e8-ba55-005056b4340f"
    }
  }
},
{
  "uuid": "14531e45-59fc-11e8-ba55-005056b4340f",
  "name": "user-cluster-01_clus1",
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/14531e45-59fc-11e8-ba55-005056b4340f"
    }
  }
},
{
  "uuid": "245979de-59fc-11e8-ba55-005056b4340f",
  "name": "cluster_mgmt",
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/245979de-59fc-11e8-ba55-005056b4340f"
    }
  }
},
{
  "uuid": "c670707c-5a11-11e8-8fcb-005056b4340f",
  "name": "lif1",
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/c670707c-5a11-11e8-8fcb-
```

```

005056b4340f"
    }
  }
},
"num_records": 5,
"_links": {
  "self": {
    "href": "/api/network/ip/interfaces"
  }
}
}
}

```

### Retrieving a specific Cluster-scoped interface

The following example shows the response when a specific Cluster-scoped interface is requested. The system returns an error when there is no interface with the requested UUID. SVM information is not returned for Cluster-scoped interfaces.

```

# The API:
/api/network/ip/interfaces/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/interfaces/245979de-59fc-11e8-ba55-005056b4340f" -H "accept: application/hal+json"

# The response:
{
  "uuid": "245979de-59fc-11e8-ba55-005056b4340f",
  "name": "cluster_mgmt",
  "ip": {
    "address": "10.63.41.6",
    "netmask": "18",
    "family": "ipv4",
  },
  "enabled": true,
  "state": "up",
  "scope": "cluster",
  "ipspace": {
    "uuid": "114ecfb5-59fc-11e8-ba55-005056b4340f",
    "name": "Default",
    "_links": {
      "self": {

```

```
    "href": "/api/network/ipspaces/114ecfb5-59fc-11e8-ba55-005056b4340f"
  }
}
},
"services": [
  "management_core",
  "management_autosupport",
  "management_access"
],
"location": {
  "is_home": true,
  "auto_revert": false,
  "failover": "broadcast_domain_only",
  "node": {
    "uuid": "c1db2904-1396-11e9-bb7d-005056acfcbb",
    "name": "user-cluster-01-a",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/c1db2904-1396-11e9-bb7d-005056acfcbb"
      }
    }
  },
  "port": {
    "uuid": "c84d5337-1397-11e9-87c2-005056acfcbb",
    "name": "e0d",
    "node": {
      "name": "user-cluster-01-a"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/c84d5337-1397-11e9-87c2-005056acfcbb"
      }
    }
  },
  "home_node": {
    "uuid": "c1db2904-1396-11e9-bb7d-005056acfcbb",
    "name": "user-cluster-01-a",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/c1db2904-1396-11e9-bb7d-005056acfcbb"
      }
    }
  },
  "home_port": {
```

```

    "uuid": "c84d5337-1397-11e9-87c2-005056acfcbb",
    "name": "e0d",
    "node": {
      "name": "user-cluster-01-a"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/c84d5337-1397-11e9-87c2-005056acfcbb"
      }
    }
  },
  "service_policy": {
    "uuid": "9e0f4151-141b-11e9-851e-005056ac1ce0",
    "name": "default-management"
  },
  "vip": false,
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/245979de-59fc-11e8-ba55-005056b4340f"
    }
  }
}

```

### Retrieving a specific SVM-scoped interface using a filter

The following example shows the response when a specific SVM-scoped interface is requested. The SVM object is only included for SVM-scoped interfaces.

```

# The API:
/api/network/ip/interfaces

# The call:
curl -X GET "https://<mgmt-
ip>/api/network/ip/interfaces?name=lif1&fields=*" -H "accept:
application/hal+json"

# The response:
{
  "records": [
    {

```

```
"uuid": "c670707c-5a11-11e8-8fcb-005056b4340f",
"name": "lif1",
"ip": {
  "address": "10.10.10.11",
  "netmask": "24",
  "family": "ipv4",
},
"enabled": true,
"state": "up",
"scope": "svm",
"ipspace": {
  "uuid": "114ecfb5-59fc-11e8-ba55-005056b4340f",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/114ecfb5-59fc-11e8-ba55-
005056b4340f"
    }
  }
},
"svm": {
  "uuid": "c2134665-5a11-11e8-8fcb-005056b4340f",
  "name": "user_vs0",
  "_links": {
    "self": {
      "href": "/api/svm/svms/c2134665-5a11-11e8-8fcb-005056b4340f"
    }
  }
},
"services": [
  "data_core",
  "data_nfs",
  "data_cifs",
  "data_flexcache"
],
"location": {
  "is_home": true,
  "auto_revert": false,
  "failover": "broadcast_domain_only",
  "node": {
    "uuid": "c1db2904-1396-11e9-bb7d-005056acfcbb",
    "name": "user-cluster-01-a",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/c1db2904-1396-11e9-bb7d-
005056acfcbb"
```

```

    }
  },
  "port": {
    "uuid": "c84d5337-1397-11e9-87c2-005056acfcbb",
    "name": "e0d",
    "node": {
      "name": "user-cluster-01-a"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/c84d5337-1397-11e9-87c2-005056acfcbb"
      }
    }
  },
  "home_node": {
    "uuid": "c1db2904-1396-11e9-bb7d-005056acfcbb",
    "name": "user-cluster-01-a",
    "_links": {
      "self": {
        "href": "/api/cluster/nodes/c1db2904-1396-11e9-bb7d-005056acfcbb"
      }
    }
  },
  "home_port": {
    "uuid": "c84d5337-1397-11e9-87c2-005056acfcbb",
    "name": "e0d",
    "node": {
      "name": "user-cluster-01-a"
    },
    "_links": {
      "self": {
        "href": "/api/network/ethernet/ports/c84d5337-1397-11e9-87c2-005056acfcbb"
      }
    }
  },
  "service_policy": {
    "uuid": "9e53525f-141b-11e9-851e-005056ac1ce0",
    "name": "default-data-files"
  },
  "vip": false,
  "_links": {

```

```

    "self": {
      "href": "/api/network/ip/interfaces/c670707c-5a11-11e8-8fcb-005056b4340f"
    }
  }
],
"num_records": 1,
"_links": {
  "self": {
    "href": "/api/network/ip/interfaces?name=lif1&fields=*"
  }
}
}
}

```

### Retrieving specific fields and limiting the output using filters

The following example shows the response when a filter is applied (`location.home_port.name=e0a`) and only certain fields are requested. Filtered fields are in the output in addition to the default fields and requested fields.

```

# The API:
/api/network/ip/interfaces

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/interfaces?location.home_port.name=e0a&fields=location.home_node.name,service_policy.name,ip.address,enabled" -H "accept: application/hal+json"

# The response:
{
  "records": [
    {
      "uuid": "1d1c9dc8-4f17-11e9-9553-005056ac918a",
      "name": "user-cluster-01-a_clus1",
      "ip": {
        "address": "192.168.170.24"
      },
      "enabled": true,
      "location": {
        "home_node": {
          "name": "user-cluster-01-a"
        }
      }
    }
  ]
}

```

```

    },
    "home_port": {
      "name": "e0a"
    }
  },
  "service_policy": {
    "name": "default-cluster"
  },
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/1d1c9dc8-4f17-11e9-9553-005056ac918a"
    }
  }
},
{
  "uuid": "d07782c1-4f16-11e9-86e7-005056ace7ee",
  "name": "user-cluster-01-b_clus1",
  "ip": {
    "address": "192.168.170.22"
  },
  "enabled": true,
  "location": {
    "home_node": {
      "name": "user-cluster-01-b"
    },
    "home_port": {
      "name": "e0a"
    }
  },
  "service_policy": {
    "name": "default-cluster"
  },
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/d07782c1-4f16-11e9-86e7-005056ace7ee"
    }
  }
}
],
"num_records": 2,
"_links": {
  "self": {
    "href":
"/api/network/ip/interfaces?location.home_port.name=e0a&fields=location.ho

```



```
me_node.name,service_policy.name,ip.address,enabled"
  }
}
}
```

## Creating IP interfaces

You can use the IP interfaces POST API to create IP interfaces as shown in the following examples.

### Examples

#### Creating a Cluster-scoped IP interface using names

The following example shows the record returned after the creation of an IP interface on "e0d".

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ip/interfaces?return_records=true" -H "accept:
application/hal+json" -d '{ "name": "cluster_mgmt", "ip": { "address":
"10.63.41.6", "netmask": "18" }, "enabled": true, "scope": "cluster",
"ipspace": { "name": "Default" }, "location": { "auto_revert": false,
"failover": "broadcast_domain_only", "home_port": { "name": "e0d", "node":
{ "name": "user-cluster-01-a" } } }, "service_policy": { "name": "default-
management" } }'
```

```
# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "245979de-59fc-11e8-ba55-005056b4340f",
      "name": "cluster_mgmt",
      "ip": {
        "address": "10.63.41.6",
        "netmask": "18"
      },
      "enabled": true,
      "scope": "cluster",
      "ipspace": {
```

```

    "name": "Default"
  },
  "location": {
    "auto_revert": false,
    "failover": "broadcast_domain_only",
    "home_port": {
      "name": "e0d",
      "node": {
        "name": "user-cluster-01-a"
      }
    },
  },
},
"service_policy": {
  "name": "default-management"
},
"_links": {
  "self": {
    "href": "/api/network/ip/interfaces/245979de-59fc-11e8-ba55-005056b4340f"
  }
}
]
}

```

### Creating a SVM-scoped IP interface using a mix of parameter types

The following example shows the record returned after the creation of a IP interface by specifying a broadcast domain as the location.

```

# The API:
/api/network/ip/interfaces

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ip/interfaces?return_records=true" -H "accept:
application/hal+json" -d '{ "name": "Data1", "ip": { "address":
"10.234.101.116", "netmask": "255.255.240.0" }, "enabled": true, "scope":
"svm", "svm": { "uuid": "137f3618-1e89-11e9-803e-005056a7646a" },
"location": { "auto_revert": true, "broadcast_domain": { "name": "Default"
} }, "service_policy": { "name": "default-data-files" } }'

# The response:

```

```

{
  "num_records": 1,
  "records": [
    {
      "uuid": "80d271c9-1f43-11e9-803e-005056a7646a",
      "name": "Data1",
      "ip": {
        "address": "10.234.101.116",
        "netmask": "20"
      },
      "enabled": true,
      "scope": "svm",
      "svm": {
        "uuid": "137f3618-1e89-11e9-803e-005056a7646a",
        "name": "vs0",
        "_links": {
          "self": {
            "href": "/api/svm/svms/137f3618-1e89-11e9-803e-005056a7646a"
          }
        }
      },
      "location": {
        "auto_revert": true
      },
      "service_policy": {
        "name": "default-data-files"
      },
      "_links": {
        "self": {
          "href": "/api/network/ip/interfaces/80d271c9-1f43-11e9-803e-005056a7646a"
        }
      }
    }
  ]
}

