



Manage QoS policies

REST API reference

NetApp

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Manage QoS policies

Manage QoS policies

Quality of Service Configuration

A QoS policy defines measurable service level objectives (SLOs) that apply to the storage objects with which the policy is associated. There are two types of policies that can be configured: fixed, which defines a fixed SLO, or adaptive which defines a variable SLO for a storage object. Adaptive policies vary the SLO depending on the space usage of the storage object. A policy can be either a fixed policy or an adaptive one, not both. Service level objectives include minimum and maximum limits on throughput in terms of IOPS. Only maximum limits can be set in terms of both IOPS and/or throughput (MB/s). A QoS policy can be used to enforce SLOs for multiple storage objects by specifying "capacity_shared" to true. For example, if a QoS policy with "capacity_shared" is set to true and it has maximum_throughput_iops set to 1000, and this policy is assigned to four volumes, then the combined throughput of all four volumes is limited to 1000 IOPS. If "capacity_shared" is set to false then, each storage object will have its SLOs enforced individually. For example, in the previous case if the same policy was applied to four volumes but with "capacity_shared" set to false, then each of the volumes would be limited to 1000 IOPS individually. Once "capacity_shared" is set, it cannot be modified. Adaptive parameters can specify the variable SLOs in terms of IOPS/TB. The actual IOPS enforced on the storage object can be calculated using the allocated space on the storage object. The policies are enforced individually amongst storage objects.

Examples

1) Create a fixed QoS policy

The following example shows how to create a fixed QoS policy to limit throughput for a storage object between 5000 IOPS and 10000 IOPS which has capacity_shared set to false. This QoS policy can be used as a template to apply on multiple storage objects to provide individual SLOs to each object.

```
curl -X POST
"https://172.21.69.245/api/storage/qos/policies?return_timeout=0" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"fixed\": { \"capacity_shared\": false, \"max_throughput_iops\": 10000,
\"min_throughput_iops\": 5000 }, \"name\":
\"qos_policy_5000_to_10000_iops\", \"svm\": { \"name\": \"vs0\" } }"
```

2) Create an adaptive QoS policy

The following example shows how to create an adaptive QoS policy which provides 5000 IOPS per GB of allocated space for a storage object with a peak of 6000 IOPS. Minimum IOPS regardless of allocated space are 1000 IOPS.

```
curl -X POST
"https://172.21.69.245/api/storage/qos/policies?return_timeout=0" -H
"accept: application/json" -H "Content-Type: application/json" -d "{
\"adaptive\": { \"absolute_min_iops\": 1000, \"expected_iops\": 5000,
\"expected_iops_allocation\": \"used_space\", \"peak_iops\": 6000,
\"peak_iops_allocation\": \"allocated_space\" }, \"name\":
\"adaptive_pg_5k_to_6k\", \"svm\": { \"name\": \"vs0\" }}"
```

3) Update an existing QoS policy

The following example shows how to update SLOs of an existing QoS policy and also rename it.

```
curl -X PATCH "https://172.21.69.245/api/storage/qos/policies/d38bafc0-
5a51-11e9-bd5b-005056ac6f1f?return_timeout=0" -H "accept:
application/json" -H "Content-Type: application/json" -d "{ \"fixed\": {
\"max_throughput_iops\": 15000, \"min_throughput_iops\": 10000 },
\"name\": \"qos_policy_10k_to_15k_iops\"}"
```

4) Delete an existing QoS policy

When a QoS policy is deleted any associations of the policy with a storage objects are also removed.

```
curl -X DELETE "https://172.21.69.245/api/storage/qos/policies/d38bafc0-
5a51-11e9-bd5b-005056ac6f1f?return_timeout=0" -H "accept:
application/json"
```

Retrieve QoS policies

GET /storage/qos/policies

Introduced In: 9.6

Retrieves a collection of QoS policies.

