show mls qos through wrr-queue threshold

show metadata application table

To display a list of metadata applications defined on a device, use the **show metadata application table** command in privileged EXEC mode.

show metadata application table

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.2(1)T	This command was introduced.
15.1(1)SY	This command was integrated into Cisco IOS Release 15.1(1)SY.

Examples

The following is sample output from the **show metadata application table** command:

```
Device# show metadata application table

ID     Name                  Vendor                Vendor id
------------------------------------------------------------------------------
113    telepresence-media    -                     -
114    telepresence-contr$   -                     -
478    telepresence-data     -                     -
414    webex-meeting         -                     -
56     citrix                -                     -
81     cisco-phone           -                     -
472    vmware-view           -                     -
473    wyze-zero-client      -                     -
61     rtp                   -                     -
64     h323                  -                     -
5060   sip                   -                     -
554    rtsp                  -                     -
496    jabber                -                     -
5222   xmpp-client           -                     -
```

The table below describes the significant fields shown in the display.

Table 1: show metadata application table Field Descriptions

Field	Description
ID	Application ID. Internally maps to the application name.
Name	Name of the application.

Related Commands

Command	Description
metadata application-params	Enters metadata application entry configuration mode and creates new metadata application parameters.

show metadata flow

To display metadata flow information, use the **show metadata flow** command in privileged EXEC mode.

show metadata flow {**classification table** | **local-flow-id** *flow-id* [**source** {**msp** | **nbar** | **rsvp**}] | **statistics** | **table** [{[**application name** *app-name* [{**ip** | **ipv6**}]] | **filter** [{**destination** {*ip-address ipv6-address*}}] [{**source** {*ip-address ipv6-address*}}] | **ip** | **ipv6**}]}

Syntax Description

classification	Displays metadata control plane classification information.
table	Displays metadata flow information for all flow entries.
local-flow-id *flow-id*	Displays information for the specified local flow ID, which is a unique ID for a given five-tuple metadata flow entry created locally. • The local flow ID is automatically generated when the flow entry is created.
source	(Optional) Displays metadata flow information for the specified source.
msp	(Optional) Displays metadata flow information for Media-Proxy Services.
nbar	(Optional) Displays metadata flow information for Network-Based Application Recognition (NBAR).
rsvp	(Optional) Displays metadata flow information for the Resource Reservation Protocol (RSVP).
statistics	Displays metadata flow statistics.
application	(Optional) Displays metadata flow information for the specified application.
name *app-name*	(Optional) Specifies all the flows for the specified application.
ip	(Optional) Displays metadata flow information for the specified IPv4 address.
ipv6	(Optional) Displays metadata flow information for the specified IPv6 address.
filter	(Optional) Displays metadata flow information based on the filter criteria.
destination }	(Optional) Displays metadata flow information for the specified destination address.
source	(Optional) Displays metadata flow information for the specified source address.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
15.2(1)T	This command was introduced.
15.1(1)SY	This command was integrated into Cisco IOS Release 15.1(1)SY.

Release	Modification
15.3(1)T	This command was modified. The **source**, **msp**, **nbar**, and **rsvp** keywords were added. IPv6 address information was added to the command output.

Examples

The following is sample output from the **show metadata flow classification table** command:

```
Device# show metadata flow classification table

Policy Type Codes:
QOS     : QOS                            PM      : Performance Monitor
PMD     : Performance Monitor Dynamic    MACE    : MACE
-------------------------------------------------------------------------------
Target          Flow ID    Dir   Policy     Filter(s)
                                 Type
--------------+----------+-----+----------+----------------------------------

Se2/0           1          OUT
Se2/0           2          OUT
Se2/0           3          OUT
Se2/0           4          OUT   QOS        application telepresence-media
Se2/0           5          OUT   QOS        application telepresence-media
Se2/0           6          OUT
Se2/0           7          OUT
Se2/0           8          OUT   QOS        application telepresence-media
Se2/0           9          OUT
```

The table below describes the significant fields shown in the display.

Table 2: show metadata classification table Field Descriptions

Field	Description
Target	Interface name for which the policy map is attached.
Flow ID	Flow entry identifier.
Dir	Direction of the flow entry. IN indicates that the flow is entering the network element. OUT indicates that the flow is exiting the network element. CL indicates that the flow has been classified successfully.

The following is sample output from the command:

```
Device# show metadata flow local-flow-id 22

To                                      From

Protocol SPort   DPort   Ingress I/F             Egress I/F
2012:33:1:2::2                          2012:33:1:2::1
UDP      49002   49003   n/a                     Serial2/0

Metadata Attributes :

Global Session Id           :   74657374-2D54-502D-3100-000000000000-00000000-00000000
Clock Frequency             :   123456
```

```
End Point Model             :   Test-TP-Model
Application Signaling Type  :   sip
Application Transport Type  :   rtp
Application Traffic Type    :   realtime
Application Device Class    :   room-conferencing
Application Category        :   voice-and-video
Application Group           :   telepresence-group
Application Media Type      :   video
Application Tag             :   218103921 (telepresence-media)
Application Name            :   telepresence-media

Matched filters :

 Direction: IN:
 Direction: OUT:
```

The table below describes the significant fields shown in the display.

Table 3: show metadata flow local-flow-id Field Descriptions

Field	Description
To	Destination address of the flow entry.
From	Source address from where the flow entry is sent.
Protocol	Transport protocol, TCP or UDP, used for the flow.
SPort	Source port of the flow entry. Valid range is from 1 to 65535.
DPort	Destination port of the flow entry. Valid range is from 1 to 65535.
Ingress I/F	Ingress interface. Incoming interface for a given network element.
Egress I/F	Egress interface. Outgoing interface for a given network element.
Global Session ID	Global session ID of the application.
Clock Frequency	Frequency of the application clock.
End Point Model	Model of the application.
Application Signaling Type	Name of the application vendor.
Application Transport Type	Transport type of the metadata application.
Application Traffic Type	Traffic type of the metadata application.
Application Device Class	Classification of the metadata application.
Application Category	Category of the metadata application.
Application Group	Group of the metadata application.
Application Media Type	Type of media for the metadata application.

Field	Description
Application Tag	Application identifier. • Every metadata application name is mapped to a unique application tag.
Application Name	Name of the metadata application.
Direction	Direction for the application.

The following is sample output from the **show metadata flow statistics** command:

```
Device# show metadata flow statistics

Interface specific report :

Serial2/0: Classified flows : Ingress 0, Egress 0

Chunk statistics :

Type               Allocated       Returned        Failed

IP Flow             9                 0                 0
Flow Key            29                20                0
Source List         4                 0                 0
Flow Info           29                29                0
Attribute Data      29                29                0
Feature Object      2                 0                 0

Event Statistics:

Add Flow                : 9         Delete Flow             : 0
Received                : 30        Rejected                : 0
Transient               : 0         Posted                  : 29
Ingress Change          : 0         Egress Change           : 11
Unknown                  : 0         Source Limit Exceeded    : 0
```

The table below describes the significant fields shown in the displays.

Table 4: show metadata flow statistics Field Descriptions

Field	Description
Interface specific report	Report specifying the number of egress or ingress flows per interface.
Ingress	Number of flows that entered the interface.
Egress	Number of flows that exited the interface.
Chunk statistics	Information specific to the chunk memory.
Type	Refers to the type of information or data structure usage for which memory consumption is recorded.
Allocated	Memory allocated for the specified type of information.
Returned	Memory returned to the system for the specified type of information.

