

Send document comments to nexus7k-docfeedback@cisco.com



Cisco NX-OS Quality of Service Commands

This chapter describes the Cisco NX-OS quality of service (QoS) commands. Cisco Nexus 7000 Series NX-OS Quality of Service Command Reference, Release 4.1

bandwidth (QoS)

To allocate a minimum percentage of the interface bandwidth to a queue and configure the bandwidth on both ingress and egress queues, use the **bandwidth**

no

bandwidth {*rate* [**bps** | **kbps** **mbps** **gbps**] | **percent** *percent*}

no bandwidth **bps** **kbps** **mbps** **gbps** **percent**

Syntax Description

Bandwidth rate. The range is from 1 to 10000000000.
(Optional) Specifies the units of bits per second.
(Optional) Specifies the units of 1000 bits per second.
(Optional) Specifies the units of megabits per second.
(Optional) Specifies the units of gigabits per second.
Specifies the percentage of bandwidth of the underlying link rate.
Percent value in the range from 1 to 100.

Defaults

Command Modes

Policy map type queuing class configuration

Supported User Roles

network-admin
vdc-admin

Command History

4.0	This command was introduced.
-----	------------------------------

Usage Guidelines

You use the system-defined ingress or egress queue class for the type of module to which you want to apply the policy map (see [Table 1](#)).

Table 1 System-Defined Type queuing Class Maps

Class Map Queue Name	Description	Default CoS Values
1 Gigabit Module Ingress: 2 queues with 4 thresholds per queue		
2q4t-in-q1	Ingress queue 1 of 2q4t type	5-7
2q4t-in-q-default	Ingress default queue of 2q4t type	0-4
1 Gigabit Module Egress: 1 strict priority queue and 3 normal queues with 4 thresholds per queue		

System-Defined Type queuing Class Maps (continued)

1p3q4t-out-pq1 ¹	Egress priority queue of 1p3q4t type	5-7
1p3q4t-out-q2	Egress queue 2 of 1p3q4t type	–
1p3q4t-out-q3	Egress queue 3 of 1p3q4t type	–
1p3q4t-out-q-default	Egress default queue of 1p3q4t type	0-4
10 Gigabit Module Ingress: 8 queues with 2 thresholds per queue		
8q2t-in-q1	Ingress queue 1 of 8q2t type	5-7
8q2t-in-q2	Ingress queue 2 of 8q2t type	–
8q2t-in-q3	Ingress queue 3 of 8q2t type	–
8q2t-in-q4	Ingress queue 4 of 8q2t type	–
8q2t-in-q5	Ingress queue 5 of 8q2t type	–
8q2t-in-q6	Ingress queue 6 of 8q2t type	–
8q2t-in-q7	Ingress queue 7 of 8q2t type	–
8q2t-in-q-default	Ingress default queue of 8q2t type	0-4
10 Gigabit Module Egress: 1 strict priority queue and 7 normal queues with 4 thresholds per queue		
1p7q4t-out-pq1 ¹	Egress priority queue of 1p7q4t type	5-7
1p7q4t-out-q2	Egress queue 2 of 1p7q4t type	–
1p7q4t-out-q3	Egress queue 3 of 1p7q4t type	–
1p7q4t-out-q4	Egress queue 4 of 1p7q4t type	–
1p7q4t-out-q5	Egress queue 5 of 1p7q4t type	–
1p7q4t-out-q6	Egress queue 6 of 1p7q4t type	–
1p7q4t-out-q7	Egress queue 7 of 1p7q4t type	–
1p7q4t-out-q-default	Egress default queue of 1p7q4t type	0-4

1. These are either priority or normal queues. If you use the priority keyword in your configuration, these are used as priority queues. Otherwise, they are used as normal queues.



Note

After you use this command in a specified policy map, you cannot use the _____ or _____ command in the same policy map.

This command does not require a license.

Examples

This example shows how to specify a bandwidth rate for a queue:

```
switch(config)# policy-map type queuing my_policy1
switch(config-pmap-que)# class type queuing 1p7q4t-out-pq1
                        bandwidth 10 mbps
```

```
policy-map type queuing my_policy1
```

show class-map	Displays class maps.
	Displays policy maps and statistics.

bandwidth remaining

Syntax Description

Valid values are from 0 to 100.

Defaults

Command Modes

SupportedUserRoles

Command History

4.0	This command was introduced.
-----	------------------------------

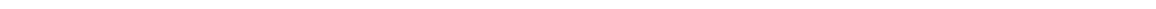
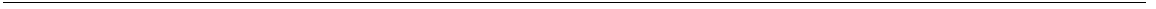
Usage Guidelines

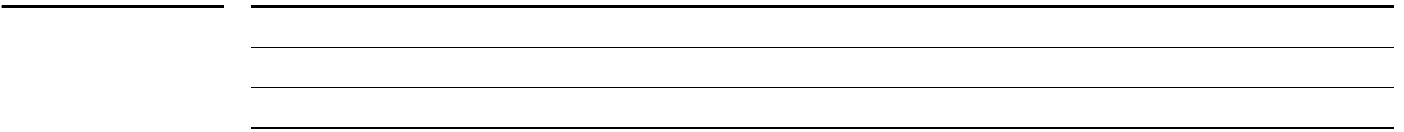
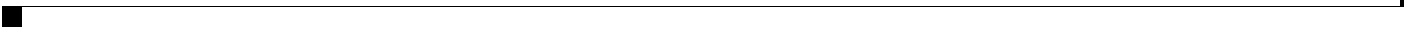
). You can use this command in conjunction with the
command.

See the *Cisco Nexus 7000 Series NX-OS Quality of Service Configuration Guide, Release 4.1*

```
bandwidth remaining percent 25
```

```
policy-map type queuing my_policy1  
  class type queuing 1p7q4t-out-pq1  
    no bandwidth remaining percent 25
```





class type queuing (policy map type queuing)

Syntax Description

Reference to a system-defined class map. For a list of the system-defined type queuing class maps, see [Table 1](#).

