



## Basic QoS Commands

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This chapter has details about the generic QoS commands. These are standard commands, which are used before applying the QoS policies or methods.

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# class-map

To define a traffic class and the associated rules that match packets to the class, use the **class-map** command in the global configuration mode. To remove an existing class map from the router, use the **no** form of this command.

```
class-map [type [traffic | qos]] [match-all] [match-any] class-map-name
no class-map [type [traffic | qos]] [match-all] [match-any] class-map-name
```

## Syntax Description

<b>type qos</b>	(Optional) Specifies a quality-of-service (QoS) class-map.
<b>traffic</b>	(Optional) Specifies traffic type class-map.
<b>match-all</b>	(Optional) Specifies a match on all of the match criteria.
<b>match-any</b>	(Optional) Specifies a match on any of the match criteria. This is the default.
<i>class-map-name</i>	Name of the class for the class map. The class name is used for the class map and to configure policy for the class in the policy map. The class name can be a maximum of 63 characters, must start with an alphanumeric character, and in addition to alphanumeric characters, can contain any of the following characters: . _ @ \$ % +   # : ; - =

## Command Default

Type is QoS when not specified.

## Command Modes

Global configuration

## Command History

Release	Modification
Release 6.1.42	This command was introduced.

## Usage Guidelines

The **class-map** command specifies the name of the class for which you want to create or modify class map match criteria. Use of this command enables class map configuration mode in which you can enter any **match** command to configure the match criteria for this class. Packets arriving on the interface are checked against the match criteria configured for a class map to determine if the packet belongs to that class.

These commands can be used in a class map match criteria for the ingress direction:

- **match [not] dscp**
- **match [not] mpls experimental topmost**
- **match [not] precedence**
- **match [not] protocol**

## Task ID

Task ID	Operations
qos	read, write

---

**Examples**

These examples show how to specify class1 as the name of a class and defines a class map for this class.

```
RP/0/(config)# class-map class1
RP/0/(config-cmap)# match dscp ipv4 1
```

```
RP/0/(config)# class-map class1
RP/0/(config-cmap)# match precedence ipv4 1
```

```
RP/0/(config)# class-map class1
RP/0/(config-cmap)# match cos 1
```

## class (policy-map)

To specify the name of the class whose policy you want to create or change, use the **class** command in policy map configuration mode. To remove a class from the policy map, use the **no** form of this command.

```
class [type qos] {class-name | class-default}
no class [type qos] {class-name | class-default}
```

### Syntax Description

<b>type qos</b>	(Optional) Specifies a quality-of-service (QoS) class.
<i>class-name</i>	Name of the class for which you want to configure or modify policy.
<b>class-default</b>	Configures the default class.

### Command Default

No class is specified.  
Type is QoS when not specified.

### Command Modes

Policy map configuration

### Command History

Release	Modification
Release 6.1.42	This command was introduced.

### Usage Guidelines

Within a policy map, the **class (policy-map)** command can be used to specify the name of the class whose policy you want to create or change. The policy map must be identified first.

To identify the policy map (and enter the required policy map configuration mode), use the **policy-map** command before you use the **class (policy-map)** command. After you specify a policy map, you can configure the policy for new classes or modify the policy for any existing classes in that policy map.

The class name that you specify in the policy map ties the characteristics for that class—that is, its policy—to the class map and its match criteria, as configured using the **class-map** command.

The **class-default** keyword is used for configuring default classes. It is a reserved name and cannot be used with user-defined classes. It is always added to the policy map (type qos) even if the class is not configured. For example, the following configuration shows that the class has not been configured, but the running configuration shows ‘class class-default’.

```
RP/0/(config)# policy-map pml
RP/0/(config-pmap)# end-policy-map
RP/0/(config)# end
!
RP/0/# show running-config
!
policy-map pml
  class class-default
  !
end-policy-map
!
```

Task ID	Task ID	Operations
	qos	read, write

### Examples

This example shows how to create a policy map called policy1, which is defined to shape class1 traffic at 30 percent and default class traffic at 20 percent.

```
RP/0/(config)# class-map class1
RP/0/(config-cmap)# match precedence 3
RP/0/(config-cmap)# exit
```

```
RP/0/(config)# policy-map policy1
RP/0/(config-pmap)# class class1
RP/0/config-pmap-c)# shape average percent 30
RP/0/(config-pmap-c)# exit
```

```
RP/0/(config-pmap)# class class-default
RP/0/(config-pmap-c)# shape average percent 20
```

The default class is used for packets that do not satisfy configured match criteria for class1. Class1 must be defined before it can be used in policy1, but the default class can be directly used in a policy map, as the system defines it implicitly.