Field	Description
Failed	Record of the memory allocation failures.
Event Statistics	Information specific to every flow event that has occurred on the device.
Add Flow	Number of flows added into the network element.
Delete Flow	Number of flows deleted from the network element.
Received	Number of flows received by the network element.
Rejected	Number of flows rejected by the network element.
Transient	Number of flows that are in transient state.
Posted	Number of change notifications received by the Resource Reservation Protocol (RSVP).
Ingress Change	Number of times the ingress interface changed.
Egress Change	Number of times the egress interface changed.
Unknown	Number of times an unknown event was received.
Source Limit Exceeded	Number of times the flow limit defined for the device was exceeded.

The following is sample output from the **show metadata flow table** command:

```
Device# show metadata flow table

Total number of IPV4 metadata flows 6

Flow  To              From            Proto DPort SPort Ingress      Egress

4     10.0.0.1        10.0.0.2        UDP   49008 49007             Se2/0
6     10.0.0.3        10.0.0.4        UDP   49004 49003             Se2/0
5     10.2.0.3        10.2.0.6        UDP   49010 49009             Se2/0
2     10.2.1.6        10.2.2.6        UDP   49004 49003             Se2/0
1     10.2.2.6        10.2.3.6        UDP   49002 49001             Se2/0
3     10.2.3.6        10.2.3.7        UDP   49006 49005             Se2/0


Total number of IPV6 metadata flows 3

To                                    From
Flow  Proto DPort SPort Ingress      Egress

2001:DB8:1::1                          2001:DB8:1::2
9     UDP   49001 49000             Se2/0
2001:DB8:1::3                          2001:DB8:1::4
7     UDP   49001 49000             Se2/0
2001:DB8:1::12                         2001:DB8:1::13
8     UDP   49003 49002             Se2/0
```

Note The output for the IPv6 metadata flow table appears in two lines as the IPv6 addresses can be long.

The following is sample output from the **show metadata flow table application name sip ip** command:

```
Device#  show metadata flow table application name sip ip

Flow  To              From           Protocol  DPort  SPort  Ingress   Egress  SSRC

2     209.165.201.14  209.165.201.18  UDP      70    80       Eth1/1   Eth1/2  3000
```

The following is sample output from the **show metadata flow table application name sip ipv6** command:

```
Device# show metadata flow table application name sip ipv6

To                                    From
Flow  Proto DPort SPort Ingress      Egress

2001:DB8:1::3                          2001:DB8:1::4
9     UDP   49001 49000              Se2/0
2001:DB8:1::5                          2001:DB8:1::6
7     UDP   49001 49000              Se2/0
2001:DB8:1::12                         2001:DB8:1::14
8     UDP   49003 49002              Se2/0
```

The following is sample output from the **show metadata flow table filter destination** command. You can specify the source or destination IPv4 address as the filter criterion.

```
Device# show metadata flow table filter destination 209.165.201.1

Entries To: 209.165.201.1

Flow ID    From             Protocol DPort   SPort   Ingress I/F    Egress I/F
1          209.165.201.3    UDP      1000    1000    Et0/0          Et0/1
2          209.165.201.3    UDP      1001    1001    Et0/0          Et0/1
Total Flows: 2
```

The following is sample output from the **show metadata flow table ipv6** command:

```
Device# show metadata flow table ipv6

To                                    From
Flow  Proto DPort SPort Ingress      Egress

2001:DB8:1::1                          2001:DB8:1::2
9     UDP   49001 49000              Se2/0
2001:DB8:1::3                          2001:DB8:1::4
7     UDP   49001 49000              Se2/0
2001:DB8:1::12                         2001:DB8:1::13
8     UDP   49003 49002              Se2/0
```

Related Commands

Command	Description
debug metadata	Enables debugging for metadata flow.
metadata application-params	Enters metadata application entry configuration mode and creates new metadata application parameters.
show metadata application table	Displays a list of metadata applications defined on a device.
metadata flow	Enables metadata on a device.

show mls qos

To display multilayer switching (MLS) quality of service (QoS) information, use the **showmlsqos** command in privileged EXEC mode.

show mls qos [{**arp** | **ipv6** | **ip** | **ipx** | **last** | **mac** | **module** [*module-number*]} [{*interface interface-number* | **slot** *slot* | **null 0** | **port-channel** *number* | **vlan** *vlan-id*}]] [**detailed**]

Syntax Description

arp	(Optional) Displays Address Resolution Protocol (ARP) information.
ipv6	(Optional) Displays IPv6 information.
ip	(Optional) Displays information about the MLS IP status.
ipx	(Optional) Displays information about the MLS Internetwork Packet Exchange (IPX) status.
last	(Optional) Displays information about the last packet-policing.
mac	(Optional) Displays information about the MAC address-based QoS status.
module *module-number*	(Optional) Specifies the module (slot) number; displays the global and per-interface QoS enabled and disabled settings and the global QoS counters.
interface	(Optional) Interface type; valid values are **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **ge-wan**, **pos**, and **atm**.
interface-number	(Optional) Module and port number; see the “Usage Guidelines” section for valid values.
slot *slot*	(Optional) Specifies the slot number; displays the global and per-interface QoS enabled and disabled settings and the global QoS counters.
null 0	(Optional) Specifies the null interface; the only valid value is **0**.
port-channel *number*	(Optional) Specifies the channel interface; there is a maximum of 64 values ranging from 1 to 282.
vlan *vlan-id*	(Optional) Specifies the VLAN ID; valid values are from 1 to 4094.
detailed	(Optional) Displays additional statistics.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(14)SX	This command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	This command was implemented on the Supervisor Engine 2 and integrated into Cisco IOS Release 12.2(17d)SXB.

Release	Modification
12.2(18)SXE	The **arp**and **ipv6** keywords were added on the Supervisor Engine 720 only.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

12.2(33)SXI	• The following information was added to the command output on the Catalyst 6500 series switch:
	  • Display of last 30-second counters.
	  • Display of peak 30-second counters over the last 5 minutes.
	  • Display of 5-minute average and peak packets-per-second (pps) rates.
	• The peak rates are monitored with 10-second resolution. Releases prior to Cisco IOS Release 12.2(33)SXI were monitored at 30-second resolution.

Usage Guidelines

The ge-wan, pos, and atm interfaces are not supported on systems that are configured with a Supervisor Engine 720.

The *interface-number* argument designates the module and port number. Valid values for *interface-number* depend on the specified interface type and the chassis and module that are used. For example, if you specify a Gigabit Ethernet interface and have a 48-port 10/100BASE-T Ethernet module that is installed in a 13-slot chassis, valid values for the module number are from 1 to 13 and valid values for the port number are from 1 to 48.

The **port-channel***number*values from 257 to 282 are supported on the Content Switching Module (CSM) and the Firewall Services Module (FWSM) only.

Catalyst 6500 Series Switches

In Cisco IOS Release 12.2(33)SXI and later releases, the following information is included in the output of the **showmlsqos** command:

- Display of last 30-second counters.
- Display of peak 30-second counters over the last 5 minutes.
- Display of 5-minute average and peak bps rates.

The peak rates are monitored with 10-second resolution. Releases prior to Cisco IOS Release 12.2(33)SXI are monitored at 30-second resolution.