Defaults

Command Modes

Supported User Roles

Command History

4.0	This command was introduced.
-----	------------------------------

Usage Guidelines

Examples

```
class type queuing 8q2t-in-q4
```

```
policy-map type queuing my_policy1  
  class type queuing 8q2t-in-q4 insert-before type queuing  
8q2t-in-q2
```

```
policy-map type queuing my_policy1  
  no class type queuing 8q2t-in-q4
```





class-map type qos

exceed-color-in **exceed-color-out**

no class-map type qos *class-map-name* |

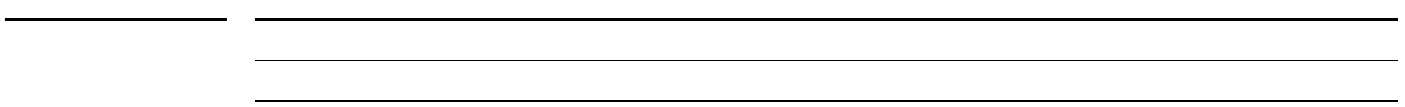
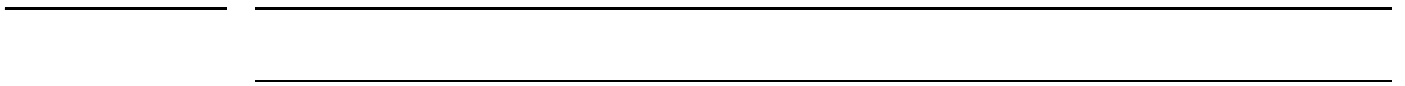
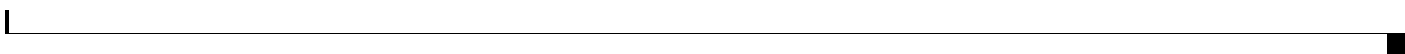
	(Optional) Specifies the component type qos for the class map. By default, the class map type is qos.
	Specifies that if the packet matches any of the criteria configured for this class map with the <code>conform</code> command, then this class map is applied to the packet.
	Specifies that if the packet matches all the criteria configured for this class map with the <code>conform</code> command, then this class map is applied to the packet. This is the default action if <code>conform</code> is not specified. <i>This option does not work. The match criteria is always treated as match-any.</i>
<i>class-map-name</i>	Name assigned to the class map. The name <code>class-default</code> is reserved.
	Type qos conform color class map in the input direction. This color-aware class map makes a policer color-aware for conform action.
	Type qos conform color class map in the output direction. This color-aware class map makes a policer color-aware for conform action.
	Type qos exceed color class map in the input direction. This color-aware class map makes a policer color-aware for exceed action.
	Type qos exceed color class map in the output direction. This color-aware class map makes a policer color-aware for exceed action.
	—qos
	Global configuration
	network-admin vdc-admin
4.0	This command was introduced.

System-defined queuing class map names cannot be deleted. See the *Cisco Nexus 7000 Series NX-OS Quality of Service Configuration Guide, Release 4.1* for more information on this command.

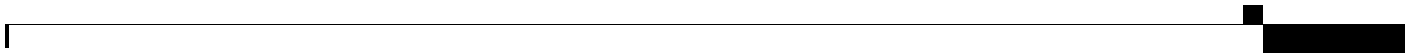
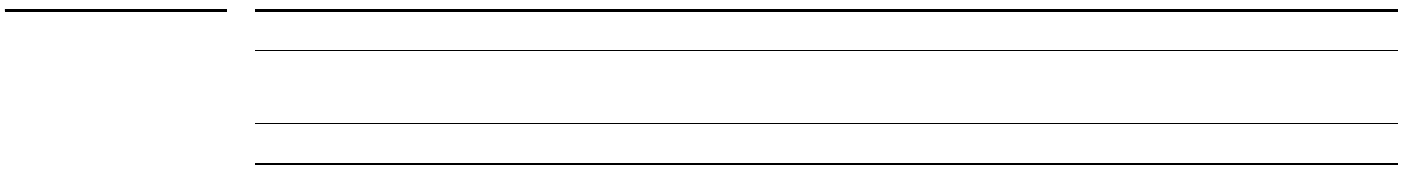


When you configure match all for a QoS class map by entering the *class-map type qos match-all*

```
switch(config-color-map) #
```



```
switch(config)#  
switch(config-cmap-que)#
```



Enables or disables QoS statistics.

Displays QoS statistics.

default (table map)

Syntax Description

Defaults

Command Modes

SupportedUserRoles

Command History

Release	Modification

Usage Guidelines

Examples

Related Commands

Command	Description

description

Syntax Description

Defaults

Command Modes

SupportedUserRoles

Command History

Usage Guidelines

Examples

```
description this policy applies to input packets
```



default (table map)

from 1 to 6
from 2 to 5

show table-map



match

access-group
no

match access-group name

Matches on the characteristics in the ACL name specified.

4.0	This command was introduced.
4.1(2)	This command was updated to allow matching on IPv6 ACLs and IPv4 ACLs.



This example shows how to create a qos class map that matches characteristics of the ACL my_acl:

Displays class maps.

To match on the match commands in a specified class map, use the `match` command in the class map configuration mode. To remove the match on the specified class map, use the `no match` form of this command.

`[]`

`[]`

(Optional) Negates the specified match result.

Matches on the `match` commands in the specified class-map name.

None

Class-map type qos configuration

network-admin
vdc-admin

4.0

This command was introduced.

This command does not require a license.

This example shows how to match on the matches specified in class map named my_test:

Displays class maps.

To define the class of traffic using the Class of Service (CoS) value in a type qos class map, use the command. To remove the match on the CoS value, use the form of this command.

[]

[]

None

Class-map type qos configuration

network-admin
vdc-admin

Release

Modification

To specify a list of values, use one of the following options:

-
-



Note

Examples

Related Commands

■ match cos (class map type qos)

Command	Description

match cos (class map type queuing)

Syntax Description

Defaults

Command Modes

SupportedUserRoles

Command History

Usage Guidelines

-
-



Note

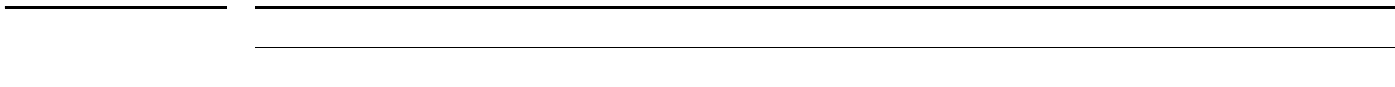
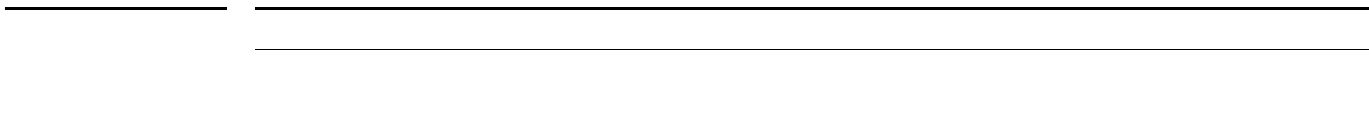
Examples

```
match cos 3
```

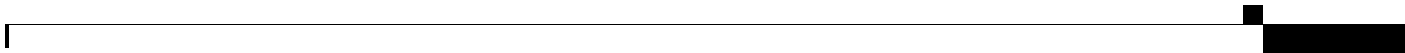
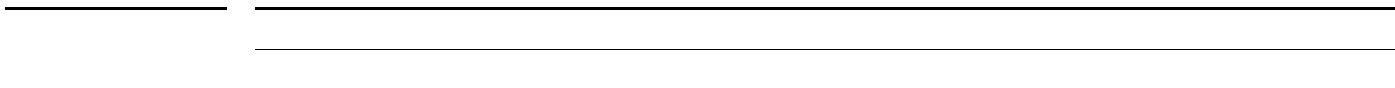
■ _____ |

_____ |
_____ |
_____ |

_____ |
■



```
class-map my_test
  match discard-class 5
```



match ip rtp

Syntax Description

Matches on the specified UDP or list of UDP ports that are using RTP.
Valid values range from 2000 to 65535.