# end-class-map

To end the configuration of match criteria for the class and to exit class map configuration mode, use the **end-class-map** command in class map configuration mode.

## end-class-map

**Syntax Description** This command has no keywords or arguments.

**Command Default** No default behavior or values

**Command Modes** Class map configuration

Command History	Release	Modification
	Release 6.1.42	This command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	qos	read, write

## Examples

These examples show how to end the class map configuration and exit class map configuration mode:

```
RP/0/(config)# class-map class1
RP/0/(config-cmap)# match dscp ipv4 1
RP/0/(config-cmap)# end-class-map
```

```
RP/0/(config)# class-map class1
RP/0/(config-cmap)# match precedence ipv4 1
RP/0/(config-cmap)# end-class-map
```

```
RP/0/(config)# class-map class1
RP/0/(config-cmap)# match cos 1
RP/0/(config-cmap)# end-class-map
```

# end-policy-map

To end the configuration of a policy map and to exit policy map configuration mode, use the **end-policy-map** command in policy map configuration mode.

## end-policy-map

**Syntax Description** This command has no keywords or arguments.

**Command Default** No default behavior or values

**Command Modes** Policy map configuration

Command History	Release	Modification
	Release 6.1.42	This command was introduced.

**Usage Guidelines** No specific guidelines impact the use of this command.

Task ID	Task ID	Operations
	qos	read, write

## Examples

This example shows how to end the policy map configuration and exit policy map configuration mode.

```
RP/0/(config)# policy-map policy1
RP/0/(config-pmap)# class class1
RP/0/(config-pmap-c)# police rate 250
RP/0/(config-pmap)# end-policy-map
```

# policy-map

To create or modify a policy map that can be attached to one or more interfaces to specify a service policy, use the **policy-map** command in global configuration mode. To delete a policy map, use the **no** form of this command.

```
policy-map [type qos] policy-name
no policy-map [type qos] policy-name
```

## Command Default

A policy map does not exist until one is configured. Because a policy map is applied to an interface, no restrictions on the flow of data are applied to any interface until a policy map is created.

Type is QoS when not specified.

## Command Modes

Global Configuration mode

## Command History

Release	Modification
Release 6.1.42	This command was introduced.

## Usage Guidelines

Use the **policy-map** command to specify the name of the policy map to be created, added to, or modified before you can configure policies for classes whose match criteria are defined in a class map. Entering the **policy-map** command enables policy map configuration mode in which you can configure or modify the class policies for that policy map.

You can configure class policies in a policy map only if the classes have match criteria defined for them. Use the **class-map** and **match** commands to configure the match criteria for a class.

A single policy map can be attached to multiple interfaces concurrently.

## Task ID

Task ID	Operations
qos	read, write

## Examples

These examples show how to create a policy map called `policy1` and configures two class policies included in that policy map. The policy map is defined to contain policy specification for `class1` and the default class (called `class-default`) to which packets that do not satisfy configured match criteria are directed.

```
RP/0/(config)# class-map class1
RP/0/(config-cmap)# match dscp ipv4 136

RP/0/(config)# policy-map policy1
RP/0/(config-pmap)# class class1
RP/0/(config-pmap-c)# set precedence 3
RP/0/(config-pmap-c)# exit

RP/0/(config-pmap)# class class-default
```



```
RP/0/(config-pmap-c)# queue-limit 1000000 bytes
```

# show policy-map interface

To display policy information and statistics for all classes configured for all service policies on the specified interface, use the **show policy-map interface** command in EXEC mode.

**show policy-map** [**interface** {*interface type* | **all**} *interface-path-id*] [{**input** | **output** }]

Syntax Description		
<i>interface type</i>		Interface type. For more information, use the question mark (?) online help function.
<b>all</b>		Specifies all interfaces.
<i>interface-path-id</i>		Physical interface or virtual interface.
	<b>Note</b>	Use the <b>show interfaces</b> command to see a list of all interfaces currently configured on the router.
		For more information about the syntax for the router, use the question mark (?) online help function.
<b>input</b>		(Optional) Displays per class statistics on inbound traffic for the specified policy map and interface.
<b>output</b>		(Optional) Displays per class statistics on outbound traffic for the specified policy map and interface.

**Command Default** None

**Command Modes** EXEC mode

Command History	Release	Modification
	Release 6.1.42	This command was introduced.

**Usage Guidelines** The **show policy-map interface** command displays the statistics for classes in the service policy attached to an interface.