```

### Creating a Cluster-scoped IP interface without specifying the scope parameter

The following example shows the record returned after creating an IP interface on "e0d" without specifying the scope parameter. The scope is "cluster" if an "svm" is not specified.

```
# The API:
```

```
/api/network/ip/interfaces
```

```
# The call:
```

```
curl -X POST "https://<mgmt-  
ip>/api/network/ip/interfaces?return_records=true" -H "accept:  
application/hal+json" -d '{ "name": "cluster_mgmt", "ip": { "address":  
"10.63.41.6", "netmask": "18" }, "enabled": true, "ipspace": { "name":  
"Default" }, "location": { "auto_revert": false, "home_port": { "name":  
"e0d", "node": { "name": "user-cluster-01-a" } } }, "service_policy": {  
"name": "default-management" } }'
```

```
# The response:
```

```
{  
  "num_records": 1,  
  "records": [  
    {  
      "uuid": "245979de-59fc-11e8-ba55-005056b4340f",  
      "name": "cluster_mgmt",  
      "ip": {  
        "address": "10.63.41.6",  
        "netmask": "18"  
      },  
      "enabled": true,  
      "scope": "cluster",  
      "ipspace": {  
        "name": "Default"  
      },  
      "location": {  
        "auto_revert": false,  
        "home_port": {  
          "name": "e0d",  
          "node": {  
            "name": "user-cluster-01-a"  
          }  
        }  
      },  
      "service_policy": {  
        "name": "default-management"  
      },  
      "_links": {  
        "self": {  
          "href": "/api/network/ip/interfaces/245979de-59fc-11e8-ba55-  
005056b4340f"  
        }  
      }  
    }  
  ]  
}
```

```
]
}
```

### Creating an SVM-scoped IP interface without specifying the scope parameter

The following example shows the record returned after creating an IP interface on "e0d" without specifying the scope parameter. The scope is "svm" if the "svm" field is specified.

```
# The API:
/api/network/ip/interfaces

# The call:
curl -X POST "https://<mgmt-
ip>/api/network/ip/interfaces?return_records=true" -H "accept:
application/hal+json" -d '{ "name": "Data1", "ip": { "address":
"10.234.101.116", "netmask": "255.255.240.0" }, "enabled": true, "svm": {
"uuid": "137f3618-1e89-11e9-803e-005056a7646a" }, "location": {
"auto_revert": true, "broadcast_domain": { "name": "Default" } },
"service_policy": { "name": "default-data-files" } }'
```

```
# The response:
{
"num_records": 1,
"records": [
  {
    "uuid": "80d271c9-1f43-11e9-803e-005056a7646a",
    "name": "Data1",
    "ip": {
      "address": "10.234.101.116",
      "netmask": "20"
    },
    "enabled": true,
    "scope": "svm",
    "svm": {
      "uuid": "137f3618-1e89-11e9-803e-005056a7646a",
      "name": "vs0",
      "_links": {
        "self": {
          "href": "/api/svms/137f3618-1e89-11e9-803e-005056a7646a"
        }
      }
    },
    "location": {
```

```
    "auto_revert": true
  },
  "service_policy": {
    "name": "default-data-files"
  },
  "_links": {
    "self": {
      "href": "/api/network/ip/interfaces/80d271c9-1f43-11e9-803e-005056a7646a"
    }
  }
}
]
```

## Updating IP interfaces

You can use the IP interfaces PATCH API to update the attributes of an IP interface.

### Examples

#### Updating the auto revert flag of an IP interface

The following example shows how the PATCH request changes the auto revert flag to 'false'.

```
# The API:
/api/network/ip/interfaces/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/interfaces/80d271c9-1f43-11e9-803e-005056a7646a" -H "accept: application/hal+json" -d '{
"location": { "auto_revert": "false" } }'
{
}
```

#### Updating the service policy of an IP interface

The following example shows how the PATCH request changes the service policy to 'default-management'.

```
# The API:
/api/network/ip/interfaces/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/interfaces/80d271c9-1f43-11e9-803e-005056a7646a" -H "accept: application/hal+json" -d '{
"service_policy": { "name": "default-management" } }'
```

---

## Deleting IP interfaces

You can use the IP interfaces DELETE API to delete an IP interface in the cluster.

---

### Example

#### Deleting an IP Interface

The following DELETE request deletes a network IP interface.

```
# The API:
/api/network/ip/interfaces/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ip/interfaces/80d271c9-1f43-11e9-803e-005056a7646a"
{
}
```

---

## Retrieve all IP interface details

GET /network/ip/interfaces

**Introduced In:** 9.6

Retrieves the details of all IP interfaces.

### Related ONTAP Commands

- network interface show

## Parameters

Name	Type	In	Required	Description
ipspace.uuid	string	query	False	Filter by ipspace.uuid
ipspace.name	string	query	False	Filter by ipspace.name
services	string	query	False	Filter by services
svm.uuid	string	query	False	Filter by svm.uuid
svm.name	string	query	False	Filter by svm.name
ddns_enabled	boolean	query	False	Filter by ddns_enabled <ul style="list-style-type: none"><li>• Introduced in: 9.9</li></ul>
scope	string	query	False	Filter by scope
vip	boolean	query	False	Filter by vip
state	string	query	False	Filter by state
ip.address	string	query	False	Filter by ip.address
ip.family	string	query	False	Filter by ip.family
ip.netmask	string	query	False	Filter by ip.netmask
dns_zone	string	query	False	Filter by dns_zone <ul style="list-style-type: none"><li>• Introduced in: 9.9</li></ul>
location.failover	string	query	False	Filter by location.failover
location.home_node.uuid	string	query	False	Filter by location.home_node.uuid



Name	Type	In	Required	Description
location.home_node.name	string	query	False	Filter by location.home_node.name
location.node.uuid	string	query	False	Filter by location.node.uuid
location.node.name	string	query	False	Filter by location.node.name
location.home_port.name	string	query	False	Filter by location.home_port.name
location.home_port_node.name	string	query	False	Filter by location.home_port_node.name
location.home_port.uuid	string	query	False	Filter by location.home_port.uuid
location.port.name	string	query	False	Filter by location.port.name
location.port_node.name	string	query	False	Filter by location.port_node.name
location.port.uuid	string	query	False	Filter by location.port.uuid
location.auto_revert	boolean	query	False	Filter by location.auto_revert
location.is_home	boolean	query	False	Filter by location.is_home
statistics.status	string	query	False	Filter by statistics.status  • Introduced in: 9.8

Name	Type	In	Required	Description
statistics.timestamp	string	query	False	Filter by statistics.timestamp  • Introduced in: 9.8
statistics.throughput_raw.read	integer	query	False	Filter by statistics.throughput_raw.read  • Introduced in: 9.8
statistics.throughput_raw.total	integer	query	False	Filter by statistics.throughput_raw.total  • Introduced in: 9.8
statistics.throughput_raw.write	integer	query	False	Filter by statistics.throughput_raw.write  • Introduced in: 9.8
service_policy.name	string	query	False	Filter by service_policy.name
service_policy.uuid	string	query	False	Filter by service_policy.uuid
enabled	boolean	query	False	Filter by enabled
metric.duration	string	query	False	Filter by metric.duration  • Introduced in: 9.8
metric.timestamp	string	query	False	Filter by metric.timestamp  • Introduced in: 9.8

Name	Type	In	Required	Description
metric.status	string	query	False	Filter by metric.status  • Introduced in: 9.8
metric.throughput.read	integer	query	False	Filter by metric.throughput.read  • Introduced in: 9.8
metric.throughput.total	integer	query	False	Filter by metric.throughput.total  • Introduced in: 9.8
metric.throughput.write	integer	query	False	Filter by metric.throughput.write  • Introduced in: 9.8
probe_port	integer	query	False	Filter by probe_port  • Introduced in: 9.10
rdma_protocols	string	query	False	Filter by rdma_protocols  • Introduced in: 9.10
name	string	query	False	Filter by name
uuid	string	query	False	Filter by uuid
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

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

## Response

Status: 200, Ok

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

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "dns_zone": "storage.company.com",
    "ip": {
      "address": "10.10.10.7",
      "family": "ipv4",
      "netmask": "24"
    },
    "ipspace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "exchange",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "location": {
      "broadcast_domain": {
        "_links": {
          "self": {
            "href": "/api/resourcelink"
          }
        },
        "name": "bd1",
        "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
      },
      "failover": "home_port_only",
      "home_node": {
        "_links": {
```

```

    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"home_port": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "elb",
  "node": {
    "name": "node1"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"port": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "elb",
  "node": {
    "name": "node1"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
}

```

```

    },
    "duration": "PT15S",
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
  },
  "name": "dataLif1",
  "probe_port": 64001,
  "rdma_protocols": {
  },
  "scope": "svm",
  "service_policy": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "name": "default-intercluster",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"services": {
},
"state": "up",
"statistics": {
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  }
},
"timestamp": "2017-01-25T11:20:13Z"
},
"svm": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"name": "svm1",
"uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"

```