Defaults

Command Modes

Supported User Roles

Command History

4.0	This command was introduced.
-----	------------------------------

Usage Guidelines

-
-

Examples

Related Commands

Displays class maps.

match packet length

packet-length-list

packet-length-list

Syntax Description

packet-length-list

Defaults

Command Modes

Supported User Roles

Command History

Release	Modification

Usage Guidelines

-
-

Examples

Related Commands

Command	Description

match precedence

precedence-list

precedence-list

Syntax Description

precedence-list

Defaults

Command Modes

Supported User Roles

Command History

Release	Modification

Usage Guidelines

Table 3 **Precedence Values**

<0-7>	IP precedence value
critical	Critical precedence (5)
flash	Flash precedence (3)
flash-override	Flash override precedence (4)
immediate	Immediate precedence (2)
internet	Internet network control precedence (6)
network	Network control precedence (7)
priority	Priority precedence (1)
routine	Routine precedence (0)

To specify a list of values, use one of the following options:

Specify a range of values separated by a dash

Specify a noncontiguous list of values separated by commas

This command does not require a license.

This example shows how to match on an IP precedence value:

Displays class maps.

To configure a class map to use a specific protocol as a match criterion, use the command. To remove the specified protocol as a match criteria, use the form of this command.

[]

[]

(Optional) Negates the specified match result.

Matches on the specified protocol name. Valid values are shown in [Table 4](#).

None

Class-map type qos configuration

network-admin
vdc-admin

4.0

This command was introduced.

The list of valid protocol names is shown in [Table 4](#).

Table 4 Protocol Names

Argument	Description
	Dynamic Host Configuration (DHCP)
isis	Intermediate system to intermediate system (IS-IS)
ldp	Label Distribution Protocol (LDP)
netbios	NetBIOS Extended User Interface (NetBEUI)



A maximum of eight different of the above protocols can be matched at one time.

To specify more than one protocol, enter the command more than once with the desired protocol value each time.

This command does not require a license.

This example shows how to match on a specified protocol:

Displays class maps.

To configure a class map to use a specific QoS group value as a match criterion, use the `match qos` command. To remove the specified protocol as a match criteria, use the `no match qos` form of this command.

```
[ ]
```

```
[ ]
```

(Optional) Negates the specified match result.

Matches on the specified QoS group value or list of QoS group values specified in bytes. Valid values are from 0 to 126.

None

Class-map type qos configuration

network-admin
vdc-admin

4.0

This command was introduced.

The QoS group is an internal label and is not part of the packet payload or any packet header. The QoS group values have no mathematical significance. For example, a QoS group value of 2 is not greater than 1; the values are used only to internally differentiate QoS groups. As such, this value has local significance only.

You match on the QoS group only in egress policies because its value is undefined until you set it in an ingress policy.

To specify a list of values, use one of the following options:

- Specify a range of values separated by a dash

- Specify a noncontiguous list of values separated by commas

This command does not require a license.

This example shows how to match on a specified QoS group value:

Displays class maps.

To configure policing of the data rates for a particular class of traffic, use the `police` command. To remove a policing configuration, use the `no police` form of this command.

```

police {
  [ cir ] {
    [ rate ] [ units ] [ percent ]
    [ burst ] [ units ] [ percent ]
  }
}

no police {
  [ cir ] {
    [ rate ] [ units ] [ percent ]
    [ burst ] [ units ] [ percent ]
  }
}

```

(Optional) Sets the committed information rate as a bit rate or a percentage of the link rate.

Committed information rate. The range of values is 1 to 80000000000; the range of policing values that are mathematically significant is 8000 to 80 Gbps.

(Optional) Specifies the units of bits per second.

(Optional) Specifies the units of kilobits per second.

(Optional) Specifies the units of megabits per second.

(Optional) Specifies the units of gigabits per second.

Specifies the percentage of the related parameter.

Specifies percent. Valid values are from 1 to 100.

Sets the committed burst rate, which is how much the cir can be exceeded, either as a bit rate or an amount of time at cir.

Committed burst rate. The range of values is 1 to 536870912. The default value is 200.

(Optional) Specifies the units of bytes per second.

(Optional) Specifies the units of kilobytes per second.

(Optional) Specifies the units of megabytes per second.

(Optional) Specifies the units of milliseconds.

(Optional) Specifies the units of microseconds.

Sets the peak information rate.

Specifies the peak information rate. The range of values is 1 to 80000000000; the range of policing values that are mathematically significant is 8000 to 80 Gbps.

Extended burst rate. The range of values is 1 to 536870912.

	Specifies the extended burst rate. If the bc value is not specified, the default is 200 milliseconds of traffic at the configured rate. The default data rate units are bytes.
	Sets the action to take when the data rate is within bounds.
	Specifies the action of transmitting packets.
	Sets the IP precedence field to the specified value and transmits the packet. Valid values are from 0 to 7.
	Sets the DSCP field to the specified value and transmits the packet. See Table 2 for a list of valid values for this field.
	Sets the CoS field to the specified value and transmits the packet. Valid values are from 0 to 7.
	Sets the discard class field to the specified value and transmits the packet. Valid values are from 0 to 63.
	Sets the QoS group field to the specified value and transmits the packet. Valid values are from 0 to 126.
	Sets the action to take when the data rate is exceeded. The default is drop.
	Specifies the action of dropping packets.
	Sets the DSCP field to the corresponding value in the system-defined table map and transmits the packet.
	Sets the action to take when the data rate violates the configured rate values. The default is drop.
	Sets the DSCP field to the corresponding value in the system-defined table map and transmits the packet.

bc default value is 200 milliseconds of traffic at the configured rate. The default data rate units are bytes.
 be default value is 200 milliseconds of traffic at the configured rate. The default data rate units are bytes.
 exceed default action is drop.
 violate default action is drop.

Policy map type qos class configuration

network-admin
 vdc-admin

4.0 This command was introduced.

This command does not require a license.

This example shows a 1-rate, 2-color policer that transmits if the data rate is within 200 milliseconds of traffic at 256000 bps and marks the Differentiated Service Code Point (DSCP) value based on the system-defined table map pir-markdown-map if the data rate is violated:

This example shows a 1-rate, 3-color policer that transmits if the data rate is within 200 milliseconds of traffic at 256000 bps, marks DSCP based on the system-defined table map cir-markdown-map if the data rate is within 300 milliseconds of traffic at 256000 bps, and drops packets otherwise (pir must equal cir):

```
                police cir 256000 pir 256000 conform transmit exceed set dscp
dscp table cir-markdown-map violate drop
```

This example shows a 2-rate, 3-color policer that transmits and sets CoS to 5 if the data rate is within 200 milliseconds of traffic at 256000 bps, marks DSCP based on the system-defined table map cir-markdown-map if the data rate exceeds 200 milliseconds of traffic at 512 bps, and drops packets otherwise:

```
                policy-map my_policy1
                  class default-class
                    police cir 256000 pir 512000 conform set-cos-transmit 5 exceed
set dscp dscp table cir-markdown-map violate drop
```

Displays policy maps and statistics.