Parameters

Name	Type	In	Required	Description
svm.name	string	query	False	Filter by svm.name
svm.uuid	string	query	False	Filter by svm.uuid
object_count	integer	query	False	Filter by object_count
adaptive.peak_iops_allocation	string	query	False	Filter by adaptive.peak_iops_allocation Introduced in: 9.10
adaptive.block_size	string	query	False	Filter by adaptive.block_size Introduced in: 9.10
adaptive.expected_iops_allocation	string	query	False	Filter by adaptive.expected_iops_allocation Introduced in: 9.10
adaptive.absolute_min_iops	integer	query	False	Filter by adaptive.absolute_min_iops
adaptive.expected_iops	integer	query	False	Filter by adaptive.expected_iops
adaptive.peak_iops	integer	query	False	Filter by adaptive.peak_iops
fixed.min_throughput_iops	integer	query	False	Filter by fixed.min_throughput_iops - Max value: 2147483647 - Min value: 0

Name	Type	In	Required	Description
fixed.capacity_share d	boolean	query	False	Filter by fixed.capacity_share d
fixed.min_throughput	string	query	False	Filter by fixed.min_throughpu t • Introduced in: 9.17
fixed.max_throughpu t_iops	integer	query	False	Filter by fixed.max_throughp ut_iops • Max value: 2147483647 • Min value: 0
fixed.max_throughpu t_mbps	integer	query	False	Filter by fixed.max_throughp ut_mbps • Max value: 4194303 • Min value: 0
fixed.min_throughput _mbps	integer	query	False	Filter by fixed.min_throughpu t_mbps • Introduced in: 9.8 • Max value: 4194303 • Min value: 0
fixed.max_throughpu t	string	query	False	Filter by fixed.max_throughp ut • Introduced in: 9.17
pgid	integer	query	False	Filter by pgid • Introduced in: 9.10

Name	Type	In	Required	Description
scope	string	query	False	Filter by scope • Introduced in: 9.11
policy_class	string	query	False	Filter by policy_class • 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.
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
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. • Max value: 120 • Min value: 0 • Default value: 15

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

Response

Status: 200, Ok

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

Example response

```
{
  "_links": {
    "next": {
      "href": "/api/resourcelink"
    },
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "error": {
    "arguments": [
      {
        "code": "string",
        "message": "string"
      }
    ],
    "code": "4",
    "message": "entry doesn't exist"
  },
  "num_records": 1,
  "records": [
    {
      "_links": {
        "self": {
          "href": "/api/resourcelink"
        }
      },
      "adaptive": {
        "block_size": "string",
        "expected_iops_allocation": "string",
        "peak_iops_allocation": "string"
      },
      "fixed": {
        "max_throughput": [
          "900KB/s",
          "500MB/s",
          "120GB/s",
          "5000IOPS",
          "5000IOPS,500KB/s",
          "2500IOPS,100MB/s",
          "1000IOPS,25MB/s"
        ],
        "min_throughput": [
          "900KB/s",
```

```

        "500MB/s",
        "120GB/s",
        "5000IOPS",
        "5000IOPS,500KB/s",
        "2500IOPS,100MB/s",
        "1000IOPS,25MB/s"
    ]
},
"name": "extreme",
"object_count": 0,
"pgid": 0,
"policy_class": "string",
"scope": "string",
"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	returned_error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
next	href	
self	href	

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code
message	string	Error message

_links

Name	Type	Description
self	href	

adaptive

Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.

Name	Type	Description
absolute_min_iops	integer	Specifies the absolute minimum IOPS that is used as an override when the expected_iops is less than this value. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
block_size	string	Specifies the block size
expected_iops	integer	Expected IOPS. Specifies the minimum expected IOPS per TB allocated based on the storage object allocated size. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
expected_iops_allocation	string	Specifies the size to be used to calculate expected IOPS per TB. The size options are either the storage object allocated space or the storage object used space.
peak_iops	integer	Peak IOPS. Specifies the maximum possible IOPS per TB allocated based on the storage object allocated size or the storage object used size.
peak_iops_allocation	string	Specifies the size to be used to calculate peak IOPS per TB. The size options are either the storage object allocated space or the storage object used space.

fixed

QoS policy-groups define a fixed service level objective (SLO) for a storage object.

Name	Type	Description
capacity_shared	boolean	Specifies whether the capacities are shared across all objects that use this QoS policy-group. Default is false.

Name	Type	Description
max_throughput	string	Maximum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no maximum throughput is enforced.
max_throughput_iops	integer	Maximum throughput defined by this policy. It is specified in terms of IOPS. 0 means no maximum throughput is enforced.
max_throughput_mbps	integer	Maximum throughput defined by this policy. It is specified in terms of Mbps. 0 means no maximum throughput is enforced.
min_throughput	string	Minimum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no minimum throughput is enforced.
min_throughput_iops	integer	Minimum throughput defined by this policy. It is specified in terms of IOPS. 0 means no minimum throughput is enforced. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
min_throughput_mbps	integer	Minimum throughput defined by this policy. It is specified in terms of Mbps. 0 means no minimum throughput is enforced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.

Name	Type	Description
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

qos_policy

Name	Type	Description
_links	_links	
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

returned_error

Name	Type	Description
arguments	array[error_arguments]	Message arguments
code	string	Error code

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

Create a QoS policy

POST /storage/qos/policies

Introduced In: 9.6

Creates a QoS policy.

Required properties

- `svm.uuid` or `svm.name` - The existing SVM owning the QoS policy.
- `name` - The name of the QoS policy.
- `fixed.*` or `adaptive.*` - Either of the fixed or adaptive parameters.

Default property values

- If `fixed.*` parameters are specified, then `capacity.shared` is set to false by default.

Related ONTAP commands

- `qos policy-group create`
- `qos adaptive-policy-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. • Default value:

Name	Type	In	Required	Description
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 0 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.

Name	Type	Description
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example request