```
}  
}
```

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions



## See Definitions

href

Name	Type	Description
href	string	

\_links

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

\_links

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

ip\_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
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.

ipspace

Either the UUID or name must be supplied on POST for cluster-scoped objects.

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

broadcast\_domain

Broadcast domain UUID along with a readable name.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home\_node

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

node

Name	Type	Description
name	string	Name of node on which the port is located.

home\_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

node

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

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

#### location

Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast\_domain can be specified alone or with home\_node. For PATCH, set is\_home to true to revert a LIF back to its home port.

Name	Type	Description
auto_revert	boolean	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name.
failover	string	Defines where an interface may failover.
home_node	<a href="#">home_node</a>	
home_port	<a href="#">home_port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
is_home	boolean	
node	<a href="#">node</a>	
port	<a href="#">port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

#### throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.

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

metric

The most recent sample of I/O metrics for the interface.

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

## service\_policy

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

## throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

## statistics

The real time I/O statistics for the interface.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	<a href="#">throughput_raw</a>	Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ip\_interface

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
ip	<a href="#">ip_info</a>	IP information
ipspace	<a href="#">ipspace</a>	Either the UUID or name must be supplied on POST for cluster-scoped objects.
location	<a href="#">location</a>	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the interface.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	<a href="#">service_policy</a>	

Name	Type	Description
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the interface.
svm	<a href="#">svm</a>	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.
vip	boolean	True for a VIP interface, whose location is announced via BGP.

#### 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.

## Create a new cluster-scoped or SVM-scoped interface

POST /network/ip/interfaces

Introduced In: 9.6



Creates a new Cluster-scoped or SVM-scoped interface.

### Required properties

- `name` - Name of the interface to create.
- `ip.address` - IP address for the interface.
- `ip.netmask` - IP subnet of the interface.
- `ip.space.name` or `ip.space.uuid`
  - Required for Cluster-scoped interfaces.
  - Optional for SVM-scoped interfaces.
- `svm.name` or `svm.uuid`
  - Required for an SVM-scoped interface.
  - Invalid for a Cluster-scoped interface.
- `location.home_port` or `location.home_node` or `location.broadcast_domain` - One of these properties must be set to a value to define where the interface will be located.

### Recommended property values

- `service_policy`
  - for SVM scoped interfaces
    - *default-data-files* for interfaces carrying file-oriented NAS data traffic
    - *default-data-blocks* for interfaces carrying block-oriented SAN data traffic
    - *default-management* for interfaces carrying SVM management requests
  - for Cluster scoped interfaces
    - *default-intercluster* for interfaces carrying cluster peering traffic
    - *default-management* for interfaces carrying system management requests
    - *default-route-announce* for interfaces carrying BGP peer connections

### Default property values

If not specified in POST, the following default property values are assigned:

- `scope`
  - *svm* if `svm` parameter is specified.
  - *cluster* if `svm` parameter is not specified
- `enabled` - *true*
- `location.auto_revert` - *true*
- `service_policy`
  - *default-data-files* if `scope` is *svm*
  - *default-management* if `scope` is *cluster* and `IPspace` is not *Cluster*

- *default-cluster* if scope is `svm` and IPspace is `Cluster`
- `failover` - Selects the least restrictive failover policy supported by all the services in the service policy.
- `ddns_enabled`
  - *true* if the interface supports `data_nfs` or `data_cifs` services
  - *false* otherwise

## Related ONTAP commands

- `network interface create`

## Parameters

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

## Request Body

Name	Type	Description
<code>_links</code>	<a href="#">_links</a>	
<code>ddns_enabled</code>	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
<code>dns_zone</code>	string	Fully qualified DNS zone name
<code>enabled</code>	boolean	The administrative state of the interface.
<code>ip</code>	<a href="#">ip_info</a>	IP information
<code>ipspace</code>	<a href="#">ipspace</a>	Either the UUID or name must be supplied on POST for cluster-scoped objects.

Name	Type	Description
location	<a href="#">location</a>	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the interface.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	<a href="#">service_policy</a>	
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the interface.
svm	<a href="#">svm</a>	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.
vip	boolean	True for a VIP interface, whose location is announced via BGP.

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dns_zone": "storage.company.com",
  "ip": {
    "address": "10.10.10.7",
    "family": "ipv4",
    "netmask": "24"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "name": "exchange",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"location": {
  "broadcast_domain": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "name": "bd1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"failover": "home_port_only",
"home_node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"home_port": {
  "_links": {
    "self": {
```

```
    "href": "/api/resourcelink"
  },
  "name": "e1b",
  "node": {
    "name": "node1"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"port": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "e1b",
  "node": {
    "name": "node1"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
```

```
"name": "dataLif1",
"probe_port": 64001,
"rdma_protocols": {
},
"scope": "svm",
"service_policy": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "default-intercluster",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"services": {
},
"state": "up",
"statistics": {
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"svm": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "svm1",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Response

Status: 201, Created

## Error

Status: Default

### ONTAP Error Response Codes

Error Code	Description
1376656	Cluster interfaces must be in the same subnet. Verify the address and netmask are set to the correct values.
1376663	All LIFs from a single DNS zone must be in the same SVM.
1376663	Cannot add interface to DNS zone because all interfaces from a single DNS zone must be in the same SVM.
1376963	Duplicate IP address.
1966138	The same IP address may not be used for both a mgmt interface and a gateway address.
1966140	An interface with the same name already exists.
1966141	Invalid DNS zone name.
1966142	Only data LIFs can be assigned a DNS zone.
1966267	IPv6 addresses must have a prefix length between 1 and 127.
1966269	IPv4 addresses must have a prefix length between 1 and 32.
1966270	Operation not support on SAN LIFs.
1966476	DNS Update is supported only on data LIFs.
1966477	DNS Update is supported only on LIFs configured with the NFS or CIFS protocol.
1966987	The Vserver Broadcast-Domain Home-Node and Home-Port combination is not valid.
1967081	The specified SVM must exist in the specified IPspace.
1967082	The specified ipspace.name does not match the IPspace name of ipspace.uuid.
1967102	POST operation might have left configuration in an inconsistent state. Check the configuration.
1967106	The specified location.home_port.name does not match the specified port name of location.home_port.uuid.
1967107	The location.home_port.uuid specified is not valid.

Error Code	Description
1967108	The specified location.home_node.name does not match the node name of location.home_node.uuid.
1967109	The specified location.home_port.node.name does not match the node name of location.home_node.uuid.
1967110	The specified location.home_port.node.name does not match location.home_node.name.
1967111	Home node must be specified by at least one location.home_node, location.home_port, or location.broadcast_domain field.
1967112	The specified location.home_node.name does not match the node name of location.home_port.uuid.
1967120	The specified service_policy.name does not match the specified service policy name of service_policy.uuid.
1967121	Invalid service_policy.uuid specified.
1967122	The specified location.broadcast_domain.name does not match the specified broadcast domain name of location.broadcast_domain.uuid.
1967123	The specified IPspace does not match the IPspace name of location.broadcast_domain.uuid.
1967124	The location.broadcast_domain.uuid specified is not valid.
1967127	svm.uuid or svm.name must be provided if scope is "svm".
1967128	ipspace.uuid or ipspace.name must be provided if scope is "cluster".
1967129	The specified location.home_port.uuid is not valid.
1967130	The specified location.home_port.name is not valid.
1967131	The specified location.home_port.uuid and location.home_port.name are not valid.
1967135	The specified location.broadcast_domain.uuid is not valid.
1967136	The specified location.broadcast_domain.name (and ipspace name) is not valid.
1967137	The specified location.broadcast_domain.uuid and location.broadcast_domain.name (and IPspace name) are not valid.
1967145	The specified location.failover is not valid.
1967146	The specified svm.name is not valid.
1967147	The specified svm.uuid is not valid.



Error Code	Description
1967153	No suitable port exists on location.home_node to host the interface.
1967154	Interfaces cannot be created on ports that are down. If a broadcast domain is specified, ensure that it contains at least one port that is operationally up.
1967381	Post VIP interfaces requires an effective cluster version of 9.7 or later.
1967382	VIP interfaces only reside in SVM scope.
1967383	Neither location.home_port.uuid or location.home_port.name should be set with vip=true.
1967384	Failed to create VIP interface because the home node does not have active BGP sessions to support Virtual IP (VIP) traffic.
1967385	VIP interfaces with an IPv4 address must use ip.netmask=32. VIP interfaces with an IPv6 address must use ip.netmask=128.
1967387	The specified IP address is in use by a subnet in this IPspace.
1967391	Setting the DNS zone requires an effective cluster version of 9.9.1 or later.
1967392	Setting the DDNS enable parameter requires an effective cluster version of 9.9.1 or later.
1967394	Setting the probe port parameter requires an effective cluster version of 9.10.1 or later.
5373966	An iSCSI interface cannot be created in an SVM configured for NVMe.
53281036	Setting the probe port parameter is not allowed on this platform.
53281065	The service_policy does not exist in the SVM.
53281086	LIF would exceed the maximum number of supported intercluster LIFs in IPspace.
53281087	Cannot configure SAN LIF on SVM.

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>	

ip\_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
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.

ipspace

Either the UUID or name must be supplied on POST for cluster-scoped objects.

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

broadcast\_domain

Broadcast domain UUID along with a readable name.

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

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home\_node

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

node

Name	Type	Description
name	string	Name of node on which the port is located.

home\_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

node

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

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

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

#### location

Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, `broadcast_domain` can be specified alone or with `home_node`. For PATCH, set `is_home` to true to revert a LIF back to its home port.

Name	Type	Description
auto_revert	boolean	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name.
failover	string	Defines where an interface may failover.
home_node	<a href="#">home_node</a>	
home_port	<a href="#">home_port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
is_home	boolean	
node	<a href="#">node</a>	
port	<a href="#">port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

#### throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

## metric

The most recent sample of I/O metrics for the interface.

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

## service\_policy

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

Name	Type	Description
name	string	
uuid	string	

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

The real time I/O statistics for the interface.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	<a href="#">throughput_raw</a>	Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ip\_interface



Name	Type	Description
_links	<a href="#">_links</a>	
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
ip	<a href="#">ip_info</a>	IP information
ipspace	<a href="#">ipspace</a>	Either the UUID or name must be supplied on POST for cluster-scoped objects.
location	<a href="#">location</a>	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the interface.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	<a href="#">service_policy</a>	

Name	Type	Description
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the interface.
svm	<a href="#">svm</a>	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.
vip	boolean	True for a VIP interface, whose location is announced via BGP.

#### 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 an IP interface

DELETE /network/ip/interfaces/{uuid}

Introduced In: 9.6

Deletes an IP interface.

### Related ONTAP commands

- `network interface delete`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP interface UUID

### Response