Task ID	Task ID	Operations
	qos	read

## Examples

This sample output shows how to display policy statistics information for all classes on the **interface hundredGigE 0/6/0/0** that are in the output direction:

```
RP/0/# show policy-map interface hundredGigE 0/6/0/0 output
```

```

Wed Dec  9 16:18:10.179 UTC
HundredGigE0/6/0/0 output: test-pol-out

Class qos-grp1
  Classification statistics          (packets/bytes)    (rate - kbps)
  Matched                          :      885333442/900384110514      57036859
  Transmitted                       :      299199945/304286344065      19278557
  Total Dropped                     :      586133497/596097766449      37758302
  Queueing statistics
  Queue ID                          :      10409
  Taildropped(packets/bytes)        :      586133497/596097766449
Class qos-grp2
  Classification statistics          (packets/bytes)    (rate - kbps)
  Matched                          :              0/0              0
  Transmitted                       :              0/0              0
  Total Dropped                     :              0/0              0
  Queueing statistics
  Queue ID                          :      10410
  Taildropped(packets/bytes)        :              0/0
Class class-default
  Classification statistics          (packets/bytes)    (rate - kbps)
  Matched                          :      1487720301/1513011546117      98203543
  Transmitted                       :      1182422140/1202523316380      78285945
  Total Dropped                     :      305298161/310488229737      19917598
  Queueing statistics
  Queue ID                          :      10408
  Taildropped(packets/bytes)        :      305298161/310488229737

```

This table describes the significant fields shown in the display.

**Table 1: show policy-map interface Field Descriptions**

Field	Description
<b>Classification Statistics</b>	
Matched	Number of packets or bytes that matched this class.
Transmitted	Number of packets or bytes transmitted for this class.
Total Dropped	Number of packets or bytes dropped for this class.
<b>Policing Statistics</b>	
Policed(conform)	Number of packets or bytes that conformed to the police rate for this class.
Policed(exceed)	Number of packets or bytes that exceeded the police rate for this class.
Policed(violate)	Number of packets or bytes that violated the police rate for this class.
Policed and dropped	Number of packets or bytes dropped by the policer of this class.
<b>Queueing Statistics</b>	
Queue ID	VOQ number of the packet in this class.
Taildropped (bytes)	Number of bytes taildropped for this queue.

## show running-configuration class-map

To display the configured class-map details, use the **show running-configuration class-map** command in EXEC mode.

### show running-configuration class-map

<b>Syntax Description</b>	This command has no keywords or arguments.
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<b>Command Default</b>	None
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<b>Command Modes</b>	EXEC
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<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 6.1.42	This command was introduced.

<b>Usage Guidelines</b>	The <b>show running-configuration class-map</b> is used for getting the class-map details.
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<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	qos	read

### Example

This example shows the configured class-map details:

```
show running-config class-map
class-map match-any CLASS_1_egress_COS
  macth qos-group1
end-class-map
!
class-map match-any CLASS_2_egress_COS
  macth qos-group2
end-class-map
!
class-map match-any CLASS_3_egress_COS
  macth qos-group3
end-class-map
!
class-map match-any CLASS_1_ingress_COS
  macth cos4
end-class-map
!
class-map match-any CLASS_2_ingress_COS
  macth cos7
end-class-map
!
class-map match-any CLASS_3_ingress_COS
  macth cos3
end-class-map
!
```

# show running-configuration policy-map

To display the configured policy-map details, use the **show running-configuration policy-map** command in EXEC mode.

## show running-configuration policy-map

**Syntax Description** This command has no keywords or arguments.

**Command Default** None

**Command Modes** EXEC

Command History	Release	Modification
	Release 6.1.42	This command was introduced.

**Usage Guidelines** The **show running-configuration policy-map** command is used for getting the policy-map details.

Task ID	Task ID	Operation
	qos	read

## Example

This example shows the configured policy-map details.

```
show running-config policy-map
policy-map egress_POLICY_L2
class CLASS_1_egress_COS
shape average 2 gbps
!
class CLASS_2_egress_COS
shape average 4 gbps
!
class CLASS_3_egress_COS
shape average 4 gbps
!
class class-default
!
end-policy-map
!
policy-map ingress_POLICY_L2
classCLASS_1_ingress_COS
set traffic-class1
!
classCLASS2_ingress_COS
set qos-group2
!
classCLASS_3_ingress_COS
set qos-group3
!
```

**show running-configuration policy-map**

```
class class-default
!  
end-policy-map
!
```