Examples

Last Logged Packet Example

This example shows how to display information about the last logged packet:

```
Router# show mls qos last
QoS engine last packet information:
    Packet was transmitted
    Output TOS/DSCP: 0xC0/48[unchanged]   Output COS: 0[unchanged]
    Aggregate policer index: 0(none)
    Microflow policer index: 0(none)
```

IPv6 Example

This example shows how to display IPv6 information:

```
Router# show mls qos ipv6
QoS Summary [IPv6]:      (* - shared aggregates, Mod - switch module)
     Int Mod Dir  Class-map DSCP  Agg  Trust Fl   AgForward-By   AgPoliced-By
                                  Id         Id
-------------------------------------------------------------------------------
      All  7   -    Default    0    0*    No  0      189115356              0
```

Example

This example shows how to display QoS information:

```
Router# show mls qos
QoS is enabled globally
Microflow policing is enabled globally
QoS ip packet dscp rewrite enabled globally
QoS is disabled on the following interfaces:
Fa6/3 Fa6/4
QoS DSCP-mutation map is enabled on the following interfaces:
Fa6/5
Vlan or Portchannel(Multi-Earl) policies supported: Yes
Egress policies supported: Yes
----- Module [5] -----
QoS global counters:
Total packets: 164
IP shortcut packets: 0
Packets dropped by policing: 0
IP packets with TOS changed by policing: 0
IP packets with COS changed by policing: 0
Non-IP packets with COS changed by policing: 0
MPLS packets with EXP changed by policing: 0
```

Example

This example shows the output if you do not enter any keywords:

```
Router# show mls qos
  QoS is enabled globally
  Microflow QoS is enabled globally
QoS global counters:
    Total packets: 217500
    IP shortcut packets: 344
    Packets dropped by policing: 344
    IP packets with TOS changed by policing 18323
    IP packets with COS changed by policing 1602
    Non-IP packets with COS changed by policing 0
```

Catalyst 6500 Series Switches Example

The **showmlsqos** command output in Cisco IOS Release 12.2(33)SXI and later releases contains more packet counter information than in previous releases.

This example shows the Cisco IOS Release 12.2(33)SXI output with the **detailed** keyword:

```
Router# show mls qos detailed
  QoS is enabled globally
  Policy marking depends on port_trust
  QoS ip packet dscp rewrite enabled globally
  Input mode for GRE Tunnel is Pipe mode
  Input mode for MPLS is Pipe mode
  Vlan or Portchannel(Multi-Earl) policies supported: Yes
  Egress policies supported: Yes
 ----- Module [5] -----
Traffic:            Total pkt's   30-s pkt's    peak pkts  5-min avg pps   peak pps
-------------------------------------------------------------------------------------
Total packets:           775606           46           22               2          5
IP shortcut packets:    5465402           33           16               1          1
Packets dropped by
policing:                     0            0            0               0          0
IP packets with TOS
changed by policing:         41           10            4               0          0
IP packets with COS
changed by policing:          2            0            0               0          0
Non-IP packets with COS
changed by policing:          0            0            0               0          0
MPLS packets with EXP
changed by policing:          0            0            0               0          0
```

The table below describes the significant fields added when you enter the **detailed** keyword.

Table 5: show mls qos detailed Field Descriptions

Field	Description
Total packets	The cumulative counters.
IP shortcut packets	Number of IP shortcut packets.
Packets dropped by policing	Number of police dropped packets.
Packets changed by policing	Number of police modified packets.
30-s pkts	The total 30-second packet count over the last 5 minutes.
30-s peak pkts	The peak 30-second packet count over the last 5 minutes.
5-min avg pps	The average packets-per-second (pps) rate over the last 5 minutes.
5-min peak pps	The peak pps rate over the last 5 minutes.

Related Commands

Command	Description
mls qos (global configuration mode)	Enables the QoS functionality globally.
mls qos (interface configuration mode)	Enables the QoS functionality on an interface.
show mls qos aggregate-policer	Displays information about the aggregate policer.

Command	Description
show mls qos free-agram	Displays the number of free aggregate RAM indexes on the switch processor and the DFCs.
show mls qos interface	Displays MLS QoS information at the interface level.
show mls qos maps	Displays MLS QoS mapping information.
show mls qos mpls	Displays an interface summary for MPLS QoS classes in policy maps.
show mls qos protocol	Displays protocol pass-through information.
show mls qos statistics-export	Displays MLS statistics data-export status and configuration.

show mls qos aggregate policer

To display information about the aggregate policer for multilayer switching (MLS) quality of service (QoS), use the **showmlsqosaggregatepolicer** command in EXEC mode.

show mls qos aggregate policer [*aggregate-name*]

Syntax Description

aggregate-name	(Optional) Name of the aggregate policer.

Command Default

This command has no default settings.

Command Modes

EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	This command was implemented on the Supervisor Engine 2 and integrated into Cisco IOS Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Aggregate policing works independently on each Distributed Forwarding Card (DFC)-equipped switching module and independently on the Policy Feature Card 2 (PFC2), which supports any non-DFC-equipped switching modules. Aggregate policing does not combine flow statistics from different DFC-equipped switching modules. You can display aggregate-policing statistics for each DFC-equipped switching module, the PFC2, and any non-DFC-equipped switching modules that are supported by the PFC2.

Examples

This example shows how to display information about the aggregate policer for MLS QoS:

```
Router# show mls qos aggregate-policer
ag1 (undefined)
    AgId=0 [ pol1 pol2 ]
ag2 64000 64000 conform-action set-dscp-transmit 56 exceed-action drop
    AgId=0 [ pol3 ]
ag3 32000 32000 conform-action set-dscp-transmit 34 exceed-action drop
```

In the output, the following applies:

- The **AgId** parameter displays the hardware-policer ID and is nonzero if assigned.
- The policy maps using the policer, if any, are listed in the square brackets ([]).
- If there are no policies using the policer, no **AgId** line is displayed.
- If the policer is referred to in policy maps, but has not been defined, [**undefined**] is displayed.

Related Commands

Command	Description
mls qos aggregate-policer	Defines a named aggregate policer for use in policy maps.

show mls qos free-agram

To display the number of free aggregate RAM indexes on the switch processor and the Distributed Forwarding Cards (DFCs), use the **showmlsqosfree-agram** command in EXEC mode.

show mls qos free-agram

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default settings.

Command Modes

EXEC

Command History

Release	Modification
12.2(18)SXD	Support for this command was introduced on the Supervisor Engine 720 and the Supervisor Engine 2
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

This example shows how to display the number of free aggregate RAM indexes on the switch processor and the DFCs:

```
Router# show mls qos free-agram
Total Number of Available AG RAM indices : 1023
 Module [1]
 Free AGIDs : 1023
 Module [6]
 Free AGIDs : 1023
```

show mls qos interface

To display Multilayer Switching (MLS) quality of service (QoS) information at the interface level, use the **showmlsqosinterface**command in privileged EXEC mode.

show mls qos interface [*interface-id*] [**policers**]

Syntax Description

interface-id	(Optional) Specifies the interface for which QoS information is to be displayed.
policers	(Optional) Displays all the policers configured on the interface, their settings, and the number of policers unassigned.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.1(6)EA2	This command was introduced.
12.2(15)ZJ	This command was implemented on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.3(4)T	This command was integrated into Cisco IOS Release 12.3(4)T on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Use the **showmlsqosinterface** command without keywords to display parameters for all interfaces.

Use the **showmlsqosinterface***interface-id* command to display the parameters for a specific interface.

On most Cisco switch platforms, the global command, "(no) mls qos", is used to toggle the MLS QoS state to be enabled or disabled. When MLS QoS is disabled globally, the CoS/IP Precidence/DSCP values for all traffic passing through the switch will not be modified. On the other hand, if MLS QoS is enabled, then by default all interfaces will be in an *untrusted* state, which means all incoming CoS/IP Prec/DSCP values will be remarked down to 0.