```
Status: 200, Ok
```

## Retrieve details for an IP interface

GET `/network/ip/interfaces/{uuid}`

Introduced In: 9.6

Retrieves details for a specific IP interface.

### Related ONTAP commands

- `network interface show`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP interface 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
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
ip	<a href="#">ip_info</a>	IP information
ipspace	<a href="#">ipspace</a>	Either the UUID or name must be supplied on POST for cluster-scoped objects.
location	<a href="#">location</a>	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the interface.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	<a href="#">service_policy</a>	
services	array[string]	The services associated with the interface.

Name	Type	Description
state	string	The operational state of the interface.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the interface.
svm	<a href="#">svm</a>	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.
vip	boolean	True for a VIP interface, whose location is announced via BGP.

## Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dns_zone": "storage.company.com",
  "ip": {
    "address": "10.10.10.7",
    "family": "ipv4",
    "netmask": "24"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "name": "exchange",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"location": {
  "broadcast_domain": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "name": "bd1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"failover": "home_port_only",
"home_node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"home_port": {
  "_links": {
    "self": {
```

```
    "href": "/api/resourcelink"
  },
  "name": "e1b",
  "node": {
    "name": "node1"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "node1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"port": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "e1b",
  "node": {
    "name": "node1"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
},
"metric": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "duration": "PT15S",
  "status": "ok",
  "throughput": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
```

```
"name": "dataLif1",
"probe_port": 64001,
"rdma_protocols": {
},
"scope": "svm",
"service_policy": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "default-intercluster",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"services": {
},
"state": "up",
"statistics": {
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"svm": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "svm1",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Error

Status: Default, Error



Name	Type	Description
error	error	

### Example error

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

### Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

ip\_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
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.

ipspace

Either the UUID or name must be supplied on POST for cluster-scoped objects.

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

broadcast\_domain

Broadcast domain UUID along with a readable name.

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

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home\_node

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

node

Name	Type	Description
name	string	Name of node on which the port is located.

home\_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

node

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

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

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

#### location

Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, `broadcast_domain` can be specified alone or with `home_node`. For PATCH, set `is_home` to true to revert a LIF back to its home port.

Name	Type	Description
auto_revert	boolean	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name.
failover	string	Defines where an interface may failover.
home_node	<a href="#">home_node</a>	
home_port	<a href="#">home_port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
is_home	boolean	
node	<a href="#">node</a>	
port	<a href="#">port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

#### throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

## metric

The most recent sample of I/O metrics for the interface.

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

## service\_policy

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

Name	Type	Description
name	string	
uuid	string	

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

The real time I/O statistics for the interface.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	<a href="#">throughput_raw</a>	Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

## Update an IP interface

PATCH /network/ip/interfaces/{uuid}

**Introduced In:** 9.6

Updates an IP interface.

### Related ONTAP commands

- `network interface migrate`
- `network interface modify`
- `network interface rename`
- `network interface revert`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IP interface UUID

### Request Body

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



Name	Type	Description
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
ip	<a href="#">ip_info</a>	IP information
ipspace	<a href="#">ipspace</a>	Either the UUID or name must be supplied on POST for cluster-scoped objects.
location	<a href="#">location</a>	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the interface.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	<a href="#">service_policy</a>	
services	array[string]	The services associated with the interface.

Name	Type	Description
state	string	The operational state of the interface.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the interface.
svm	<a href="#">svm</a>	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.
vip	boolean	True for a VIP interface, whose location is announced via BGP.

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "dns_zone": "storage.company.com",
  "ip": {
    "address": "10.10.10.7",
    "family": "ipv4",
    "netmask": "24"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "name": "exchange",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"location": {
  "broadcast_domain": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    }
  },
  "name": "bd1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"failover": "home_port_only",
"home_node": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  }
},
"home_port": {
  "_links": {
    "self": {
```

```

        "href": "/api/resourcelink"
    }
},
"name": "e1b",
"node": {
    "name": "node1"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"node": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "node1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"port": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "name": "e1b",
    "node": {
        "name": "node1"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
},
"metric": {
    "_links": {
        "self": {
            "href": "/api/resourcelink"
        }
    },
    "duration": "PT15S",
    "status": "ok",
    "throughput": {
        "read": 200,
        "total": 1000,
        "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z"
},

```

```
"name": "dataLif1",
"probe_port": 64001,
"rdma_protocols": {
},
"scope": "svm",
"service_policy": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "default-intercluster",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
},
"services": {
},
"state": "up",
"statistics": {
  "status": "ok",
  "throughput_raw": {
    "read": 200,
    "total": 1000,
    "write": 100
  },
  "timestamp": "2017-01-25T11:20:13Z"
},
"svm": {
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "svm1",
  "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
},
"uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Response

Status: 200, Ok

## Error

Status: Default

### ONTAP Error Response Codes

Error Code	Description
1376663	Cannot add interface to DNS zone because all interfaces from a single DNS zone must be in the same SVM.
1376963	Duplicate IP address.
1376997	Interface failed to migrate because the node hosting the port is not healthy.
1376998	The specified location.node does not own any ports in the same broadcast domain as the home port of the interface.
1376999	Interface failed to migrate because port is in the down admin state.
1377607	The specified location.port is not in the same broadcast domain as the home port of the interface.
1966138	The same IP address may not be used for both a mgmt interface and a gateway address.
1966141	Invalid DNS zone name.
1966142	Only data LIFs can be assigned a DNS zone.
1966197	Migration of cluster interfaces must be done from the local node.
1966267	IPv6 addresses must have a prefix length between 1 and 127.
1966269	IPv4 addresses must have a prefix length between 1 and 32.
1966476	DNS Update is supported only on data interfaces.
1966477	DNS Update is supported only on interfaces configured with the NFS or CIFS protocol.
1967106	The specified location.home_port.name does not match the specified port name of location.home_port.uuid.
1967107	The specified location.home_port.uuid is not valid.
1967111	A home node must be specified by at least one location.home_node, location.home_port, or location.broadcast_domain field.
1967113	The specified location.port.name does not match the port name of location.port.uuid.

<b>Error Code</b>	<b>Description</b>
1967114	The specified location.port.uuid is not valid.
1967115	The specified location.node.name does not match the node name of location.node.uuid.
1967116	The specified location.port.node.name does not match the node name of location.node.uuid.
1967117	The specified location.port.node.name does not match location.node.name.
1967118	A node must be specified by at least one location.node or location.port field.
1967119	The specified location.node.name does not match the node name of location.port.uuid.
1967120	The specified service_policy.name does not match the specified service policy name of service_policy.uuid.
1967121	The specified service_policy.uuid is not valid.
1967125	You cannot patch the "location.node" or "location.port" fields to migrate interfaces using the iSCSI data protocol. Instead perform the following PATCH operations on the interface: set the "enabled" field to "false"; change one or more "location.home_port" fields to migrate the interface; and then set the "enabled" field to "true".
1967129	The specified location.home_port.uuid is not valid.
1967130	The specified location.home_port.name is not valid.
1967131	The specified location.home_port.uuid and location.home_port.name are not valid.
1967132	The specified location.port.uuid is not valid.
1967133	The specified location.port.name is not valid.
1967134	The specified location.port.uuid and location.port.name are not valid.
1967138	Cannot patch port for a VIP interface. The specified parameter location.port.uuid is not valid.
1967139	Cannot patch port for a VIP interface. The specified parameter location.port.name is not valid.
1967140	Cannot patch port for a VIP interface. The specified parameters location.port.uuid and location.port.name are not valid.
1967141	Cannot patch home_port for a VIP interface. The specified parameter location.home_port.uuid is not valid.

Error Code	Description
1967142	Cannot patch home_port for a VIP interface. The specified parameter location.home_port.name is not valid.
1967143	Cannot patch home_port for a VIP interface. The specified parameters location.home_port.uuid and location.home_port.name are not valid.
1967145	The specified location.failover is not valid.
1967153	No suitable port exists on location.home_node to host the interface.
1967380	Cannot patch home_port for a VIP interface. The specified parameter location.home_port.node.name is not valid. Consider using location.home_node.name instead.
1967386	Cannot patch port for a VIP interface. The specified parameter location.port.node.name is not valid. Consider using location.node.name instead.
1967387	The specified IP address is in use by a subnet in this IPspace.
1967389	Patching location.is_home to the value "false" is not supported. The value "true" would revert a network interface to its home port if the current value is "false".
1967390	Cannot patch a LIF revert as it requires an effective cluster version of 9.9.1 or later.
1967391	Patching the DNS zone requires an effective cluster version of 9.9.1 or later.
1967392	Patching the DDNS enable parameter requires an effective cluster version of 9.9.1 or later.
53281065	The service_policy does not exist in the SVM.
53281086	LIF would exceed the maximum number of supported intercluster LIFs in IPspace.
53281089	LIF on SVM cannot be updated to use service policy because that service policy includes SAN services and the target LIF is not home.

## Definitions



## See Definitions

href

Name	Type	Description
href	string	

\_links

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

ip\_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
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.

ipspace

Either the UUID or name must be supplied on POST for cluster-scoped objects.

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

broadcast\_domain

Broadcast domain UUID along with a readable name.

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

Name	Type	Description
name	string	Name of the broadcast domain, scoped to its IPspace
uuid	string	Broadcast domain UUID

home\_node

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

node

Name	Type	Description
name	string	Name of node on which the port is located.

home\_port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

node

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

port

Port UUID along with readable names. Either the UUID or both names may be supplied on input.

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

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

#### location

Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, `broadcast_domain` can be specified alone or with `home_node`. For PATCH, set `is_home` to true to revert a LIF back to its home port.

Name	Type	Description
auto_revert	boolean	
broadcast_domain	<a href="#">broadcast_domain</a>	Broadcast domain UUID along with a readable name.
failover	string	Defines where an interface may failover.
home_node	<a href="#">home_node</a>	
home_port	<a href="#">home_port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.
is_home	boolean	
node	<a href="#">node</a>	
port	<a href="#">port</a>	Port UUID along with readable names. Either the UUID or both names may be supplied on input.

#### throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

## metric

The most recent sample of I/O metrics for the interface.

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

## service\_policy

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

Name	Type	Description
name	string	
uuid	string	

#### throughput\_raw

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

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

#### statistics

The real time I/O statistics for the interface.

Name	Type	Description
status	string	Errors associated with the sample. For example, if the aggregation of data over multiple nodes fails, then any partial errors might return "ok" on success or "error" on an internal uncategorized failure. Whenever a sample collection is missed but done at a later time, it is back filled to the previous 15 second timestamp and tagged with "backfilled_data". "inconsistent_delta_time" is encountered when the time between two collections is not the same for all nodes. Therefore, the aggregated value might be over or under inflated. "Negative_delta" is returned when an expected monotonically increasing value has decreased in value. "inconsistent_old_data" is returned when one or more nodes do not have the latest data.
throughput_raw	<a href="#">throughput_raw</a>	Throughput bytes observed at the interface. This can be used along with delta time to calculate the rate of throughput bytes per unit of time.
timestamp	string	The timestamp of the performance data.

svm

Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ip\_interface

Name	Type	Description
_links	<a href="#">_links</a>	
ddns_enabled	boolean	Indicates whether or not dynamic DNS updates are enabled. Defaults to true if the interface supports "data_nfs" or "data_cifs" services, otherwise false.
dns_zone	string	Fully qualified DNS zone name
enabled	boolean	The administrative state of the interface.
ip	<a href="#">ip_info</a>	IP information
ipspace	<a href="#">ipspace</a>	Either the UUID or name must be supplied on POST for cluster-scoped objects.
location	<a href="#">location</a>	Current or home location can be modified. Specifying a port implies a node. Specifying a node allows an appropriate port to be automatically selected. Ports are not valid and not shown for VIP interfaces. For POST, broadcast_domain can be specified alone or with home_node. For PATCH, set is_home to true to revert a LIF back to its home port.
metric	<a href="#">metric</a>	The most recent sample of I/O metrics for the interface.
name	string	Interface name
probe_port	integer	Probe port for Cloud load balancer
rdma_protocols	array[string]	Supported RDMA offload protocols
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
service_policy	<a href="#">service_policy</a>	

Name	Type	Description
services	array[string]	The services associated with the interface.
state	string	The operational state of the interface.
statistics	<a href="#">statistics</a>	The real time I/O statistics for the interface.
svm	<a href="#">svm</a>	Applies only to SVM-scoped objects. Either the UUID or name must be supplied on POST.
uuid	string	The UUID that uniquely identifies the interface.
vip	boolean	True for a VIP interface, whose location is announced via BGP.

## Retrieve interface historical performance metrics

GET /network/ip/interfaces/{uuid}/metrics

**Introduced In:** 9.8

Retrieves historical performance metrics for an interface.

### Parameters

Name	Type	In	Required	Description
throughput.read	integer	query	False	Filter by throughput.read
throughput.total	integer	query	False	Filter by throughput.total
throughput.write	integer	query	False	Filter by throughput.write
status	string	query	False	Filter by status
timestamp	string	query	False	Filter by timestamp
duration	string	query	False	Filter by duration



Name	Type	In	Required	Description
uuid	string	path	True	Unique identifier of the interface.
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",
    "status": "ok",
    "throughput": {
      "read": 200,
      "total": 1000,
      "write": 100
    },
    "timestamp": "2017-01-25T11:20:13Z",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

## Error

Status: Default, Error

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

## 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>	

throughput

The rate of throughput bytes per second observed at the interface.

Name	Type	Description
read	integer	Performance metric for read I/O operations.
total	integer	Performance metric aggregated over all types of I/O operations.
write	integer	Performance metric for write I/O operations.

records

Throughput performance for the interfaces.

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

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

#### 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

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

## Manage network IP routes

### Network IP routes endpoint overview

#### Overview

This endpoint supports the following operations: GET (collection and instance), POST, and DELETE.

#### Retrieving network routes

You can use the IP routes GET API to retrieve and display relevant information pertaining to the routes configured in the cluster. The API retrieves the list of all routes configured in the cluster, or a specific route. The fields that are returned in the response will differ with the configuration.

#### Examples

##### Retrieving all routes in the cluster

The following output shows the list of all routes configured in a cluster.