To apply an aggregate policer to a particular class of traffic across multiple interfaces, use the `policy-map` command. To remove an aggregate policer configuration, use the `no` form of this command.

Name of a shared aggregate policer to use.

None

Policy map type qos class configuration

network-admin
vdc-admin

4.0 This command was introduced.

Shared policers can only be applied to interfaces on the same module.



For information about configuring a shared policer, see the `policy-map` command.

This command does not require a license.

This example shows how to configure a shared policer for the class-default class of traffic:

```
policy-map my_policy1
  class default-class
    police aggregate my_aggregate_policer
```

This example shows how to remove the configuration of a shared policer from the class-default class of traffic:

```
policy-map my_policy1
  class default-class
    no police aggregate my_aggregate_policer
```

Configures simultaneous policing across multiple interfaces for a specified class of traffic.

Displays policy maps and statistics.

To create or modify a policy map and enter the policy map type qos configuration mode, use the `policy-map` command. To remove a policy map, use the `no policy-map` form of this command.

```
[ ] [ ]  
[ ] [ ]
```

(Optional) Specifies that policies associated with the first class that matches the packet characteristics are executed. This is the default action if this option is not specified.

Because this is the default action, you do not need to enter this variable; it is here to ensure compatibility with other systems.

Name assigned to a type qos policy map.

The software enters the policy map type qos configuration mode if you enter the `policy-map` command without specifying a type.

Global configuration

```
network-admin  
vdc-admin
```

4.0 This command was introduced.

Use the `policy-map` command to assign policy maps to interfaces.
This command does not require a license.

This example shows how to create or modify a type qos policy map:

```
policy-map my_policy1
```

This example shows how to remove a type qos policy map:

```
no policy-map my_policy1
```

service-policy

Attaches a policy map to an interface.

Displays policy maps and statistics.

To create or modify a policy map and enter the policy map type queuing configuration mode, use the `policy-map type queuing` command. To remove a policy map, use the `no policy-map type queuing` form of this command.

```
[ ]
```

```
[ ]
```

(Optional) Specifies that policies associated with the first class that matches the packet characteristics are executed. This is the default action if this option is not specified.

Because this is the default action, you do not need to enter this variable; it is here to ensure compatibility with other systems.

Name assigned to a type queuing policy map.

None

Global configuration

network-admin
vdc-admin

4.0 This command was introduced.

Use the `policy-map type queuing` command to assign policy maps to interfaces.

This command does not require a license.

This example shows how to create or modify a queuing policy map:

```
policy-map type queuing my_policy1
```

This example shows how to remove a type queuing policy map:

```
no policy-map type queuing my_policy1
```

service-policy

Attaches a policy map to an interface.

Displays policy maps and statistics.

To configure a single output queuing class as the priority queue, use the `priority` command. To remove the priority queue selection, use the `no priority` form of this command.

```
priority [class] [level]
no priority [class] [level]
```

(Optional) Priority level for an output queuing class. Only one priority level is supported. The priority value can only be 1.

The software distributes the bandwidth among the output queues, when you do not specify priority.

Policy map type queuing configuration

```
network-admin
vdc-admin
```

4.0 This command was introduced.

The priority level can only be 1.

Use the `priority` command to allocate the remaining bandwidth among the nonpriority output queues. By default, the software evenly distributes the remaining bandwidth among the nonpriority output queues.

You can also use the `no priority` command to explicitly configure the priority for specified classes of traffic.



After you use this command in a specified policy map, you cannot use the `priority` or `no priority` command in the same policy map.

This command does not require a license.

This example shows how to assign a priority queue:

```
policy-map type queuing match-first my_queue
class type queuing 1p3q4t-out-pq1
priority level 1
```

This example shows how to remove a priority queue:

```
policy-map type queuing match-first my_queue
  class type queuing 1p3q4t-out-pq1
    no priority level 1
```

Configures the bandwidth remaining on the interface in a queue.

Configures policing for specified classes of traffic.

Displays policy maps and statistics.

	Sets the action to take when the data rate is within bounds.
	Specifies the action of transmitting packets.
	Sets the IP precedence field to the specified value and transmits the packet. Valid values are from 0 to 7.
	Sets the DSCP field to the specified value and transmits the packet. See Table 2 for a list of valid values for this field.
	Sets the CoS field to the specified value and transmits the packet. Valid values are from 0 to 7.
	Sets the discard class field to the specified value and transmits the packet. Valid values are from 0 to 63.
	Sets the QoS group field to the specified value and transmits the packet. Valid values are from 0 to 126.
	Sets the action to take when the data rate is exceeded. The default is drop.
	Specifies the action of dropping packets.
	Sets the DSCP field to the corresponding value in the system-defined table map and transmits the packet.
	Sets the action to take when the data rate violates the configured rate values. The default is drop.
	Sets the DSCP field to the corresponding value in the system-defined table map and transmits the packet.

type default value is qos.

bc default value is 200 milliseconds of traffic at the configured rate. The default data rate units are bytes.

be default value is 200 milliseconds of traffic at the configured rate. The default data rate units are bytes.

exceed default action is drop.

violate default action is drop.

Global configuration

network-admin

vdc-admin

4.0	This command was introduced.
-----	------------------------------

The interfaces attached to the shared policer must be on the same module. See the command for an example of using a shared policer.

This command does not require a license.

This example shows configuration of a 2-rate, 3-color shared policer that transmits and sets CoS to 5 if the data rate is within 200 milliseconds of traffic at 256000 bps, marks DSCP based on the system-defined table map cir-markdown-map if the data rate exceeds 200 milliseconds of traffic at 512 bps, and drops packets otherwise:

```
qos shared-policer my_shared_policer cir 256000 pir 512000 conform
set-cos-transmit 5 exceed set dscp dscp table cir-markdown-map violate drop
```

Configures simultaneous policing of the data rates for a particular class of traffic across multiple interfaces.

Displays policy maps and statistics.

To enable QoS statistics, use the `show qos statistics` command. To disable QoS statistics, use the `no show qos statistics` form of this command.

This command has no arguments or keywords.

Enabled

Global configuration

network-admin
vdc-admin

4.0 This command was introduced.

This command does not require a license.

This example shows how to enable QoS statistics:

```
qos statistics
```

This example shows how to disable QoS statistics:

```
no qos statistics
```

Displays policy maps and statistics.

To configure tail drop by setting queue limits on both ingress and egress queues, use the command. To remove a queue limit, use the form of this command.

```

[ ] {queue-size
percent-queue-size

cos-value queue-size
percent-queue-size

```

(Optional) Applies the queue limit to packets with the specified CoS value. Valid values are from 0 to 7.