Cisco_2600 and Cisco_3600 Series Switches

Becuase the**(no)mlsqos**global command is not supported for the Cisco_2600 or Csico_3600 series switches, this presents a unique situationregarding the default trust state for the interface.

By default, when there is no "mls qos" related commands configured under an interface on the Cisco_2600 or Cisco_3600 series switches, the CoS/IP Prec/DSCP value of all incoming traffic will not be remarked as it passes through the switch. This has the same result as when MLS QoS is disabled on other Cisco switches.

Examples

The following is sample output from the **showmlsqosinterfacefastethernet0/1**command:

```
Router# show mls qos interface fastethernet0/1
FastEthernet0/1
trust state: trust cos
COS override: dis
default COS: 0
```

The following example shows that there is no mls QoS command configured on the interface. the CoS/IP Precidence/DSCP values of incoming traffic will not be remarked as it passes through the switch.

```
Router# show mls qos interface f1/1
FastEthernet1/1
trust state: none  <<<
trust mode: none  <<<
COS override: dis
default COS: 0
pass-through: none
```

Related Commands

Command	Description
mls qos cos	Defines the default MLS CoS value of a port or assigns the default CoS value to all incoming packets on the port.
mls qos map	Defines the MLS CoS-to-DSCP map and DSCP-to-CoS map.
mls qos trust	Configures the MLS port trust state and classifies traffic by an examination of the CoS or DSCP value.

show mls qos maps

To display multilayer switching (MLS) quality of service (QoS) mapping information, use the **showmlsqosmaps** command in privileged EXEC mode.

Cisco 2600, 3660, 3700, 3845, 7200, 7400, and 7500 Series Routers
show mls qos maps [{**cos-dscp** | **dscp-cos**}]

Cisco 7600 Series Router and Catalyst 6500 Series Switch
show mls qos maps [{**cos-dscp** | **cos-mutation** | **dscp-cos** | **dscp-exp** | **dscp-mutation** | **exp-dscp** | **exp-mutation** | **ip-prec-dscp** | **policed-dscp**}]

Syntax Description

cos-dscp	(Optional) Displays the class of service (CoS)-to-differentiated services code point (DSCP) map.
dscp-cos	(Optional) Displays the DSCP-to-CoS map.
cos-mutation	(Optional) Displays the CoS-mutation map.
dscp-exp	(Optional) Displays the DSCP-to-exp map.
dscp-mutation	(Optional) Displays the DSCP-mutation map.
exp-dscp	(Optional) Displays the exp-to-DSCP map.
exp-mutation	(Optional) Displays the exp-mutation map.
ip-prec-dscp	(Optional) Displays the IP-precedence-to-DSCP map.
policed-dscp	(Optional) Displays the policed-DSCP map.

Command Default

All MLS QoS maps are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.1(6)EA2	This command was introduced.
12.2(14)SX	This command was implemented on the Cisco 7600 series routers.
12.2(15)ZJ	This command was implemented on the following platforms: Cisco 2600 series routers, Cisco 3600 series routers, and Cisco 3700 series routers.
12.2(17b)SXA	This command was changed to support the **cos-mutation**, **exp-dscp**, and **exp-mutation** keywords.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Release	Modification
12.3(4)T	This command was integrated into Cisco IOS Release 12.3(4)T on the following platforms: Cisco 2600 series, Cisco 3600 series, and Cisco 3700 series routers.
12.2(33)SXI	Support was added for all map type keywords.

Usage Guidelines

Maps are used to generate an internal DSCP value, which represents the priority of the traffic. Use the **showmlsqosmaps** command without keywords to display all maps.

Examples

The following is sample output from the **showmlsqosmapscos-dscp** command displaying the DSCP values to which each CoS value will be mapped:

```
Router# show mls qos maps cos-dscp
Cos-dscp map:
        cos:  0  1  2  3  4  5  6  7
     --------------------------------
       dscp:  8  8  8  8 24 32 56 56
```

The following is sample output from the **showmlsqosmapsdscp-cos** command displaying the CoS values to which each DSCP value will be mapped:

```
Router# show mls qos maps dscp-cos
Dscp-cos map:
       dscp:  0  8 10 16 18 24 26 32 34 40 46 48 56
     ---------------------------------------------
        cos:  0  1  1  1  2  2  3  3  4  4  5  6  7
```

This example shows how to display the QoS-map settings:

```
Router# show mls qos maps
   Policed-dscp map:
            0  1  2  3  4  5  6  7  8  9
   ----------------------------------
      00:  00 01 02 03 04 05 06 07 08 09
      10:  10 11 12 13 14 15 16 17 18 19
      20:  20 21 22 23 24 25 26 27 28 29
      30:  30 31 32 33 34 35 36 37 38 39
      40:  40 41 42 43 44 45 46 47 48 49
      50:  50 51 52 53 54 55 56 57 58 59
      60:  60 61 62 63
   Dscp-cos map:
            0  1  2  3  4  5  6  7  8  9
   ----------------------------------
      00:  00 00 00 00 00 00 00 00 01 01
      10:  01 01 01 01 01 01 02 02 02 02
      20:  02 02 02 02 03 03 03 03 03 03
      30:  03 03 04 04 04 04 04 04 04 04
      40:  05 05 05 05 05 05 05 05 06 06
      50:  06 06 06 06 06 06 07 07 07 07
      60:  07 07 07 07
   Cos-dscp map:
          cos:   0  1  2  3  4  5  6  7
       ----------------------------------
        dscp:   0  8 16 24 32 40 48 56
   IpPrecedence-dscp map:
       ipprec:   0  1  2  3  4  5  6  7
       ----------------------------------
```

```
        dscp:   0  8 16 24 32 40 48 56
Router#
```

In the policed DSCP and DSCP-CoS map displays, the new DSCP or CoS values are shown in the body of the table. The decade of the original DSCP value is shown in the left-side vertical column, and the units digit is in the top row. For example, the DSCP-CoS map indicates that if the original DSCP value is between 32 and 39, the CoS will be set to 4.

The CoS-DSCP and IP precedence-DSCP maps display the DSCP values to which each CoS or IP precedence value will be mapped. For example, the IP precedence-DSCP map indicates that if the original IP precedence value is 3, the DSCP will be set to 24.

This example shows how to verify the configuration of DSCP-mutation mapping:

```
Router# show mls qos maps | begin DSCP mutation

DSCP mutation map mutmap1:                    (dscp= d1d2)
     d1 :  d2 0  1  2  3  4  5  6  7  8  9
     ------------------------------------
      0 :    00 01 02 03 04 05 06 07 08 09
      1 :    10 11 12 13 14 15 16 17 18 19
      2 :    20 21 22 23 24 25 26 27 28 29
      3 :    08 31 32 33 34 35 36 37 38 39
      4 :    40 41 42 43 44 45 46 47 48 49
 <...Output Truncated...>
Router#
```

In the DSCP mutation map display, the marked-down DSCP values are shown in the body of the table. The first digit (d1) of the original DSCP value is in the left-side vertical column labeled d1, and the second digit (d2) is in the top row. For example, a DSCP value of 30 maps to a new DSCP value of 08.