```
# The API:
/api/network/ip/routes

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

# The response:
{
  "records": [
    {
      "uuid": "5fdffb0b-62f8-11e8-853d-005056b4c971",
      "ipspace": {
        "uuid": "84f4beb2-616c-11e8-a4df-005056b4c971",
        "name": "Default",
```

```

    "_links": {
      "self": {
        "href": "/api/network/ipspaces/84f4beb2-616c-11e8-a4df-005056b4c971"
      }
    },
    "svm": {
      "uuid": "3243312c-62f8-11e8-853d-005056b4c971",
      "name": "vs1",
      "_links": {
        "self": {
          "href": "/api/svm/svms/3243312c-62f8-11e8-853d-005056b4c971"
        }
      }
    },
    "scope": "svm",
    "destination": {
      "address": "10.4.3.14",
      "netmask": "18",
      "family": "ipv4"
    },
    "gateway": "10.4.3.1",
    "_links": {
      "self": {
        "href": "/api/network/ip/routes/5fdffb0b-62f8-11e8-853d-005056b4c971"
      }
    }
  },
  {
    "uuid": "84c128d2-62f9-11e8-853d-005056b4c971",
    "ipspace": {
      "uuid": "cc71aadc-62f7-11e8-853d-005056b4c971",
      "name": "ips1",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/cc71aadc-62f7-11e8-853d-005056b4c971"
        }
      }
    },
    "scope": "cluster",
    "destination": {
      "address": "::",
      "netmask": "0",

```



```

    "family": "ipv6"
  },
  "gateway": "fd20:8b1e:b255:814e::1",
  "_links": {
    "self": {
      "href": "/api/network/ip/routes/84c128d2-62f9-11e8-853d-005056b4c971"
    }
  }
},
{
  "uuid": "8cc72bcd-616c-11e8-a4df-005056b4c971",
  "ipspace": {
    "uuid": "84f4beb2-616c-11e8-a4df-005056b4c971",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/84f4beb2-616c-11e8-a4df-005056b4c971"
      }
    }
  },
  "scope": "cluster",
  "destination": {
    "address": "0.0.0.0",
    "netmask": "0",
    "family": "ipv4"
  },
  "gateway": "10.224.64.1",
  "_links": {
    "self": {
      "href": "/api/network/ip/routes/8cc72bcd-616c-11e8-a4df-005056b4c971"
    }
  }
},
{
  "uuid": "d63b6eee-62f9-11e8-853d-005056b4c971",
  "ipspace": {
    "uuid": "84f4beb2-616c-11e8-a4df-005056b4c971",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/84f4beb2-616c-11e8-a4df-005056b4c971"
      }
    }
  }
}

```

```

    }
  },
  "svm": {
    "uuid": "3243312c-62f8-11e8-853d-005056b4c971",
    "name": "vs1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/3243312c-62f8-11e8-853d-005056b4c971"
      }
    }
  },
  "scope": "svm",
  "destination": {
    "address": "fd20:8b1e:b255:814e::",
    "netmask": "64",
    "family": "ipv6"
  },
  "gateway": "fd20:8b1e:b255:814e::1",
  "_links": {
    "self": {
      "href": "/api/network/ip/routes/d63b6eee-62f9-11e8-853d-005056b4c971"
    }
  }
},
]
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/network/ip/routes?fields=*"
  }
}
}
}

```

### Retrieving a specific Cluster-scoped route

The following output shows the returned response when a specific Cluster-scoped route is requested. The system returns an error if there is no route with the requested UUID. SVM information is not returned for Cluster-scoped routes.

```

# The API:
/api/network/ip/routes/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/routes/84c128d2-62f9-11e8-853d-005056b4c971?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "84c128d2-62f9-11e8-853d-005056b4c971",
  "ipspace": {
    "uuid": "cc71aadc-62f7-11e8-853d-005056b4c971",
    "name": "ips1",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/cc71aadc-62f7-11e8-853d-005056b4c971"
      }
    }
  },
  "scope": "cluster",
  "destination": {
    "address": "::",
    "netmask": "0",
    "family": "ipv6"
  },
  "gateway": "fd20:8b1e:b255:814e::1",
  "_links": {
    "self": {
      "href": "/api/network/ip/routes/84c128d2-62f9-11e8-853d-005056b4c971"
    }
  }
}

```

### Retrieving a specific SVM-scoped route

The following output shows the returned response when a specific SVM-scoped route is requested. The system returns an error if there is no route with the requested UUID. The SVM object is only included for SVM-scoped routes.

```
# The API:
/api/network/ip/routes/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/routes/d63b6eee-62f9-11e8-853d-005056b4c971?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "d63b6eee-62f9-11e8-853d-005056b4c971",
  "ipspace": {
    "uuid": "84f4beb2-616c-11e8-a4df-005056b4c971",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/84f4beb2-616c-11e8-a4df-005056b4c971"
      }
    }
  },
  "svm": {
    "uuid": "3243312c-62f8-11e8-853d-005056b4c971",
    "name": "vs1",
    "_links": {
      "self": {
        "href": "/api/svm/svms/3243312c-62f8-11e8-853d-005056b4c971"
      }
    }
  },
  "scope": "svm",
  "destination": {
    "address": "fd20:8b1e:b255:814e::",
    "netmask": "64",
    "family": "ipv6"
  },
  "gateway": "fd20:8b1e:b255:814e::1",
  "_links": {
    "self": {
      "href": "/api/network/ip/routes/d63b6eee-62f9-11e8-853d-005056b4c971"
    }
  }
}
```

## Creating network routes

You can use the POST API to create an SVM-scoped route by specifying the associated SVM, or a Cluster-scoped route by specifying the associated IPspace.

### Examples

#### Creating a Cluster-scoped route

IPspace is required to create a Cluster-scoped route. If the IPspace is not specified, the route will be created in the Default IPspace. The default destination will be set to "0.0.0.0/0" for IPv4 gateway addresses or ":::0" for IPv6 gateway addresses.

```
# The API:
/api/network/ip/routes

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/routes?return_records=true"
-H "accept: application/json" -d '{ "ipspace": { "name":"ips1" },
"gateway": "10.10.10.1"}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "ae583c9e-9ac7-11e8-8bc9-005056bbd531",
      "ipspace": {
        "name": "ips1"
      },
      "gateway": "10.10.10.1"
    }
  ]
}
```

#### Creating an SVM-scoped route

To create an SVM-scoped route, the associated SVM can be identified by either its UUID or name.

```
# The API:
/api/network/ip/routes

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/routes?return_records=true"
-H "accept: application/json" -d '{ "svm": { "name": "vs0" }, "gateway":
"10.10.10.1"}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "38805a91-9ac9-11e8-8bc9-005056bbd531",
      "svm": {
        "name": "vs0"
      },
      "gateway": "10.10.10.1"
    }
  ]
}
```

---

## Deleting network routes

You can use the DELETE API to delete a specific route identified by its UUID.

### Example

#### Deleting a specific route

```
# The API:
/api/network/ip/routes/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ip/routes/38805a91-9ac9-
11e8-8bc9-005056bbd531"
```

---

## Retrieve IP routes

GET /network/ip/routes

## Introduced In: 9.6

Retrieves the collection of IP routes.

### 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.

- `interfaces.*`

### Related ONTAP commands

- `network route show`
- `network route show-lifs`

### Parameters

Name	Type	In	Required	Description
<code>ipspace.uuid</code>	string	query	False	Filter by <code>ipspace.uuid</code>
<code>ipspace.name</code>	string	query	False	Filter by <code>ipspace.name</code>
<code>interfaces.ip.address</code>	string	query	False	Filter by <code>interfaces.ip.address</code>  • Introduced in: 9.9
<code>interfaces.name</code>	string	query	False	Filter by <code>interfaces.name</code>  • Introduced in: 9.9
<code>interfaces.uuid</code>	string	query	False	Filter by <code>interfaces.uuid</code>  • Introduced in: 9.9
<code>svm.uuid</code>	string	query	False	Filter by <code>svm.uuid</code>
<code>svm.name</code>	string	query	False	Filter by <code>svm.name</code>

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



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

## Response

Status: 200, Ok

Name	Type	Description
_links	<a href="#">_links</a>	
error	<a href="#">error</a>	
num_records	integer	Number of records
records	array[ <a href="#">network_route</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": {
      "code": "string",
      "message": "string"
    },
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "destination": {
      "address": "10.10.10.7",
      "family": "ipv4",
      "netmask": "24"
    },
    "gateway": "10.1.1.1",
    "interfaces": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "ipspace": {
```

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

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

Name	Type	Description
next	<a href="#">href</a>	
self	<a href="#">href</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.