Specifies the queue size threshold. The range is from 1 to 83886080.

(Optional) Specifies that queue size is in packets. If not specified, packets is the default units.

(Optional) Specifies that the queue size is in bytes.

(Optional) Specifies that the queue size is in kilobytes.

(Optional) Specifies that the queue size is in megabytes.

(Optional) Specifies that the queue size is in milliseconds at the underlying interface minimum guaranteed link rate.

(Optional) Specifies that queue size is in microseconds at the underlying interface minimum guaranteed link rate.

Specifies the percentage of the buffer memory used by the queue. The range is from 1 to 100.

queue-size is in packets by default.

Policy map type queuing class configuration

network-admin
vdc-admin

4.0 This command was introduced.

The system drops packets that exceed the configured queue-size threshold.

By default, the queue limit is applied to all packets with a CoS value not assigned a queue limit.

The queue limit is not supported on ingress policies on the 10-Gbps interfaces.

Tail drop and weighted random early detection (WRED) cannot be configured in the same class. For information about configuring WRED, see the `show class` command.

This command does not require a license.

This example shows how to assign a queue limit to a policy map queuing class that applies only to the specified CoS value:

This example shows how to remove a queue limit from a policy map queuing class:

Configures weighted random early detection (WRED).

Displays policy maps and statistics.

To configure weighted random early detection (WRED) on both ingress and egress queues by setting aggregate minimum and maximum packet drop threshold default values for specific CoS values, use the `ipconfig wred` command. To remove a WRED configuration, use the `no ipconfig wred` form of this command.

```

ipconfig wred { ingress | egress } [ queue ] {
  [ cos ] {
    [ min-threshold ] {
      [ packets | bytes | kilobytes | megabytes |
        milliseconds | microseconds ]
    }
    [ max-threshold ] {
      [ packets | bytes | kilobytes | megabytes |
        milliseconds | microseconds ]
    }
  }
}

```

Specifies the CoS values where the software applies thresholds. Valid values are from 0 to 7.

Specifies the minimum threshold. Valid values are from 1 to 52428800.

(Optional) Specifies that thresholds are in packets.

(Optional) Specifies that thresholds are in bytes.

(Optional) Specifies that thresholds are in kilobytes.

(Optional) Specifies that thresholds are in megabytes.

(Optional) Specifies that thresholds are in milliseconds at the underlying interface minimum guaranteed link rate

(Optional) Specifies that thresholds are in microseconds at the underlying interface minimum guaranteed link rate.

(Optional) Specifies the minimum percentage of the buffer memory used by the queue. The range is from 1 to 100.

Specifies the maximum threshold. Valid values are from 1 to 52428800.

(Optional) Specifies the maximum percentage of the buffer memory used by the queue. The range is from 1 to 100.

Thresholds are in packets by default.

The `ipconfig wred` command must be specified for a queue to establish default thresholds for any CoS values that are not specified in `ipconfig wred` commands for the same queue.

Policy map type queuing class configuration

```

network-admin
vdc-admin

```



You must enter the _____ command before you enter the _____ command.

The minimum and maximum threshold units must match.

The system drops packets that exceed the minimum threshold at an increasing rate as the maximum threshold is reached. By default, the units are in packets,

WRED and tail drop cannot be configured in the same class. For information about configuring tail drop, see the _____ command.

You cannot configure WRED on ingress 10-Gigabit Ethernet ports.

For CoS lists, you can use the following:

Specify only one value—

Specify a range of values—

Specify a comma-separated list of values—**cos 1, 4-6**

```
random-detect cos 5,7 15 mbytes 20 mbytes
```

```
policy-map type queuing match-first my_queue
  class type queuing 1p3q4t-out-pq1
    random-detect cos-based aggregate 10 mbytes 20 mbytes
    random-detect cos 5 percent 5 percent 15
```

```
policy-map type queuing match-first my_queue
  class type queuing 1p3q4t-out-pq1
    no random-detect cos-based aggregate 10 mbytes 20 mbytes
    no random-detect cos 5 percent 5 percent 15
```

random-detect

cos-based

queue limit

show policy-map

random-detect cos-based

no

random-detect cos-based aggregate minimum-threshold packets bytes
kbytes mbytes ms us percent maximum-threshold
packets bytes kbytes mbytes ms us percent

no random-detect cos-based aggregate minimum-threshold packets bytes
kbytes mbytes ms us percent maximum-threshold
packets bytes kbytes mbytes ms us percent

aggregate

random-detect

packets

bytes

kbytes

mbytes

ms

us



queue-limit



```
policy-map type queuing match-first my_queue
  class type queuing lp3q4t-out-pq1
    random-detect cos-based aggregate 10 mbytes 20 mbytes
    random-detect cos 5,7 15 mbytes 20 mbytes
```

```
policy-map type queuing match-first my_queue
  class type queuing lp3q4t-out-pq1
    random-detect cos-based aggregate 10 mbytes 20 mbytes
    random-detect cos 5 percent 5 percent 15
```

```
policy-map type queuing match-first my_queue
  class type queuing lp3q4t-out-pq1
    no random-detect cos-based aggregate 10 mbytes 20 mbytes
    no random-detect cos 5 percent 5 percent 15
```

random-detect

queue limit

show policy-map

service-policy

Syntax Description

Defaults

Command Modes

SupportedUserRoles

Command History

Release

Modification

Usage Guidelines



Note

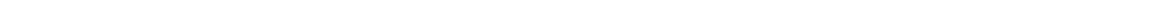
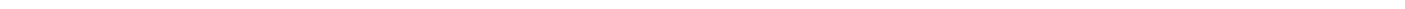
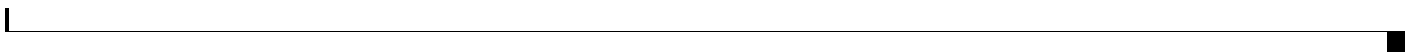
Examples

```
switch(config-vlan)#  
switch(config-vlan)#  
switch(config-vlan)#
```

```
switch(config)# interface ethernet 2/1  
                 service-policy type queuing input my_input_q_policy
```

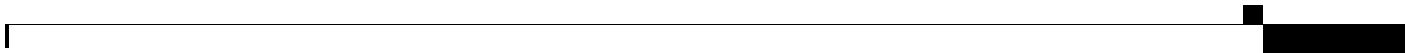
```
                 vlan 1  
                 no service-policy input my_input_policy
```

```
policy-map my_policy1
  class traffic_class2
    no set cos 3
```



```
policy-map type queuing match-first my_queuing_policy1
  class type queuing 2q4t-in-q-default
  set cos 3
```

```
policy-map type queuing match-first my_queuing_policy1
```



```
class type queuing 2q4t-in-q-default
no set cos 3
```



```
policy-map my_policy1
  class traffic_class2
    set discard-class 40
```