Related Commands

Command	Description
mls qos map	Defines the CoS-to-DSCP map and DSCP-to-CoS map.
mls qos map cos-dscp	Defines the ingress CoS-to-DSCP map for trusted interfaces.
mls qos map cos-mutation	Maps a packet's CoS to a new CoS value.
mls qos map dscp-cos	Defines an egress DSCP-to-CoS map.
mls qos map dscp-mutation	Defines a named DSCP mutation map.
mls qos map ip-prec-dscp	Defines an ingress IP precedence-to-DSCP map for trusted interfaces.
mls qos map policed-dscp	Sets the mapping of policed DSCP values to marked-down DSCP values.

show mls qos mpls

To display an interface summary for Multiprotocol Label Switching (MPLS) quality of service (QoS) classes in policy maps, use the **showmlsqosmpls** command in user EXEC or privileged EXEC mode.

show mls qos mpls [{**interface-type** *interface-number* | **module slot**}]

Syntax Description

interface-type interface-number	(Optional) Interface type; valid values are the following: • **fastethernet** • **gigabitethernet** • **tengigabitethernet** . (Optional) Module and port number; see the "Usage Guidelines" section for valid values.
module slot	(Optional) Specifies the module slot number.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(17a)SX	This command was introduced on the Supervisor Engine 720.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.

Usage Guidelines

This command is supported in PFC3BXL or PFC3B mode only.

The *interface-number* argument designates the module and port number. Valid values for *interface-number* depend on the specified interface type and the chassis and module that are used. For example, if you specify a Gigabit Ethernet interface and have a 48-port 10/100BASE-T Ethernet module that is installed in a 13-slot chassis, valid values for the module number are from 1 to 13 and valid values for the port number are from 1 to 48.

Examples

The following example shows an interface summary for MPLS QoS classes in policy maps:

```
Router# show mls qos mpls
QoS Summary [MPLS]: (* - shared aggregates, Mod - switch module)
Int Mod Dir Class-map DSCP Agg Trust Fl AgForward-By AgPoliced-By
Id Id
-------------------------------------------------------------------------------------------------------------

Fa3/38 5 In exp2 0 1 dscp 0 378900 0
Fa3/41 5 In exp4 0 3 dscp 0 0 0
All 5 - Default 0 0* No 0 1191011240 0
```

The table below describes the significant fields shown in the display.

Table 6: show mls qos mpls Field Descriptions

Field	Description
QoS Summary [MPLS]: (* - shared aggregates, Mod - switch module)	Shows if there are any shared aggregate policers, indicated by *, and the type of module.
Int Mod Dir Class-map DSCP Agg Trust Fl AgForward-By AgPoliced-By	Provides the column headings for the following lines in the display. These include interface name and number, module number, direction, class-map name, and DSCP value.
Fa3/38 5 In exp2 0 1 dscp 0 378900 0	Provides the following information: • Fa3/38--Interface name and number. • 5--Module number in the chassis. • In--Direction of the policy applied (In = ingress). • exp2--Class map configured in the policy. • 0--Differentiated Services Code Point (DSCP) value. • 1--Policer ID assigned to that class map. • dscp--Trust value configured on the port. In this example, the value is trusting on DSCP. • 0--The flow ID if the flow policer is configured. • 378900--The aggregate forwarded bytes, meaning the forwarded traffic. • 0--The aggregate policed bytes, meaning this traffic has been subjected to policing.
All 5 - Default 0 0* No 0 1191011240 0	The total of the preceding lines including the aggregate forwarded and aggregate policed bytes.

Related Commands

Command	Description
mls qos exp-mutation	Attaches an egress-EXP mutation map to the interface.
mls qos map exp-dscp	Defines the ingress EXP value to the internal DSCP map.
mls qos map exp-mutation	Maps a packet's EXP to a new EXP value.

show mls qos protocol

To display protocol pass-through information, use the **showmlsqosprotocol**command in EXEC mode.

show mls qos protocol [**module** *number*]

Syntax Description

module *number*	(Optional) Specifies the module number.

Command Default

This command has no default settings.

Command Modes

EXEC

Command History

Release	Modification
12.2(17a)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(18)SXE	Support for this command was introduced on the Supervisor Engine 2 but does not support Address Resolution Protocol (ARP), Integrated Intermediate System-to-Intermediate System (IS-IS), or Enhanced Interior Gateway Routing Protocol (EIGRP). Support for neighbor discovery protocol packets was added on the Supervisor Engine 720 only.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Examples

This example shows how to display protocol pass-through information:

```
Router# show mls qos protocol
RIP : Passthru mode
OSPF : Passthru mode
ND : Policing mode Cir = 32000 Burst = 1000
----- Module [5] -----
Routing protocol RIP is using AgId 0*
Routing protocol OSPF is using AgId 0*
Routing protocol ND is using AgId 1
----- Module [6] -----
Routing protocol RIP is using AgId 0*
Routing protocol OSPF is using AgId 0*
```

Related Commands

Command	Description
mls qos protocol	Defines the routing-protocol packet policing .

show mls qos queuing interface

To display the queueing statistics of an interface, use the **showmlsqosqueuinginterface**command in user EXEC mode.

show mls qos queuing interface {*type* | **vlan**}

Syntax Description

type	Interface type. For Cisco 7600 series routers, the valid interface types are **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **pos**, **atm**, and **ge-wan**.
vlan	Specifies the VLAN identification number; valid values are from 1 to 4094.

Command Modes

User EXEC (>)

Command History

Release	Modification
15.0(1)S	This command was introduced on LAN cards on Cisco 7600 Series Routers.

Usage Guidelines

Cisco 7600 Series Routers

The pos, atm, and ge-wan interfaces are supported on Cisco 7600 series routers that are configured with a Supervisor Engine 2 only.

The *typenumber*argument used with the **interface** keyword designates the module and port number. Valid values depend on the specified interface type and the chassis and module that are used. For example, if you specify a Gigabit Ethernet interface and have a 48-port 10/100BASE-T Ethernet module installed in a 13-slot chassis, valid values for the module number are from 1 to 13 and valid values for the port number are from 1 to 48.

Use the **showqm-spport-data**command to verify the values that are programmed in the hardware.

Examples

The following example shows sample output from the **showmlsqosqueuinginterfacegigabitethernet5/1**command on the Endor (RSP720-10G) card.

```
Router# show mls qos queuing interface gig5/1
Weighted Round-Robin
  Port QoS is enabled
  Port is untrusted
  Extend trust state: not trusted [COS = 0]
  Default COS is 0
    Queueing Mode In Tx direction: mode-cos
    Transmit queues [type = 1p3q8t]:
    Queue Id    Scheduling  Num of thresholds
    -----------------------------------------
       01         WRR                 08
       02         WRR                 08
       03         WRR                 08
       04         Priority            01
WRR bandwidth ratios:  100[queue 1] 150[queue 2] 200[queue 3]
    queue-limit ratios:     50[queue 1]  20[queue 2]  15[queue 3]  15[Pri Queue]
```

```
queue tail-drop-thresholds
--------------------------
1     70[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
2     70[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
3     100[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
queue random-detect-min-thresholds
----------------------------------
  1    40[1] 70[2] 70[3] 70[4] 70[5] 70[6] 70[7] 70[8]
  2    40[1] 70[2] 70[3] 70[4] 70[5] 70[6] 70[7] 70[8]
  3    70[1] 70[2] 70[3] 70[4] 70[5] 70[6] 70[7] 70[8]
queue random-detect-max-thresholds
----------------------------------
  1    70[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
  2    70[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
  3    100[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
WRED disabled queues:
queue thresh cos-map
---------------------------------------
1     1      0
1     2      1
1     3
1     4
1     5
1     6
1     7
1     8
2     1      2
2     2      3 4
2     3
2     4
2     5
2     6
2     7
2     8
3     1      6 7
3     2
3     3
3     4
3     5
3     6
3     7
3     8
4     1      5
Queueing Mode In Rx direction: mode-cos
Receive queues [type = 2q8t]:
Queue Id    Scheduling  Num of thresholds
-----------------------------------------
   01         WRR                 08
   02         WRR                 08
WRR bandwidth ratios:  100[queue 1]   0[queue 2]
queue-limit ratios:    100[queue 1]   0[queue 2]
queue tail-drop-thresholds
--------------------------
1     100[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
2     100[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
queue random-detect-min-thresholds
----------------------------------
  1    40[1] 40[2] 50[3] 50[4] 50[5] 50[6] 50[7] 50[8]
  2    100[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
queue random-detect-max-thresholds
----------------------------------
  1    70[1] 80[2] 90[3] 100[4] 100[5] 100[6] 100[7] 100[8]
  2    100[1] 100[2] 100[3] 100[4] 100[5] 100[6] 100[7] 100[8]
queue thresh cos-map
```

```
    ---------------------------------------
    1     1      0 1 2 3 4 5 6 7
    1     2
    1     3
    1     4
    1     5
    1     6
    1     7
    1     8
    2     1
    2     2
    2     3
    2     4
    2     5
    2     6
    2     7
    2     8
  Packets dropped on Transmit:
    queue     dropped  [cos-map]
    ---------------------------------------------
    1                       0  [0 1 ]
    2                       0  [2 3 4 ]
    3                       0  [6 7 ]
    4                       0  [5 ]
  Packets dropped on Receive:
    BPDU packets:  0
    queue              dropped  [cos-map]
    ---------------------------------------------------
    1                       0  [0 1 2 3 4 5 6 7 ]
    2                       0  []
.
.
.
```