```
{
  "adaptive": {
    "block_size": "string",
    "expected_iops_allocation": "string",
    "peak_iops_allocation": "string"
  },
  "fixed": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ]
  },
  "name": "extreme",
  "object_count": 0,
  "pgid": 0,
  "policy_class": "string",
  "scope": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

Status: 202, Accepted

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Headers

Name	Description	Type
Location	Useful for tracking the resource location	string

Response

Status: 201, Created

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
8454147	The maximum limit for QoS policies has been reached.
8454154	The name specified for creating conflicts with an existing QoS policy name.
8454194	The minimum throughput value for the policy group must be less than or equal to the maximum throughput value.
8454260	Invalid value for maximum and minimum fields. Valid values for max_throughput_iops and max_throughput_mbps combination is for the ratio of max_throughput_mbps and max_throughput_iops to be within 1 to 4096.

Error Code	Description
8454273	Invalid value for an adaptive field. Value should be non-zero.
8454274	Invalid value for an adaptive field. Value for expected_iops must be less than or equal to the value for peak_iops.
8454277	The name specified for creating an adaptive QoS policy conflicts with an existing fixed QoS policy name.
8454278	The name specified for creating a fixed QoS policy conflicts with an existing adaptive QoS policy name.
8454379	The name specified for creating a fixed QoS policy already exists.
8454380	The name specified for creating an adaptive QoS policy already exists.
8454389	One specified field cannot be used in combination with at least one other specified field.

Also see the table of common errors in the [Response body](#) overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

adaptive

Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.

Name	Type	Description
absolute_min_iops	integer	Specifies the absolute minimum IOPS that is used as an override when the expected_iops is less than this value. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
block_size	string	Specifies the block size
expected_iops	integer	Expected IOPS. Specifies the minimum expected IOPS per TB allocated based on the storage object allocated size. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
expected_iops_allocation	string	Specifies the size to be used to calculate expected IOPS per TB. The size options are either the storage object allocated space or the storage object used space.
peak_iops	integer	Peak IOPS. Specifies the maximum possible IOPS per TB allocated based on the storage object allocated size or the storage object used size.

Name	Type	Description
peak_iops_allocation	string	Specifies the size to be used to calculate peak IOPS per TB. The size options are either the storage object allocated space or the storage object used space.

fixed

QoS policy-groups define a fixed service level objective (SLO) for a storage object.

Name	Type	Description
capacity_shared	boolean	Specifies whether the capacities are shared across all objects that use this QoS policy-group. Default is false.
max_throughput	string	Maximum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no maximum throughput is enforced.
max_throughput_iops	integer	Maximum throughput defined by this policy. It is specified in terms of IOPS. 0 means no maximum throughput is enforced.
max_throughput_mbps	integer	Maximum throughput defined by this policy. It is specified in terms of Mbps. 0 means no maximum throughput is enforced.
min_throughput	string	Minimum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no minimum throughput is enforced.
min_throughput_iops	integer	Minimum throughput defined by this policy. It is specified in terms of IOPS. 0 means no minimum throughput is enforced. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.

Name	Type	Description
min_throughput_mbps	integer	Minimum throughput defined by this policy. It is specified in terms of Mbps. 0 means no minimum throughput is enforced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

qos_policy

Name	Type	Description
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.

Name	Type	Description
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

job_link

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

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

Delete a QoS policy

```
DELETE /storage/qos/policies/{uuid}
```

Introduced In: 9.6

Deletes a QoS policy. All QoS workloads associated with the policy are removed.