\_links

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

ip\_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

Name	Type	Description
family	string	IPv4 or IPv6
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.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interfaces

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

ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

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

svm

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.

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

network\_route

Name	Type	Description
_links	<a href="#">_links</a>	
destination	<a href="#">ip_info</a>	IP information
gateway	string	The IP address of the gateway router leading to the destination.
interfaces	array[ <a href="#">interfaces</a> ]	IP interfaces on the same subnet as the gateway.
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	<a href="#">svm</a>	
uuid	string	The UUID that uniquely identifies the route.

## Create a cluster-scoped or SVM-scoped static route

POST /network/ip/routes

**Introduced In:** 9.6

Creates a Cluster-scoped or SVM-scoped static route.

### Required properties

- gateway - IP address to route packets to.
- SVM-scoped routes
  - `svm.name` or `svm.uuid` - SVM that route is applied to.
- cluster-scoped routes
  - There are no additional required fields for Cluster-scoped routes.

## Default property values

If not specified in POST, the following default property values are assigned:

- `destination` - `0.0.0.0/0` for IPv4 or `::/0` for IPv6.
- `ipspace.name`
  - *Default* for Cluster-scoped routes.
  - Name of the SVM's IPspace for SVM-scoped routes.

## Related ONTAP commands

- `network route create`

## Parameters

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

## Request Body

Name	Type	Description
<code>_links</code>	<a href="#">_links</a>	
<code>destination</code>	<a href="#">ip_info</a>	IP information
<code>gateway</code>	string	The IP address of the gateway router leading to the destination.
<code>interfaces</code>	array[ <a href="#">interfaces</a> ]	IP interfaces on the same subnet as the gateway.
<code>ipspace</code>	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
<code>scope</code>	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
<code>svm</code>	<a href="#">svm</a>	
<code>uuid</code>	string	The UUID that uniquely identifies the route.



**Example request**



```

{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "destination": {
    "address": "10.10.10.7",
    "family": "ipv4",
    "netmask": "24"
  },
  "gateway": "10.1.1.1",
  "interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scope": "svm",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}

```

## Response

Status: 201, Created

Name	Type	Description
_links	<a href="#">_links</a>	
error	<a href="#">error</a>	
num_records	integer	Number of records
records	array[ <a href="#">network_route</a> ]	

## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": {
      "code": "string",
      "message": "string"
    },
    "code": "4",
    "message": "entry doesn't exist",
    "target": "uuid"
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "destination": {
      "address": "10.10.10.7",
      "family": "ipv4",
      "netmask": "24"
    },
    "gateway": "10.1.1.1",
    "interfaces": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "ip": {
        "address": "10.10.10.7"
      },
      "name": "lif1",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "ipspace": {
```

```

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

```

## Error

Status: Default

### ONTAP Error Response Codes

Error Code	Description
1966345	Duplicate route exists.
1967080	The destination.address is missing.
1967081	The specified SVM must exist in the specified IPspace.
1967082	The specified ipspace.uuid and ipspace.name refer to different IPspaces.
1967146	The specified svm.name is not valid.
2	The specified svm.uuid is not valid.

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>	

ip\_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
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.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interfaces

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

## ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

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

## svm

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

## network\_route

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
destination	<a href="#">ip_info</a>	IP information
gateway	string	The IP address of the gateway router leading to the destination.
interfaces	array[ <a href="#">interfaces</a> ]	IP interfaces on the same subnet as the gateway.
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	<a href="#">svm</a>	
uuid	string	The UUID that uniquely identifies the route.

## [\\_links](#)



Name	Type	Description
next	<a href="#">href</a>	
self	<a href="#">href</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.

## Delete an IP route

DELETE /network/ip/routes/{uuid}

**Introduced In:** 9.6

Deletes a specific IP route.

### Related ONTAP commands

- `network route delete`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Route UUID

### Response

Status: 200, Ok

## Error

Status: Default, Error

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

## Example error

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

## Definitions

## See Definitions

### error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

### error

Name	Type	Description
arguments	array[ <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 details for an IP route

GET /network/ip/routes/{uuid}

**Introduced In:** 9.6

Retrieves the details of a specific IP route.

### Related ONTAP commands

- `network route show`
- `network route show-lifs`

### Parameters

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

## Response

Status: 200, Ok

Name	Type	Description
_links	<a href="#">_links</a>	
destination	<a href="#">ip_info</a>	IP information
gateway	string	The IP address of the gateway router leading to the destination.
interfaces	array[ <a href="#">interfaces</a> ]	IP interfaces on the same subnet as the gateway.
ipspace	<a href="#">ipspace</a>	Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
svm	<a href="#">svm</a>	
uuid	string	The UUID that uniquely identifies the route.

**Example response**

A large, empty rectangular box with a thin, dashed border, occupying most of the page. It is intended for an example response.

```

{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "destination": {
    "address": "10.10.10.7",
    "family": "ipv4",
    "netmask": "24"
  },
  "gateway": "10.1.1.1",
  "interfaces": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ip": {
      "address": "10.10.10.7"
    },
    "name": "lif1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "scope": "svm",
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}

```

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

ip\_info

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address
family	string	IPv4 or IPv6
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.

ip

IP information

Name	Type	Description
address	string	IPv4 or IPv6 address

interfaces

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



## ipspace

Applies to both SVM and cluster-scoped objects. Either the UUID or name may be supplied on input.

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

## svm

Name	Type	Description
<a href="#">_links</a>	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

## error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

## error

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

# Manage network IP service policies

## Network IP service-policies endpoint overview

### Overview

Service policies are named groupings that define what services are supported by an IP interface. The following operations are supported:

- Creation: POST `network/ip/service-policies`
- Collection Get: GET `network/ip/service-policies`
- Instance Get: GET `network/ip/service-policies/{uuid}`
- Instance Patch: PATCH `network/ip/service-policies/{uuid}`
- Instance Delete: DELETE `network/ip/service-policies/{uuid}`

### Examples

#### Retrieving all service policies in the cluster

The following output shows the collection of all service policies configured in a 2-node cluster. By default (without `field=*` parameter), only the UUID and name fields are shown for each entry.

```
# The API:
/api/network/ethernet/ip/service-policies

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

# The response:
{
  "records": [
    {
      "uuid": "e4e2f193-c1a3-11e8-bb9d-005056bb88c8",
      "name": "net-intercluster",
      "_links": {
        "self": {
          "href": "/api/network/ip/service-policies/e4e2f193-c1a3-11e8-bb9d-005056bb88c8"
        }
      }
    },
    {
      "uuid": "e4e3f6da-c1a3-11e8-bb9d-005056bb88c8",
      "name": "net-route-announce",
      "_links": {
        "self": {
```

```

    "href": "/api/network/ip/service-policies/e4e3f6da-c1a3-11e8-bb9d-
005056bb88c8"
  }
}
},
{
  "uuid": "e5111111-c1a3-11e8-bb9d-005056bb88c8",
  "name": "vserver-route-announce",
  "_links": {
    "self": {
      "href": "/api/network/ip/service-policies/e5111111-c1a3-11e8-bb9d-
005056bb88c8"
    }
  }
},
{
  "uuid": "e6111111-c1a3-11e8-bb9d-005056bb88c8",
  "name": "data-route-announce",
  "_links": {
    "self": {
      "href": "/api/network/ip/service-policies/e6111111-c1a3-11e8-bb9d-
005056bb88c8"
    }
  }
}
],
"num_records": 4,
"_links": {
  "self": {
    "href": "/api/network/ip/service-
policies/?return_records=true&return_timeout=15"
  }
}
}
}

```

### Retrieving a specific service policy (scope=svm)

The following output displays the response when a specific "svm" scoped service policy is requested. Among other parameters, the response contains the svm parameters associated with the service policy. The system returns an error when there is no service policy with the requested UUID.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X GET "http://<mgmt-ip>/api/network/ip/service-policies/dad323ff-4ce0-11e9-9372-005056bb91a8?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "dad323ff-4ce0-11e9-9372-005056bb91a8",
  "name": "default-data-files",
  "scope": "svm",
  "svm": {
    "uuid": "d9060680-4ce0-11e9-9372-005056bb91a8",
    "name": "vs0",
    "_links": {
      "self": {
        "href": "/api/svm/svms/d9060680-4ce0-11e9-9372-005056bb91a8"
      }
    }
  },
  "ipspace": {
    "uuid": "45ec2dee-4ce0-11e9-9372-005056bb91a8",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/45ec2dee-4ce0-11e9-9372-005056bb91a8"
      }
    }
  },
  "services": [
    "data_core",
    "data_nfs",
    "data_cifs",
    "data_flexcache"
  ],
  "_links": {
    "self": {
      "href": "/api/network/ip/service-policies/dad323ff-4ce0-11e9-9372-005056bb91a8"
    }
  }
}
```

### Retrieving a specific service policy (scope=svm) when requesting commonly used fields

The following output displays the response when commonly used fields are requested for a specific "svm" scoped service policy. Among other parameters, the response contains the svm parameters associated with the service policy. The system returns an error when there is no service policy with the requested UUID.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/service-policies/e0889ce6-1e6a-11e9-89d6-005056bbdc04?fields=name,scope,svm.name,ipospace.name" -H "accept: application/hal+json"

# The response:
{
  "uuid": "e0889ce6-1e6a-11e9-89d6-005056bbdc04",
  "name": "test_policy",
  "scope": "svm",
  "svm": {
    "name": "vs0"
  },
  "ipospace": {
    "name": "Default"
  },
  "_links": {
    "self": {
      "href": "/api/network/ip/service-policies/e0889ce6-1e6a-11e9-89d6-005056bbdc04"
    }
  }
}
```

### Retrieving a specific service policy (scope=cluster)

The following output displays the response when a specific cluster-scoped service policy is requested. The SVM object is not included for cluster-scoped service policies. A service policy with a scope of "cluster" is associated with an IPspace. The system returns an error when there is no service policy with the requested UUID.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/service-policies/4c6b72b9-0f6c-11e9-875d-005056bb21b8?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "4c6b72b9-0f6c-11e9-875d-005056bb21b8",
  "name": "net-intercluster",
  "scope": "cluster",
  "ipspace": {
    "uuid": "4051f13e-0f6c-11e9-875d-005056bb21b8",
    "name": "Default",
    "_links": {
      "self": {
        "href": "/api/network/ipspaces/4051f13e-0f6c-11e9-875d-005056bb21b8"
      }
    }
  },
  "services": [
    "intercluster_core"
  ],
  "_links": {
    "self": {
      "href": "/api/network/ip/service-policies/4c6b72b9-0f6c-11e9-875d-005056bb21b8"
    }
  }
}
```