Related Commands

Command	Description
mls qos cos	Defines the default MLS CoS value of a port or assigns the default CoS value to all incoming packets on the port.
mls qos map	Defines the MLS CoS-to-DSCP map and DSCP-to-CoS map.
mls qos trust	Configures the MLS port trust state and classifies traffic by an examination of the CoS or DSCP value.
custom-queue-list	Assigns a custom queue list to an interface.
fair-queue (class-default)	Specifies the number of dynamic queues to be reserved for use by the class-default class as part of the default class policy.
fair-queue (WFQ)	Enables WFQ for an interface.
priority-group	Assigns the specified priority list to an interface.
random-detect flow	Enables flow-based WRED.
random-detect (interface)	Enables WRED or DWRED.
random-detect (per VC)	Enables per-VC WRED or per-VC DWRED.

Command	Description
show frame-relay pvc	Displays information and statistics about WFQ for a VIP-based interface.
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.
show qm-sp port-data	Displays information about the QoS manager switch processor.
show queueing	Lists all or selected configured queueing strategies.

show mls qos statistics-export info

To display information about the multilayer switching (MLS)-statistics data-export status and configuration, use the **showmlsqosstatistics-exportinfo**command in EXEC mode

show mls qos statistics-export info

Syntax Description

This command has no keywords or arguments.

Command Default

This command has no default settings.

Command Modes

EXEC

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	This command was implemented on the Supervisor Engine 2 and integrated into Cisco IOS Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

Quality of service (QoS)-statistics data export is not supported on Optical Service Module (OSM) interfaces.

Examples

This example shows how to display information about the MLS-statistics data-export status and configuration:

```
Router# show mls qos statistics-export info
QoS Statistics Data Export Status and Configuration information
---------------------------------------------------------------
Export Status : enabled
Export Interval : 250 seconds
Export Delimiter : @
Export Destination : 172.20.52.3, UDP port 514 Facility local6, Severity debug

QoS Statistics Data Export is enabled on following ports:
---------------------------------------------------------
FastEthernet5/24

QoS Statistics Data export is enabled on following shared aggregate policers:
-----------------------------------------------------------------------------
aggr1M

QoS Statistics Data Export is enabled on following class-maps:
--------------------------------------------------------------
class3
```

Related Commands

Command	Description
mls qos statistics-export (global configuration)	Enables QoS-statistics data export globally.

Command	Description
mls qos statistics-export (interface configuration)	Enables per-port QoS-statistics data export.
mls qos statistics-export aggregate-policer	Enables QoS-statistics data export on the named aggregate policer.
mls qos statistics-export class-map	Enables QoS-statistics data export for a class map.
mls qos statistics-export delimiter	Sets the QoS-statistics data-export field delimiter.
mls qos statistics-export destination	Configures the QoS-statistics data-export destination host and UDP port number.
mls qos statistics-export interval	Specifies how often a port and/or aggregate-policer QoS-statistics data is read and exported.

show platform hardware acl entry global-qos

To display information about inbound and outbound access control list (ACL) ternary content addressable memory (TCAM) global Quality of Service (QoS) entries, use the**showplatformhardwareaclentryglobal-qos** command in privileged EXEC mode.

show platform hardware acl entry global-qos {**in** | **out**} {**arp** | **ip** | **ipv6** | **mac** | **mpls**} [**detail**]

Syntax Description

in	Displays inbound entries in the output.
out	Displays outbound entries in the output.
arp	Specifies the Address Resolution Protocol for entries.
ip	Specifies the Internet Protocolfor entries.
ipv6	Specifies the Internet Protocol, Version 6 for entries.
mac	Specifies the Media Access Control address for entries.
mpls	Specifies the Multiprotocol Label Switching Protocol for entries.
detail	Displays detailed information about the entries.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2XJC	This command was introduced.

Usage Guidelines

Cisco IOS-based switches support the wire-rate ACL and QoS feature with use of the TCAM. Enabling ACLs and policies does not decrease the switching or routing performance of the switch as long as the ACLs are fully loaded in the TCAM.

To implement the various types of ACLs and QoS policies in hardware, the Cisco IOS-based switches use hardware lookup tables (TCAM) and various hardware registers in the Supervisor Engine. When a packet arrives, the switch performs a hardware table lookup (TCAM lookup) and decides to either permit or deny the packet.

Examples

The following sample output from the **showplatformhardwareaclentryglobal-qos** command displays one result for inbound Address Resolution Protocol entries:

```
Switch# show platform hardware acl entry global-qos in arp

0x0000000000000003 arp ip any any mac any
```

The following sample output from the **showplatformhardwareaclentryglobal-qos** command displays the *detailed* results for inbound Address Resolution Protocol entries (the legend provides definitions for abbreviations that may appear in the output):

```
Switch# show platform hardware acl entry global-qos in arp detail
-------------------------------------------------------------------------------------------
ENTRY TYPE: A - ARP I - IPv4 M - MPLS O - MAC Entry S - IPv6(Six) C - Compaction L - L2V4
Suffix: D - dynamic entry E - exception entry R - reserved entry
FIELDS: FS - first_seen/from_rp ACOS - acos/group_id F - ip_frag FF - frag_flag DPORT -
dest_port SPORT - src_port LM - L2_miss GP - gpid_present ETYPE - enc_etype CEVLD -
ce_vlan_valid MM - mpls_mcast FN - exp_from_null IV - ip_hdr_vld MV - mpls_valid E_CAU -
exception_cause UK - U_key ACO - acos A/R - arp_rarp RR - req_repl GM - global_acl_fmt_match
 D-S-S-A - dest_mac_bcast, src_snd_mac_same, snd_tar_mac_same, arp_rarp_vld OM - ofe_mode
SVLAN - Src_vlan
-------------------------------------------------------------------------------------------
```

A	INDEX	LABEL	A/R	RR	IP SA	IP DA	SRC MAC	D-S-S-A	GM	IM	OM	RSLT	CNT
ARV	963	8191	1	7	0.0.0.0	0.0.0.0	FFFF.FFFF.FFFF	1-1-1-1	1	1	0	0x0000000000000003	0
ARM	963	0x0000	0	0x0	0.0.0.0	0.0.0.0	0000.0000.0000	0-0-0-1	0	0	1		

Command	Description
mls qos protocol	Configures TCAM entries that are displayed by the **showplatformhardwareaclentryglobal-qos** command.

show platform hardware pp active infrastructure pi npd rx policer

To display punt policing statistics for all queues, use the **show platform hardware pp active infrastructure pi npd rx policer** command in privileged EXEC mode.

show platform hardware pp active infrastructure pi npd rx policer

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled (no information about the punt policer is displayed).