Related ONTAP commands

- `qos policy-group delete`

- qos adaptive-policy-group delete

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• Introduced in: 9.8
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 0 • Max value: 120 • Min value: 0

Response

Status: 200, Ok

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
8454286	Modifications to these cluster-scoped preset policies is prohibited.

Also see the table of common errors in the [Response body](#) overview section of this documentation.

Name	Type	Description
error	returned_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

returned_error

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

Retrieve a QoS policy

GET /storage/qos/policies/{uuid}

Introduced In: 9.6

Retrieves a specific QoS policy.

Related ONTAP commands

- `qos policy-group show`
- `qos adaptive-policy-group show`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• Introduced in: 9.8
fields	array[string]	query	False	Specify the fields to return.

Response

Status: 200, Ok

Name	Type	Description
_links	_links	
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example response

```
{
  "_links": {
    "self": {
      "href": "/api/resourcelink"
    }
  },
  "adaptive": {
    "block_size": "string",
    "expected_iops_allocation": "string",
    "peak_iops_allocation": "string"
  },
  "fixed": {
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ]
  },
  "name": "extreme",
  "object_count": 0,
  "pgid": 0,
  "policy_class": "string",
  "scope": "string",
  "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	returned_error	

Example error

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

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

Name	Type	Description
self	href	

adaptive

Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.

Name	Type	Description
absolute_min_iops	integer	Specifies the absolute minimum IOPS that is used as an override when the expected_iops is less than this value. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
block_size	string	Specifies the block size
expected_iops	integer	Expected IOPS. Specifies the minimum expected IOPS per TB allocated based on the storage object allocated size. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
expected_iops_allocation	string	Specifies the size to be used to calculate expected IOPS per TB. The size options are either the storage object allocated space or the storage object used space.
peak_iops	integer	Peak IOPS. Specifies the maximum possible IOPS per TB allocated based on the storage object allocated size or the storage object used size.

Name	Type	Description
peak_iops_allocation	string	Specifies the size to be used to calculate peak IOPS per TB. The size options are either the storage object allocated space or the storage object used space.

fixed

QoS policy-groups define a fixed service level objective (SLO) for a storage object.

Name	Type	Description
capacity_shared	boolean	Specifies whether the capacities are shared across all objects that use this QoS policy-group. Default is false.
max_throughput	string	Maximum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no maximum throughput is enforced.
max_throughput_iops	integer	Maximum throughput defined by this policy. It is specified in terms of IOPS. 0 means no maximum throughput is enforced.
max_throughput_mbps	integer	Maximum throughput defined by this policy. It is specified in terms of Mbps. 0 means no maximum throughput is enforced.
min_throughput	string	Minimum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no minimum throughput is enforced.
min_throughput_iops	integer	Minimum throughput defined by this policy. It is specified in terms of IOPS. 0 means no minimum throughput is enforced. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.

Name	Type	Description
min_throughput_mbps	integer	Minimum throughput defined by this policy. It is specified in terms of Mbps. 0 means no minimum throughput is enforced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
_links	_links	
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

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

Update a QoS policy

PATCH /storage/qos/policies/{uuid}

Introduced In: 9.6

Update a specific QoS policy.

Related ONTAP commands

- `qos policy-group modify`
- `qos adaptive-policy-group modify`

Parameters

Name	Type	In	Required	Description
uuid	string	path	True	• Introduced in: 9.8
return_timeout	integer	query	False	The number of seconds to allow the call to execute before returning. When doing a POST, PATCH, or DELETE operation on a single record, the default is 0 seconds. This means that if an asynchronous operation is started, the server immediately returns HTTP code 202 (Accepted) along with a link to the job. If a non-zero value is specified for POST, PATCH, or DELETE operations, ONTAP waits that length of time to see if the job completes so it can return something other than 202. • Default value: 0 • Max value: 120 • Min value: 0

Request Body

Name	Type	Description
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

Example request

```
{
  "adaptive": {
    "block_size": "string",
    "expected_iops_allocation": "string",
    "peak_iops_allocation": "string"
  },
  "fixed": {
    "capacity_shared": true,
    "max_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ],
    "min_throughput": [
      "900KB/s",
      "500MB/s",
      "120GB/s",
      "5000IOPS",
      "5000IOPS,500KB/s",
      "2500IOPS,100MB/s",
      "1000IOPS,25MB/s"
    ]
  },
  "name": "extreme",
  "object_count": 0,
  "pgid": 0,
  "policy_class": "string",
  "scope": "string",
  "svm": {
    "name": "svm1",
    "uuid": "02c9e252-41be-11e9-81d5-00a0986138f7"
  },
  "uuid": "1cd8a442-86d1-11e0-ae1c-123478563412"
}
```

Response

Status: 200, Ok

Name	Type	Description
job	job_link	

Example response