---

### Retrieving a specific service policy (scope=cluster) when requesting commonly used fields

The following output displays the response when commonly used fields are requested for a specific "cluster" scoped service policy. The SVM object is not included for cluster-scoped service policies. A service policy with a scope of "cluster" is associated with an IPspace. The system returns an error when there is no service policy with the requested UUID.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ip/service-policies/4c6b72b9-0f6c-11e9-875d-005056bb21b8?fields=name,scope,ip.space.name" -H "accept: application/hal+json"

# The response:
{
  "uuid": "4c6b72b9-0f6c-11e9-875d-005056bb21b8",
  "name": "net-intercluster",
  "scope": "cluster",
  "ip.space": {
    "name": "Default"
  },
  "services": [
    "intercluster_core"
  ],
  "_links": {
    "self": {
      "href": "/api/network/ip/service-policies/4c6b72b9-0f6c-11e9-875d-005056bb21b8"
    }
  }
}
```

---

## Creating service policies

You can use this API to create an SVM-scoped service policy by specifying the associated SVM, or a cluster-scoped service policy by specifying the associated IPspace. If the scope is not specified, it is inferred from the presence of the IPspace or SVM. Cluster scoped service policies will operate on the IPspace "Default" unless IPspace is explicitly specified.

## Examples

### Creating a cluster-scoped service policy

The following output displays the response when creating a service policy with a scope of "cluster" and an IPspace of "Default".

---

```

# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy", "scope": "cluster", "ipSPACE": { "name":"Default" },
"services": [ "intercluster_core" ] }'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "74139267-f1aa-11e9-b5d7-005056a73e2e",
      "name": "new-policy",
      "scope": "cluster",
      "ipSPACE": {
        "uuid": "ba556295-e912-11e9-a1c8-005056a7080e",
        "name": "Default",
        "_links": {
          "self": {
            "href": "/api/network/ip/spaces/ba556295-e912-11e9-a1c8-
005056a7080e"
          }
        }
      },
      "_links": {
        "self": {
          "href": "/api/network/ip/service-policies/74139267-f1aa-11e9-b5d7-
005056a73e2e"
        }
      },
      "services": [
        "intercluster_core"
      ]
    }
  ]
}

```

### Creating a cluster-scoped service policy without specifying IPspace

The following output displays the response when creating a service policy with a scope of "cluster" without specifying an IPspace".



```

# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy", "scope": "cluster", "services": [ "intercluster_core" ] }'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "74139267-f1aa-11e9-b5d7-005056a73e2e",
      "name": "new-policy",
      "scope": "cluster",
      "ipspace": {
        "uuid": "ba556295-e912-11e9-a1c8-005056a7080e",
        "name": "Default",
        "_links": {
          "self": {
            "href": "/api/network/ipspaces/ba556295-e912-11e9-a1c8-
005056a7080e"
          }
        }
      },
      "_links": {
        "self": {
          "href": "/api/network/ip/service-policies/74139267-f1aa-11e9-b5d7-
005056a73e2e"
        }
      },
      "services": [
        "intercluster_core"
      ]
    }
  ]
}

```

### Creating a cluster-scoped service policy without specifying scope

The following output displays the response when creating a service policy in the "Default" IPspace without specifying the scope".

```

# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy2", "ipSpace.name": "Default", "services": [
"intercluster_core" ] }'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "59439267-f1aa-11e9-b5d7-005056a73e2e",
      "name": "new-policy2",
      "scope": "cluster",
      "ipSpace": {
        "uuid": "ba556295-e912-11e9-a1c8-005056a7080e",
        "name": "Default",
        "_links": {
          "self": {
            "href": "/api/network/ip/spaces/ba556295-e912-11e9-a1c8-
005056a7080e"
          }
        }
      },
      "services": [
        "intercluster_core"
      ],
      "_links": {
        "self": {
          "href": "/api/network/ip/service-policies/74139267-f1aa-11e9-b5d7-
005056a73e2e"
        }
      }
    }
  ]
}

```

### Creating an SVM-scoped service policy

The following output displays the response when creating a service policy with a scope of "svm" in the SVM "vs0".

```

# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy", "scope": "svm", "svm": { "name":"vs0" }, "services": [
"data-nfs", "data-cifs" ] }'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "f3901097-f2c4-11e9-b5d7-005056a73e2e",
      "name": "new-policy",
      "scope": "svm",
      "svm": {
        "uuid": "07df9cee-e912-11e9-a13a-005056a73e2e",
        "name": "vs0",
        "_links": {
          "self": {
            "href": "/api/svm/svms/07df9cee-e912-11e9-a13a-005056a73e2e"
          }
        }
      },
      "ipspace": {
        "uuid": "1d3199d2-e906-11e9-a13a-005056a73e2e",
        "name": "Default",
        "_links": {
          "self": {
            "href": "/api/network/ipspaces/1d3199d2-e906-11e9-a13a-
005056a73e2e"
          }
        }
      },
      "services": [
        "data_nfs",
        "data_cifs"
      ],
      "_links": {
        "self": {
          "href": "/api/network/ip/service-policies/f3901097-f2c4-11e9-b5d7-
005056a73e2e"
        }
      }
    }
  ]
}

```

```
}
}
]
}
```

### Creating an SVM-scoped service policy without specifying scope

The following output displays the response when creating a service policy with a SVM of "vs0" without specifying the scope.

```
# The API:
/api/network/ip/service-policies

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ip/service-
policies?return_records=true" -H "accept: application/json" -d '{ "name":
"new-policy", "svm": { "name":"vs0" }, "services": [ "data-nfs", "data-
cifs" ] }'
```

```
# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "f3901097-f2c4-11e9-b5d7-005056a73e2e",
      "name": "new-policy",
      "scope": "svm",
      "svm": {
        "uuid": "07df9cee-e912-11e9-a13a-005056a73e2e",
        "name": "vs0",
        "_links": {
          "self": {
            "href": "/api/svm/svms/07df9cee-e912-11e9-a13a-005056a73e2e"
          }
        }
      }
    },
    "ipospace": {
      "uuid": "1d3199d2-e906-11e9-a13a-005056a73e2e",
      "name": "Default",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/1d3199d2-e906-11e9-a13a-
005056a73e2e"
        }
      }
    }
  ]
}
```

```
    }
  }
},
"services": [
  "data_nfs",
  "data_cifs"
],
"_links": {
  "self": {
    "href": "/api/network/ip/service-policies/f3901097-f2c4-11e9-b5d7-005056a73e2e"
  }
}
]
}
```

### Updating the name of a service policy

The following example displays the command used to update the name of a service policy scoped to a specific "svm". The system returns an error when there is no service policy associated with the UUID or the service policy cannot be renamed.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/service-policies/734eaf57-d2fe-11e9-9284-005056acaad4" -d '{"name": "new-name"}' -H "accept: application/hal+json"
```

### Updating the services for a service policy

The following example displays the command used to update the services a service policy contains. The specified services replace the existing services. To retain existing services, they must be included in the PATCH request. The system returns an error when there is no service policy associated with the UUID or the services cannot be applied.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ip/service-policies/734eaf57-
d2fe-11e9-9284-005056acaad4" -d "{ \"services\": [ \"data-nfs\", \"data-
cifs\" ] }" -H "accept: application/hal+json"
```

### Deleting a service policy

The following output displays the response for deleting a service policy.

```
# The API:
/api/network/ip/service-policies/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ip/service-
policies/757ed726-bdc1-11e9-8a92-005056a7bf25" -H "accept:
application/hal+json"
```

## Retrieve service policies

GET /network/ip/service-policies

**Introduced In:** 9.6

Retrieves a collection of service policies.

### Related ONTAP commands

- network interface service-policy show

### Parameters

Name	Type	In	Required	Description
scope	string	query	False	Filter by scope
services	string	query	False	Filter by services

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

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

## Response

Status: 200, Ok

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



## Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "ipospace": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "exchange",
      "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
    },
    "name": "default-intercluster",
    "scope": "svm",
    "services": {
    },
    "svm": {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "name": "svm1",
      "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
    },
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}
```

## Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

\_links

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

ipspace

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

svm

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ip\_service\_policy

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

Name	Type	Description
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	
svm	<a href="#">svm</a>	
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
target	string	The target parameter that caused the error.

## Create a service policy for network interfaces

POST /network/ip/service-policies

**Introduced In:** 9.8

Creates a service policy for network interfaces.

### Required properties

- name - Name of the service policy to create.
- ipspace.name or ipspace.uuid
  - Required for cluster-scoped service policies.
  - Optional for SVM-scoped service policies.
- svm.name or svm.uuid

- Required for SVM-scoped service policies.
- Not valid for cluster-scoped service policies.

### Default property values

If not specified in POST, the following default property values are assigned:

- `scope`
  - `svm` if the `svm` parameter is specified
  - `cluster` if the `svm` parameter is not specified

### Parameters

Name	Type	In	Required	Description
<code>return_records</code>	boolean	query	False	The default is false. If set to true, the records are returned.  • Default value:

### Request Body

Name	Type	Description
<code>_links</code>	<a href="#">_links</a>	
<code>ipspace</code>	<a href="#">ipspace</a>	
<code>name</code>	string	
<code>scope</code>	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
<code>services</code>	array[string]	
<code>svm</code>	<a href="#">svm</a>	
<code>uuid</code>	string	

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipspace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "default-intercluster",
  "scope": "svm",
  "services": {
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Response

Status: 200, Ok

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1966373	Port must reside in the same IPspace as the interface's SVM.
1967146	Svm.name does not exist.
1967147	Svm.uuid does not exist.
53281929	Service policies cannot combine block and file services.
53281931	Service policy names cannot start with "default-".
53281932	Service cannot be added because the service does not exist for the specified SVM or IPspace.
53281933	A Cluster-scoped service cannot be added to a SVM-scoped service policy.
53281934	An SVM-scoped service cannot be added to a Cluster-scoped service policy.
53281935	Scope is set to "svm" and svm.uuid or svm.name have not been specified.
53281936	The SVM is not in the specified IPspace.
53281937	Svm.uuid and svm.name are not valid parameters when scope is cluster.
53281938	Svm.uuid or svm.name specify a vserver that does not exist.
53281939	One or more of the svm.uuid, svm.name, ipspace.uuid, and ipspace.name have invalid values.
53281940	SVM or IPspace has not been specified.
53281941	SVM does not exist.
53281944	Ipspace.name does not exist.
53281945	Ipspace.uuid is not an IPspace.
53281946	Service policy already exists.