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.5S	This command was introduced on the Cisco ASR 903 router.

Usage Guidelines

Use the **show platform hardware pp active infrastructure pi npd rx policer** command to view the punt rate and burst rate statistics for all queues and to verify the punt policier settings.

Examples

The following is sample output from the **show platform hardware pp active infrastructure pi npd rx policer** command:

```
Router# show platform hardware pp active infrastructure pi npd rx policer

PUNT POLICER
Ring |           Queue Name |            Punt rate |           Burst rate
-----+----------------------+----------------------+---------------------
 0   |      SW FORWARDING Q |                  500 |                 1000
 1   |  ROUTING PROTOCOL Q  |                  500 |                 1000
 2   |               ICMP Q |                  500 |                 1000
 3   |               HOST Q |                 1000 |                 2000
 4   |        ACL LOGGING Q |                  500 |                 1000
 5   |                STP Q |                 3000 |                 6000
 6   |        L2 PROTOCOL Q |                 1000 |                 2000
 7   |      MCAST CONTROL Q |                 1000 |                 2000
 8   |          BROADCAST Q |                  500 |                 1000
 9   |                REP Q |                 3000 |                 6000
10   |                CFM Q |                 3000 |                 6000
11   |            CONTROL Q |                 1000 |                 2000
12   |        IP MPLS TTL Q |                 1000 |                 2000
13   |     DEFAULT MCAST Q  |                  500 |                 1000
14   |  MCAST ROUTE DATA Q  |                  500 |                 1000
15   |    MCAST MISMATCH Q  |                  500 |                 1000
16   |           RPF FAIL Q |                  500 |                 1000
17   |  ROUTING THROTTLE Q  |                  500 |                 1000
18   |              MCAST Q |                  500 |                 1000
19   |           MPLS OAM Q |                 1000 |                 2000
20   |        IP MPLS MTU Q |                  500 |                 1000
21   |                PTP Q |                 3000 |                 6000
```

```
22   |          LINUX ND Q |                500 |                1000
23   |         KEEPALIVE Q |               1000 |                2000
24   |              ESMC Q |               3000 |                6000
25   |          FPGA BFD Q |               3000 |                6000
26   |          FPGA CCM Q |               3000 |                6000
27   |          FPGA CFE Q |               3000 |                6000
28   |          L2PT DUP Q |               4000 |                8000
```

The table below describes the significant fields shown in the display.

Table 7: show platform hardware pp active infrastructure pi npd rx policer Field Descriptions

Field	Description
Ring	Unique number that identifies the queue.
Queue Name	Name of the queue.
Punt rate	Punt rate for the queue, in packets per second (pps).
Burst rate	The burst-rate for the queue, in packets per second (pps).

Related Commands

Command	Description
platform punt-police queue	Enables punt policing on a queue and specifies the maximum punt rate and burst rate on a per-queue basis.
show platform software infrastructure punt statistics	Displays whether queue-based punt policing is enabled.

show platform hardware qfp active feature qos config global

To display whether the QoS: Packet Marking Statistics and QoS: Packet Matching Statistics features are currently enabled, use the **showplatformhardwareqfpactivefeatureqosconfigglobal** command in privileged EXEC mode.

show platform hardware qfp active feature qos config global

Syntax Description

hardware	Hardware
qfp	Quantum flow processor
active	Active instance
feature	Feature specific information
qos	Quality of Service (QoS) information
config	QoS config information
global	Global configuration

Command Default

Disabled (no information about the status of the QoS: Packet Marking Statistics or QoS: Packet Matching Statistics feature is displayed).

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.3S	This command was introduced.

Usage Guidelines

Both the QoS: Packet Marking Statistics and QoS: Packet Matching Statistics features are disabled by default. Use the **showplatformhardwareqfpactivefeatureqosconfigglobal** command to display whether they are enabled.

Examples

The following example shows how to see if the QoS: Packet Marking Statistics or QoS: Packet Matching Statistics feature is enabled:

```
Router#
show platform hardware qfp active feature qos config global

Marker statistics are: enabled
Match per filter statistics are: enabled
```

The table below describes the significant fields shown in the display.

Table 8: show platform hardware qfp active feature qos config global Field Descriptions

Field	Description
Marker statistics are:	The status of the QoS: Packet Marking Statistics feature, enabled or disabled.
Match per filter statistics are:	The status of the QoS: Packet Matching Statistics feature, enabled or disabled.

Related Commands

Command	Description
platform qos marker-statistics	Displays the number of packets that have modified headers and have been classified into a category for local router processing.
platform qos match-statistics per-filter	Displays the display the number of packets and bytes matching a user-defined filter.

show platform lowq

To display the number of low queues configured on each interface, use the **showplatformlowq** command.

show platform lowq

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC(#)

Command History

Release	Modification
15.0(1)S	This command was introduced.

Usage Guidelines

Use the**showplatformlowq**command to check the number of queues per interface, if you are using low-queue line cards. If there are no queues configured on any line card, a message is displayed to show that low queue is empty.

Examples

The following is a sample output of the **showplatformlowq**command.

```
Router# show platform lowq
TenGigabitEthernet10/1
Input Queue count:8     Output Queue count:8    Total Queue count:16
```

The following table describes the fields in the command:

Field	Description
Input Queue Count	Number of input low queues on the interface.
Output Queue Count	Number of output low queues on the interface.
Total Queue Count	Sum of the input and output low queues.

show platform qos policy-map

To display the type and number of policy maps that are configured on the router, use the **showplatformqospolicy-map**command in privileged EXEC mode.

show platform qos policy-map

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.2(18)SXE	This command was introduced for Cisco Catalyst 6500 series switches and Cisco 7600 series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

On Cisco Catalyst 6500 series switches and Cisco 7600 series routers, you cannot attach a quality of service (QoS) policy map with **matchinputvlan** to an interface if you have already attached a QoS policy map to a VLAN interface (a logical interface that has been created with the **interfacevlan** command). If you attempt to use both types of service policies, you must remove both types of service policies before you can add the policy maps.

The **showplatformqospolicy-map** command shows whether the router is currently configured for **interfacevlan** and **matchinputvlan** service policies. It also shows the number of policy maps for each type.

Examples

The following example shows a router that has service policies configured only on VLAN interfaces:

```
Router# show platform qos policy-map

 service policy configured on int vlan: TRUE
 # of int vlan service policy instances: 3
 match input vlan service policy configured: FALSE
 # of match input vlan service policy instances: 0
```

The following example shows a router that has service policies configured on VLAN interfaces and that has a service policy configured with **matchinputvlan**. In this configuration, you must remove all service policies from their interfaces, and then configure only one type or another.

```
Router# show platform qos policy-map

 service policy configured on int vlan: TRUE
 # of int vlan service policy instances: 1
 match input vlan service policy configured: TRUE
 # of match input vlan service policy instances: 1
```

The table below describes each field shown in the **showplatformqospolicy-map** command:

Table 9: show platform qos policy-map Field Descriptions

Field	Description
service policy configured on int vlan	Indicates whether any QoS policy maps are configured on VLAN interfaces.
# of int vlan service policy instances	Number of QoS policy maps that are configured on VLAN interfaces.
match input vlan service policy configured	Indicates whether any QoS policy maps that use the **matchinputvlan** command are configured on interfaces.
# of match input vlan service policy instances	Number of QoS policy maps using the **matchinputvlan** command that are configured on interfaces.