]
no set dscp tunnel]

tunnel

tunnel



set discard-class set precedence

show policy-map

precedence

no set

set precedence tunnel

no set precedence tunnel

tunnel

tunnel



set discard-class set dscp

show policy-map



set qos-group

no

set qos-group

no set qos-group

show policy-map



set table

no

set *header-parameter* {*same-header-parameter* | *output-header-parameter*} **table** {*table-map-name* | *mutation-map*}

no set *header-parameter* {*same-header-parameter* | *output-header-parameter*} **table** {*table-map-name* | *mutation-map*}

header-parameter

discard-class

cos dscp precedence

same-header-parameter

output-header-parameter

table-map-name

mutation-map

set table

shape

Syntax Description

Note

Defaults

Command Modes

Supported User Roles

Command History

Release	Modification

Usage Guidelines



Note

■ shape

Examples

Related Commands

Command	Description
---------	-------------

show class-map type qos

Syntax Description

Defaults

Command Modes

Supported User Roles

Command History

Release	Modification

Usage Guidelines

Table 6 System-Defined Type qos Class Maps That Display with This Command

Type qos class-maps
=====

class-map type qos match-all abc
 match dscp 0-3

class-map type qos conform-color-in
 Description: Conform color map in input direction

class-map type qos conform-color-out
 Description: Conform color map in output direction

class-map type qos exceed-color-in
 Description: Exceed color map in input direction

class-map type qos exceed-color-out
 Description: exceed color map in output direction


```
class-map type queuing match-any 8q2t-in-q3
  Description: Classifier for ingress queue 3 of type 8q2t

class-map type queuing match-any 8q2t-in-q4
  Description: Classifier for ingress queue 4 of type 8q2t

class-map type queuing match-any 8q2t-in-q5
  Description: Classifier for ingress queue 5 of type 8q2t

class-map type queuing match-any 8q2t-in-q6
  Description: Classifier for ingress queue 6 of type 8q2t

class-map type queuing match-any 8q2t-in-q7
  Description: Classifier for ingress queue 7 of type 8q2t

class-map type queuing match-any 8q2t-in-q-default
  Description: Classifier for ingress default queue of type 8q2t
  match cos 0-4

class-map type queuing match-any 1p3q4t-out-pq1
  Description: Classifier for egress priority queue of type 1p3q4t
  match cos 5-7

class-map type queuing match-any 1p3q4t-out-q2
  Description: Classifier for egress queue 2 of type 1p3q4t

class-map type queuing match-any 1p3q4t-out-q3
  Description: Classifier for egress queue 3 of type 1p3q4t

class-map type queuing match-any 1p3q4t-out-q-default
  Description: Classifier for egress default queue of type 1p3q4t
  match cos 0-4

class-map type queuing match-any 1p7q4t-out-pq1
  Description: Classifier for egress priority queue of type 1p7q4t
  match cos 5-7

class-map type queuing match-any 1p7q4t-out-q2
  Description: Classifier for egress queue 2 of type 1p7q4t

class-map type queuing match-any 1p7q4t-out-q3
  Description: Classifier for egress queue 3 of type 1p7q4t

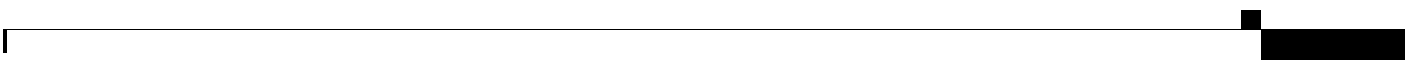
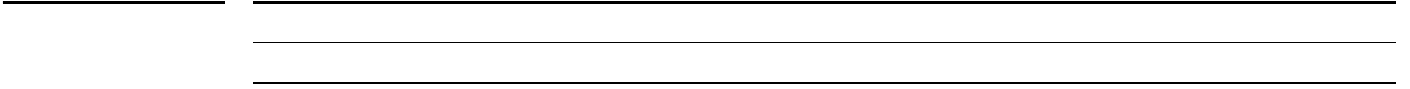
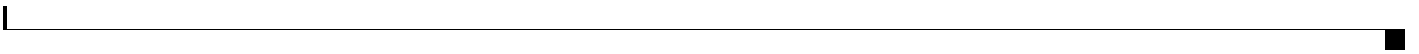
class-map type queuing match-any 1p7q4t-out-q4
  Description: Classifier for egress queue 4 of type 1p7q4t

class-map type queuing match-any 1p7q4t-out-q5
  Description: Classifier for egress queue 5 of type 1p7q4t

class-map type queuing match-any 1p7q4t-out-q6
  Description: Classifier for egress queue 6 of type 1p7q4t

class-map type queuing match-any 1p7q4t-out-q7
  Description: Classifier for egress queue 7 of type 1p7q4t

class-map type queuing match-any 1p7q4t-out-q-default
  Description: Classifier for egress default queue of type 1p7q4t
  match cos 0-4
```



This example shows how to display all type queuing policy maps:

```
switch(config)#  
  
Type queuing policy-maps  
=====
```

```
policy-map type queuing q1  
  class type queuing 8q2t-in-q-default  
    set cos 4  
policy-map type queuing default-in-policy  
  class type queuing in-q1  
    queue-limit percent 50  
    bandwidth percent 80  
  class type queuing in-q-default  
    queue-limit percent 50  
    bandwidth percent 20  
policy-map type queuing default-out-policy  
  class type queuing out-pq1  
    priority level 1  
    queue-limit percent 16  
  class type queuing out-q2  
    queue-limit percent 1  
  class type queuing out-q3  
    queue-limit percent 1  
  class type queuing out-q-default  
    queue-limit percent 82  
    bandwidth remaining percent 25
```

Creates or modifies a class map.

```
policy statistics status:  enabled

Class-map (queuing):  in-q1 (match-any)
  queue-limit percent 50
  bandwidth percent 50
  queue dropped pkts : 0

Class-map (queuing):  in-q-default (match-any)
  queue-limit percent 50
  bandwidth percent 80
  queue dropped pkts : 0

Service-policy (queuing) output:  default-out-policy
policy statistics status:  enabled

Class-map (queuing):  out-pq1 (match-any)
  priority level 1
  queue-limit percent 16
  queue dropped pkts : 0

Class-map (queuing):  out-q2 (match-any)
  queue-limit percent 1
  queue dropped pkts : 0

Class-map (queuing):  out-q3 (match-any)
  queue-limit percent 1
  queue dropped pkts : 0

Class-map (queuing):  out-q-default (match-any)
  queue-limit percent 82
  bandwidth remaining percent 25
  queue dropped pkts : 0
```

```
switch(config)#
```

```
Global statistics status : enabled
```

```
Ethernet2/2
```