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>	

ipspace

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

svm

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ip\_service\_policy

Name	Type	Description
_links	<a href="#">_links</a>	
ipspace	<a href="#">ipspace</a>	
name	string	
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	
svm	<a href="#">svm</a>	
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
target	string	The target parameter that caused the error.

## Delete a service policy for network interfaces

DELETE /network/ip/service-policies/{uuid}

**Introduced In:** 9.8

Deletes a service policy for network interfaces.

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the service policy

### Response

```
Status: 200, Ok
```

### Error

```
Status: Default
```

## ONTAP Error Response Codes

Error Code	Description
53281927	Service policies owned by the system cannot be deleted.
53281928	Service policies assigned to LIFs cannot be deleted.

Name	Type	Description
error	error	

### Example error

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

### Definitions

## See Definitions

error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[ <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 a service policy

GET /network/ip/service-policies/{uuid}

**Introduced In:** 9.6

Retrieves a specific service policy.

### Related ONTAP commands

- `network interface service-policy show`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	Service policy UUID
fields	array[string]	query	False	Specify the fields to return.
max_records	integer	query	False	Limit the number of records returned.

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

## Response

Status: 200, Ok

Name	Type	Description
_links	<a href="#">_links</a>	
ipspace	<a href="#">ipspace</a>	
name	string	
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	
svm	<a href="#">svm</a>	

Name	Type	Description
uuid	string	

### Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipospace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "default-intercluster",
  "scope": "svm",
  "services": {
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

### Error

Status: Default, Error

Name	Type	Description
error	error	

## Example error

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

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

ipospace

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

svm

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[ <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 a service policy for network interfaces

PATCH /network/ip/service-policies/{uuid}

**Introduced In:** 9.8

Updates a service policy for network interfaces.

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	UUID of the service policy

### Request Body

Name	Type	Description
_links	<a href="#">_links</a>	
ipspace	<a href="#">ipspace</a>	
name	string	
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	
svm	<a href="#">svm</a>	
uuid	string	

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "ipospace": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "exchange",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  },
  "name": "default-intercluster",
  "scope": "svm",
  "services": {
  },
  "svm": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Response

Status: 200, Ok

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1376669	Port must reside in the same IPspace as the interface's SVM.
53281929	Service policies cannot combine block and file services.
53281930	Service policies maintained by the system cannot be renamed.
53281931	Service policy names cannot start with "default-".
53281932	Service cannot be added because the service does not exist for the specified SVM or IPspace.
53281933	A Cluster-scoped service cannot be added to a SVM-scoped service policy.
53281934	An SVM-scoped service cannot be added to a Cluster-scoped service policy.
53281952	The service policy on an SVM cannot be updated to include a block service. Use built-in service policies for SAN services.
53281953	The service policy on an SVM cannot be updated to include a new service.

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>	

ipspace

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

svm

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	The name of the SVM.
uuid	string	The unique identifier of the SVM.

ip\_service\_policy

Name	Type	Description
_links	<a href="#">_links</a>	
ipspace	<a href="#">ipspace</a>	
name	string	
scope	string	Set to "svm" for interfaces owned by an SVM. Otherwise, set to "cluster".
services	array[string]	
svm	<a href="#">svm</a>	
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
target	string	The target parameter that caused the error.

# Manage network IPspaces

## Network ipspaces endpoint overview

### Overview

An IPspace is an addressing domain within which each IP address is unique. The same address may appear in a different IPspace, but the matching addresses are considered to be distinct. SVMs and broadcast domains, and therefore IP interfaces and Ethernet ports, are associated with a single IPspace. This endpoint supports the following operations: GET (collection and instance), POST, PATCH, and DELETE.

### Retrieving IPspace information

You can use the IPspaces GET API to retrieve all IPspaces configured in the cluster, including built-in and custom IPspaces, and specifically requested IPspaces.

### Examples

#### Retrieving a list of the IPspaces in the cluster

The following example returns the requested list of IPspaces configured in the cluster.

```
# The API:  
/api/network/ipspaces  
  
# The call:  
curl -X GET "https://<mgmt-ip>/api/network/ipspaces?fields=*" -H "accept:
```

```
application/hal+json"
```

```
# The response:
```

```
{  
  "records": [  
    {  
      "uuid": "dcc7e79c-5acc-11e8-b9de-005056b42b32",  
      "name": "Default",  
      "_links": {  
        "self": {  
          "href": "/api/network/ipspaces/dcc7e79c-5acc-11e8-b9de-  
005056b42b32"  
        }  
      }  
    },  
    {  
      "uuid": "dfd3c1b2-5acc-11e8-b9de-005056b42b32",  
      "name": "Cluster",  
      "_links": {  
        "self": {  
          "href": "/api/network/ipspaces/dfd3c1b2-5acc-11e8-b9de-  
005056b42b32"  
        }  
      }  
    },  
    {  
      "uuid": "dedeclbe-5aec-1eee-beee-0eee56be2b3e",  
      "name": "IpSPACE1",  
      "_links": {  
        "self": {  
          "href": "/api/network/ipspaces/dedeclbe-5aec-1eee-beee-  
0eee56be2b3e"  
        }  
      }  
    }  
  ],  
  "num_records": 3,  
  "_links": {  
    "self": {  
      "href": "/api/network/ipspaces?fields=*"  
    }  
  }  
}
```

## Retrieving a specific IPspace in the cluster

The following example returns the specific IPspace requested. The system returns an error if there is no IPspace with the requested UUID.

```
# The API:
/api/network/ipspaces/{uuid}

# The call:
curl -X GET "https://<mgmt-ip>/api/network/ipspaces/dfd3c1b2-5acc-11e8-b9de-005056b42b32?fields=*" -H "accept: application/hal+json"

# The response:
{
  "uuid": "dcc7e79c-5acc-11e8-b9de-005056b42b32",
  "name": "Default",
  "_links": {
    "self": {
      "href": "/api/network/ipspaces/dcc7e79c-5acc-11e8-b9de-005056b42b32"
    }
  }
}
```

## Creating IPspaces

You can use the network IPspaces POST API to create IPspaces.

### Example

#### Creating an IPspace

The following output displays the record returned after the creation of an IPspace with the name "ipspace1".

```
# The API:
/api/network/ipspaces

# The call:
curl -X POST "https://<mgmt-ip>/api/network/ipspaces?return_records=true"
-H "accept: application/hal+json" -d '{"name": "ipspace2"}'

# The response:
{
  "num_records": 1,
  "records": [
    {
      "uuid": "4165655e-0528-11e9-bd68-005056bb046a",
      "name": "ipspace2",
      "_links": {
        "self": {
          "href": "/api/network/ipspaces/4165655e-0528-11e9-bd68-005056bb046a"
        }
      }
    }
  ]
}
```

---

## Updating IPspaces

You can use the IPspaces PATCH API to update the attributes of the IPspace.

---

### Example

#### Updating the name of an IPspace

The following PATCH request is used to update the name of the IPspace from "ipspace2" to "ipspace20".

---



```
# The API:
/api/network/ipspaces/{uuid}

# The call:
curl -X PATCH "https://<mgmt-ip>/api/network/ipspaces/4165655e-0528-11e9-
bd68-005056bb046a" -H "accept: application/hal+json" -d "{ \"name\":
\"ipspace20\"}"
```

---

## Deleting IPspaces

You can use the IPspaces DELETE API to delete an IPspace.

---

### Example

#### Deleting an IPspace

The following DELETE request is used to delete an IPspace.

```
# The API:
/api/network/ipspaces/{uuid}

# The call:
curl -X DELETE "https://<mgmt-ip>/api/network/ipspaces/4165655e-0528-11e9-
bd68-005056bb046a" -H "accept: application/hal+json" -H "Content-Type:
application/json"
```

---

## Retrieve IPspaces for a cluster

GET /network/ipspaces

**Introduced In:** 9.6

Retrieves a collection of IPspaces for the entire cluster.

### Related ONTAP commands

- network ipspace show

## Parameters

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

## Response

Status: 200, Ok

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

### Example response

```

{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "num_records": 1,
  "records": {
    "_links": {
      "self": {
        "href": "/api/resourcelink"
      }
    },
    "name": "ipSPACE1",
    "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
  }
}

```

### Error

Status: Default, Error

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

## 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>	

ipospace

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

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

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

## Create a new domain with unique IP addresses

POST /network/ipspaces

**Introduced In:** 9.6

Creates a new domain within which IP addresses are unique. SVMs, ports, and networks are scoped to a single IPspace.

### Required properties

- name - Name of the IPspace to create.

### Related ONTAP commands

- `network ipspace create`

### Parameters

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

### Request Body

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "ipspace1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Response

Status: 201, Created

## Error

Status: Default

## ONTAP Error Response Codes

Error Code	Description
1966586	The specified IPspace name is invalid because it is already used by a peered SVM.
1967102	A POST operation might have left the configuration in an inconsistent state. Check the configuration.

## ONTAP Error Response Codes

Error Code	Description
9240591	The name is not valid. The name is already in use by a cluster node, Vserver, or it is the name of the local 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>	

ipspace

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

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 an IPspace object

DELETE /network/ipspaces/{uuid}

**Introduced In:** 9.6

Deletes an IPspace object.

### Related ONTAP commands

- `network ipspace delete`

### Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IPspace UUID

### Response

```
Status: 200, Ok
```

## Retrieve information about an IPspace

GET /network/ipspaces/{uuid}

**Introduced In:** 9.6

Retrieves information about a specific IPspace.

### Related ONTAP commands

- `network ipspace show`

### Parameters

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

### Response

```
Status: 200, Ok
```

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

### Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "ipspace1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

### Error

Status: Default, Error

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

### 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>	

error\_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

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

## Update an IPspace object

PATCH /network/ipspaces/{uuid}

**Introduced In:** 9.6

Updates an IPspace object.

### Related ONTAP commands

- `network ipspace rename`

## Parameters

Name	Type	In	Required	Description
uuid	string	path	True	IPspace UUID

## Request Body

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

## Example request

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "name": "ipspace1",
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

## Response

Status: 200, Ok

## Definitions

## See Definitions

href

Name	Type	Description
href	string	

\_links

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

ipospace

Name	Type	Description
_links	<a href="#">_links</a>	
name	string	IPspace name
uuid	string	The UUID that uniquely identifies the IPspace.

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