```
{
  "job": {
    "uuid": "string"
  }
}
```

Response

Status: 202, Accepted

Error

Status: Default

ONTAP Error Response Codes

Error Code	Description
8454147	The maximum limit for QoS policies has been reached.
8454154	The name specified for creating conflicts with an existing QoS policy name.
8454194	The minimum throughput value for the policy group must be less than or equal to the maximum throughput value.
8454260	Invalid value for maximum and minimum fields. Valid values for max_throughput_iops and max_throughput_mbps combination is for the ratio of max_throughput_mbps and max_throughput_iops to be within 1 to 4096.
8454273	Invalid value for an adaptive field. Value should be non-zero.

Error Code	Description
8454277	The name specified for creating an adaptive QoS policy conflicts with an existing fixed QoS policy name.
8454278	The name specified for creating a fixed QoS policy conflicts with an existing adaptive QoS policy name.
8454286	Modifications on these cluster scoped preset policies is prohibited.
8454327	The existing fixed QoS policy cannot be modified to an adaptive QoS policy.
8454328	The existing adaptive QoS policy cannot be modified to a fixed QoS policy.
8454379	The name specified for creating a fixed QoS policy already exists.
8454380	The name specified for creating an adaptive QoS policy already exists.
8454389	One specified field cannot be used in combination with at least one other specified field.

Also see the table of common errors in the [Response body](#) overview section of this documentation.

Definitions

See Definitions

href

Name	Type	Description
href	string	

_links

adaptive

Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.

Name	Type	Description
absolute_min_iops	integer	Specifies the absolute minimum IOPS that is used as an override when the expected_iops is less than this value. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
block_size	string	Specifies the block size
expected_iops	integer	Expected IOPS. Specifies the minimum expected IOPS per TB allocated based on the storage object allocated size. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
expected_iops_allocation	string	Specifies the size to be used to calculate expected IOPS per TB. The size options are either the storage object allocated space or the storage object used space.
peak_iops	integer	Peak IOPS. Specifies the maximum possible IOPS per TB allocated based on the storage object allocated size or the storage object used size.

Name	Type	Description
peak_iops_allocation	string	Specifies the size to be used to calculate peak IOPS per TB. The size options are either the storage object allocated space or the storage object used space.

fixed

QoS policy-groups define a fixed service level objective (SLO) for a storage object.

Name	Type	Description
max_throughput	string	Maximum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no maximum throughput is enforced.
max_throughput_iops	integer	Maximum throughput defined by this policy. It is specified in terms of IOPS. 0 means no maximum throughput is enforced.
max_throughput_mbps	integer	Maximum throughput defined by this policy. It is specified in terms of Mbps. 0 means no maximum throughput is enforced.
min_throughput	string	Minimum throughput defined by this policy. It is specified in terms of Kbps, Mbps or Gbps along with or without IOPS. 0 means no minimum throughput is enforced.
min_throughput_iops	integer	Minimum throughput defined by this policy. It is specified in terms of IOPS. 0 means no minimum throughput is enforced. These floors are not guaranteed on non-AFF platforms or when FabricPool tiering policies are set.
min_throughput_mbps	integer	Minimum throughput defined by this policy. It is specified in terms of Mbps. 0 means no minimum throughput is enforced.

svm

SVM, applies only to SVM-scoped objects.

Name	Type	Description
name	string	The name of the SVM. This field cannot be specified in a PATCH method.
uuid	string	The unique identifier of the SVM. This field cannot be specified in a PATCH method.

qos_policy

Name	Type	Description
adaptive	adaptive	Adaptive QoS policy-groups define measurable service level objectives (SLOs) that adjust based on the storage object used space and the storage object allocated space.
fixed	fixed	QoS policy-groups define a fixed service level objective (SLO) for a storage object.
name	string	Name of the QoS policy.
object_count	integer	Number of objects attached to this policy.
pgid	integer	Policy group ID of the QoS policy.
policy_class	string	Class of the QoS policy.
scope	string	Scope of the entity. Set to "cluster" for cluster owned objects and to "svm" for SVM owned objects.
svm	svm	SVM, applies only to SVM-scoped objects.
uuid	string	

job_link

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

error_arguments

Name	Type	Description
code	string	Argument code
message	string	Message argument

returned_error

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

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