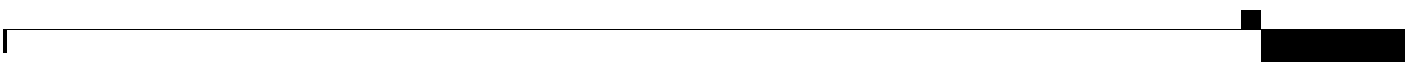
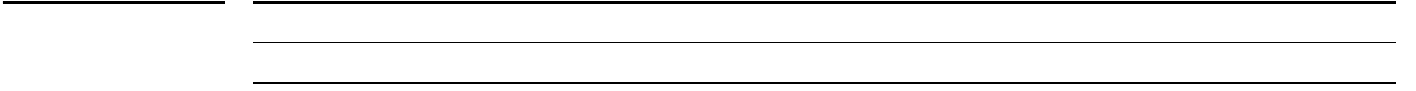
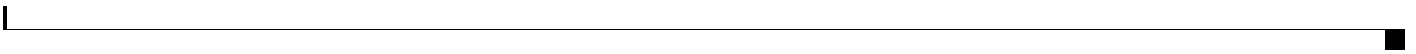
```
Service-policy (qos) input: pmap
policy statistics status: enabled
```

```
Class-map (qos): map (match-all)
1000000 packets
Match: dscp 46
police cir percent 20 bc 200 ms
conformed 78962304 bytes, 2725540 bps action: transmit
violated 49037696 bytes, 1692633 bps action: drop
```

```
Class-map (qos): class-default (match-any)
1000000 packets
police cir percent 10 bc 200 ms
conformed 39481856 bytes, 1362794 bps action: transmit
violated 88518144 bytes, 3055378 bps action: drop
```

switch(config)#

Interface/VLAN	[Status]:	INP QOS	OUT QOS	INP QUE	OUT QUE
port-channel15	[Active]:			default-in-po	default-out-p
port-channel20	[Active]:			default-in-po	default-out-p
port-channel30	[Active]:			default-in-po	default-out-p
port-channel37	[Active]:			default-in-po	default-out-p
port-channel50	[Active]:			default-in-po	default-out-p
Ethernet2/2	[Active]:			default-in-po	default-out-p
Ethernet2/3	[Active]:			default-in-po	default-out-p



```
switch(config)#
```

```
Global statistics status : enabled
```

```
Vlan 1
```

```
Service-policy (qos) input: abc  
policy statistics status: enabled
```

```
Class-map (qos): abc (match-all)  
Match: dscp 0-3  
set dscp 3  
set qos-group 3  
set cos dscp table cos-dscp-map
```

```
Class-map (qos): class-default (match-any)
Service-policy (qos) output: def
policy statistics status: enabled
```



```
switch(config)#
```

```
switch(config)# qos shared-policer foo cir 300 mbps bc 200 ms conform transmit violate drop
```



```
switch# show queuing interface ethernet 2/9
```

```
Interface Ethernet2/9 TX Queuing strategy: Weighted Round-Robin
```

```
Port QoS is enabled
```

```
Queuing Mode in TX direction: mode-cos
```

```
Transmit queues [type = 1p3q4t]
```

Queue Id	Scheduling	Num of thresholds
1p3q4t-out-q-default	WRR	04
1p3q4t-out-q2	WRR	04
1p3q4t-out-q3	WRR	04
1p3q4t-out-pq1	Priority	04

```
Configured WRR
```

```
WRR bandwidth ratios: 25[1p3q4t-out-q-default] 38[1p3q4t-out-q2] 37[1p3q4t-out-q3]
```

```
WRR configuration read from HW
```

```
WRR bandwidth ratios: 24[1p3q4t-out-q-default] 37[1p3q4t-out-q2] 37[1p3q4t-out-q3]
```

Configured queue-limit ratios
 queue-limit ratios: 82[1p3q4t-out-q-default] 1[1p3q4t-out-q2] 1[1p3q4t-out-q3] 16[1p3q4t-out-pq1]
 queue-limit ratios configuration read from HW
 queue-limit ratios: 82[1p3q4t-out-q-default] 1[1p3q4t-out-q2] 1[1p3q4t-out-q3] 16[1p3q4t-out-pq1]

Thresholds:

COS	Queue	Threshold Type	Min	Max
0	1p3q4t-out-q-default	DT	100	100
1	1p3q4t-out-q-default	DT	100	100
2	1p3q4t-out-q-default	DT	100	100
3	1p3q4t-out-q-default	DT	100	100
4	1p3q4t-out-q-default	DT	100	100
5	1p3q4t-out-pq1	DT	100	100
6	1p3q4t-out-pq1	DT	100	100
7	1p3q4t-out-pq1	DT	100	100

Interface Ethernet2/9 RX Queuing strategy: Weighted Round-Robin

Queuing Mode in RX direction: mode-cos

Receive queues [type = 2q4t]

Port Cos not configured

Queue Id	Scheduling	Num of thresholds
2q4t-in-q-default	WRR	04
2q4t-in-q1	WRR	04

Configured WRR

WRR bandwidth ratios: 50[2q4t-in-q-default] 50[2q4t-in-q1]

WRR configuration read from HW

WRR bandwidth ratios: 50[2q4t-in-q-default] 50[2q4t-in-q1]

Configured queue-limit ratios

queue-limit ratios: 50[2q4t-in-q-default] 50[2q4t-in-q1]

queue-limit ratios configuration read from HW

queue-limit ratios: 50[2q4t-in-q-default] 50[2q4t-in-q1]

Thresholds:

COS	Queue	Threshold Type	Min	Max
0	2q4t-in-q-default	DT	100	100
1	2q4t-in-q-default	DT	100	100
2	2q4t-in-q-default	DT	100	100
3	2q4t-in-q-default	DT	100	100
4	2q4t-in-q-default	DT	100	100
5	2q4t-in-q1	DT	100	100
6	2q4t-in-q1	DT	100	100
7	2q4t-in-q1	DT	100	100

```
switch(config)#
version 4.0(3)
qos statistics
class-map type qos match-all abc
    match dscp 0-3
class-map type qos match-all qqq
class-map type qos match-all class1
class-map type qos match-all cmapdef
class-map type qos match-all my_test
    match cos 5
class-map type qos match-all my_class
    match discard-class 56
class-map type qos match-all class_acl
class-map type qos match-all class_protocol
class-map conform-color-in
class-map conform-color-out
class-map exceed-color-in
class-map exceed-color-out
class-map type queuing match-any 2q4t-in-q1
    match cos 5-7
class-map type queuing match-any 2q4t-in-q-default
    match cos 0-4
```

```
class-map type queuing match-any 8q2t-in-q1
  match cos 5-7
class-map type queuing match-any 8q2t-in-q2
class-map type queuing match-any 8q2t-in-q3
class-map type queuing match-any 8q2t-in-q4
class-map type queuing match-any 8q2t-in-q5
class-map type queuing match-any 8q2t-in-q6
class-map type queuing match-any 8q2t-in-q7
class-map type queuing match-any 8q2t-in-q-default
  match cos 0-4
class-map type queuing match-any 1p3q4t-out-pq1
  match cos 5-7
class-map type queuing match-any 1p3q4t-out-q2
class-map type queuing match-any 1p3q4t-out-q3
class-map type queuing match-any 1p3q4t-out-q-default
  match cos 0-4
class-map type queuing match-any 1p7q4t-out-pq1
  match cos 5-7
class-map type queuing match-any 1p7q4t-out-q2
class-map type queuing match-any 1p7q4t-out-q3
class-map type queuing match-any 1p7q4t-out-q4
class-map type queuing match-any 1p7q4t-out-q5
class-map type queuing match-any 1p7q4t-out-q6
class-map type queuing match-any 1p7q4t-out-q7
class-map type queuing match-any 1p7q4t-out-q-default
  match cos 0-4
table-map cir-markdown-map
  default copy
  from 10,12 to 12
  from 18,20 to 20
  from 26,28 to 28
  from 34,36 to 36
table-map pir-markdown-map
  default copy
  from 10,12 to 14
  from 18,20 to 22
  from 26,28 to 30
  from 34,36 to 38
table-map cos-dscp-map
  default copy
  from 0 to 2
table-map cos-precedence-map
  default copy
table-map cos-discard-class-map
  default copy
table-map dscp-cos-map
  default copy
table-map dscp-precedence-map
  default copy
table-map dscp-discard-class-map
  default copy
table-map precedence-cos-map
  default copy
table-map precedence-dscp-map
  default copy
table-map precedence-discard-class-map
  default copy
table-map discard-class-cos-map
  default copy
table-map discard-class-dscp-map
  default copy
table-map discard-class-precedence-map
  default copy
table-map t1
```

```

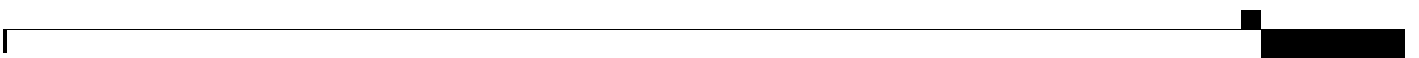
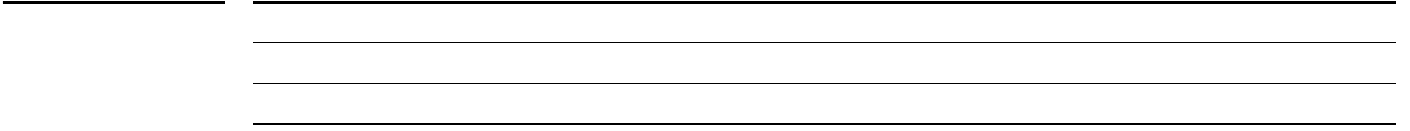
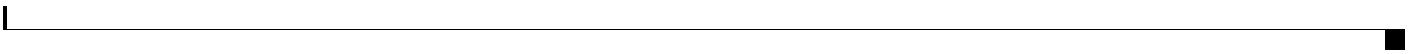
    default copy
table-map abc
    default copy
table-map my_table1
    default copy
table-map steve_tm2
    default 3
table-map steve_table_map
    default ignore
policy-map type queuing q
policy-map type queuing pq
    class type queuing 8q2t-in-q4
        queue-limit cos 3 1000 packets
        queue-limit cos 4 1000 packets
        queue-limit 10000 packets
policy-map type queuing q1
policy-map type queuing q2
    class type queuing 1p3q4t-out-pq1
policy-map type queuing p_q
    class type queuing 8q2t-in-q4
    class type queuing 8q2t-in-q-default
    set cos 4
policy-map type queuing abcq
    class type queuing 8q2t-in-q4
policy-map type queuing p_q2
    class type queuing 1p7q4t-out-q2
    shape average percent 10
policy-map type queuing steve_q
    class type queuing 1p7q4t-out-pq1
    class type queuing 1p7q4t-out-q4
    class type queuing 1p7q4t-out-q2
policy-map type queuing my_queue
    class type queuing 1p3q4t-out-pq1
policy-map type queuing steve_pq1
    class type queuing 1p3q4t-out-pq1
policy-map type qos abc
    class abc

switch# show running-config ipqos
version 4.0(3)
class-map type qos match-all abc
    match dscp 0-3
class-map type qos match-all qqq
class-map type qos match-all class1
class-map type qos match-all cmapdef
class-map type qos match-all my_test
    match cos 5
class-map type qos match-all my_class
    match discard-class 56
class-map type qos match-all class_acl
class-map type qos match-all class_protocol
table-map cos-dscp-map
    default copy
    from 0 to 2
table-map t1
    default copy
table-map abc
    default copy
table-map my_table1
    default copy
table-map steve_tm2
    default 3
table-map steve_table_map

```

```
default ignore
policy-map type queuing q
policy-map type queuing pq
  class type queuing 8q2t-in-q4
    queue-limit cos 3 1000 packets
    queue-limit cos 4 1000 packets
    queue-limit 10000 packets
policy-map type queuing q1
policy-map type queuing q2
  class type queuing 1p3q4t-out-pq1
policy-map type queuing p_q
  class type queuing 8q2t-in-q4
  class type queuing 8q2t-in-q-default
  set cos 4
policy-map type queuing abcq
  class type queuing 8q2t-in-q4
policy-map type queuing p_q2
  class type queuing 1p7q4t-out-q2
  shape average percent 10
policy-map type queuing steve_q
  class type queuing 1p7q4t-out-pq1
  class type queuing 1p7q4t-out-q4
  class type queuing 1p7q4t-out-q2
policy-map type queuing my_queue
  class type queuing 1p3q4t-out-pq1
policy-map type queuing steve_pq1
  class type queuing 1p3q4t-out-pq1
policy-map type qos abc
  class abc
  set dscp 3
  set qos-group 3
  set cos dscp table cos-dscp-map
  class class-default
policy-map type qos def
policy-map type qos policy1
  class class-default
  class class1
policy-map type qos polilcy1
policy-map type qos my_policy
  class class-default
policy-map type qos my_policy1
policy-map type queuing my_policy1
  class type queuing 1p7q4t-out-q2
policy-map type queuing shape_queue
  class type queuing 1p3q4t-out-pq1
  queue-limit 38984 packets
  random-detect cos-based
policy-map type queuing shape_queues
  class type queuing 1p3q4t-out-pq1
policy-map type queuing 1p3q4t-out-pq1
policy-map type queuing untrusted_port_cos
  class type queuing 2q4t-in-q-default

interface Ethernet2/4
  service-policy type qos input abc
  service-policy type qos output def
  service-policy type queuing output q1
```





```
switch(config-pmap-c-qos)#
```

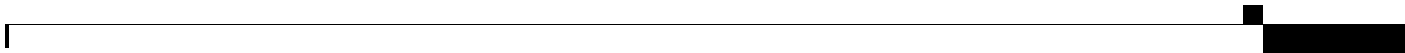
```
Table-map cos-dscp-map  
default copy
```

```
switch(config)#
```

```
Table-map cos-dscp-map  
from 0 to 0  
from 1 to 1
```



from 2 to 2
from 3 to 3
from 4 to 4
from 5 to 5
from 6 to 6
from 7 to 7





```
switch(config)#  
switch(config-tmap)#
```

```
switch(config)#  
switch(config)#
```