Related Commands

Command	Description
match input vlan	Configures a class map to match incoming packets that have a specific virtual local area network (VLAN) ID.
match qos-group	Identifies a specified QoS group value as a match criterion.
mls qos trust	Sets the trusted state of an interface, to determine which incoming QoS field on a packet, if any, should be preserved.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
service-policy	Attaches a policy map to an input interface or VC, or an output interface or VC, to be used as the service policy for that interface or VC.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.
show platform qos policy-map	Displays the type and number of policy maps that are configured on the router.

show platform software infrastructure punt statistics

To display whether queue-based punt policing is enabled, use the **show platform software infrastructure punt statistics** command in privileged EXEC mode.

show platform software infrastructure punt statistics

Syntax Description

This command has no arguments or keywords.

Command Default

Disabled (no information about punt policing statistic configuration is displayed).

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release 3.5S	This command was introduced on the Cisco ASR 903 router.

Usage Guidelines

Use the **show platform software infrastructure punt statistics** command to verify that queue-based punt policing is enabled on a queue. If the feature is configured on your interface, the command output displays punt police statistics.

Examples

The following is sample output from the **show platform software infrastructure punt statistics** command:

```
        Router# show platform software infrastructure punt statistics
UEA Punt Statistics

Global drops : 0

 Queue Name              | Rx count                   |  Drop count
-------------------------+----------------------------+-----------------------
 SW FORWARDING Q         | 0                          | 0
 ROUTING PROTOCOL Q      | 0                          | 0
 ICMP Q                  | 0                          | 0
 HOST Q                  | 57115                      | 0
 ACL LOGGING Q           | 0                          | 0
 STP Q                   | 0                          | 0
 L2 PROTOCOL Q           | 6571                       | 0
 MCAST CONTROL Q         | 208839                     | 0
 BROADCAST Q             | 4                          | 0
 REP Q                   | 0                          | 0
 CFM Q                   | 0                          | 0
 CONTROL Q               | 0                          | 0
 IP MPLS TTL Q           | 0                          | 0
 DEFAULT MCAST Q         | 0                          | 0
 MCAST ROUTE DATA Q      | 0                          | 0
 MCAST MISMATCH Q        | 0                          | 0
 RPF FAIL Q              | 0                          | 0
 ROUTING THROTTLE Q      | 87                         | 0
 MCAST Q                 | 0                          | 0
 MPLS OAM Q              | 0                          | 0
 IP MPLS MTU Q           | 0                          | 0
 PTP Q                   | 0                          | 0
```

```
LINUX ND Q              | 0                         | 0
KEEPALIVE Q             | 0                         | 0
ESMC Q                  | 0                         | 0
FPGA BFD Q              | 0                         | 0
FPGA CCM Q              | 0                         | 0
FPGA CFE Q              | 0                         | 0
L2PT DUP Q              | 0                         | 0
```

The table below describes the significant fields shown in the display.

Table 10: show platform software infrastructure punt statistics Field Descriptions

Field	Description
Queue Name	Name of the queue.
Rx count	Number of received packet for the specified queue.
Drop count	Number of dropped packets for the specified queue.

Related Commands

Command	Description
platform punt-police queue	Enables punt policing on a queue , and specifies the maximum punt rate and burst rate on a per-queue basis.
show platform hardware pp active infrastructure pi npd rx policer	Displays punt policing statistics for all queues.

show policy-manager events

To display detailed information about the policy-manager event statistics, use the **showpolicy-managerevents** command in privileged EXEC mode.

show policy-manager events

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(1)	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
Cisco IOS XE Release 2.1	This command was implemented on the Cisco ASR 1000 series routers.

Examples

The following is sample output from the **showpolicy-managerevents**command:

```
Router# show policy-manager events
Event Statistics
0          catastrophic
0          critical
0          high
0          medium
0          low
0          positive
The following events were discarded
0          unknown
Event buffer pool
Number of free event buffers = 300
Number of events awaiting processing by Policy Manager process = 0
```

The table below describes the significant fields shown in the display.

Table 11: show policy-manager events Field Descriptions

Field	Description
catastrophic	Displays the total number of events in a catastrophic state.
critical	Displays the total number of events in a critical state.
high	Displays the total number of events in a high severity state.
medium	Displays the total number of events in a medium severity state.
low	Displays the total number of events in a low severity state.

Field	Description
positive	Displays the total number of events that are safe.
Number of free event buffers	Displays the total number of event buffers that are free.
Number of events awaiting processing by Policy Manager process	Displays the number of events that are yet to be processed by the policy manager.

Related Commands

Command	Description
show policy-manager policy	Displays different policies of the policy manager.
show policy-manager subsystem	Displays subsystems of the policy manager.

show policy-manager policy

To display information about the policy-manager policy database, use the **showpolicy-managerpolicy** command in privileged EXEC mode.

Cisco IOS SX, T, and XE Trains
show policy-manager policy [{*policy-id* | **detail** | **subsystem** *subsystem-name* [{**detail** | **policy-name** *name*}]}]

Cisco IOS SR Train
show policy-manager policy [{*policy-id* | **detail** | **event-id** | **policy-id** | **subsystem** *subsystem-name* [{**detail** | **policy-name** *name*}]}]

Syntax Description

policy-id	(Optional) Displays information about the policy with the specified policy ID. The range is from 1 to 4294967295.
detail	(Optional) Displays policy database information in detail.
subsystem	(Optional) Displays information about the specified subsystem.
subsystem-name	(Optional) Name of the subsystem.
policy-name	(Optional) Displays information about the specified policy.
name	(Optional) Name of the policy.
event-id	(Optional) Displays information about the event ID table.
policy-id	(Optional) Displays information about the policy ID table.

Command Default

If no argument or keywords are specified, information about all policies is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(24)T	This command was introduced in a release earlier than Cisco IOS Release 12.4(24)T.
12.2(33)SRC	This command was modified and integrated into a release earlier than Cisco IOS Release 12.2(33)SRC. The **event-id** and **policy-id** keywords were added.
12.2(33)SXI	This command was integrated into a release earlier than Cisco IOS Release 12.2(33)SXI.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.

Examples

The following is sample output from the **showpolicy-managerpolicy** command. The field descriptions are self-explanatory.

```
Router# show policy-manager policy
Status (S) codes:
A = active
D = deactivated
S ID    Subsystem                Name
```

Related Commands

Command	Description
show policy-manager events	Displays detailed information about the policy-manager event statistics.
show policy-manager subsystem	Displays subsystems of the policy manager.

show policy-map

To display the configuration of all classes for a specified service policy map or of all classes for all existing policy maps, use the **showpolicy-map**command in user EXEC or privileged EXEC mode.

show policy-map [*policy-map*]

Syntax Description

policy-map	(Optional) Name of the service policy map whose complete configuration is to be displayed. The name can be a maximum of 40 characters.

Command Default

All existing policy map configurations are displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was intergrated into Cisco IOS Release 12.0(7)S.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.2(4)T	This command was modified for two-rate traffic policing to display burst parameters and associated actions.
12.2(8)T	The command was modified for the Policer Enhancement--Multiple Actions feature and the Weighted Random Early Detection (WRED)--Explicit Congestion Notification (ECN) feature.
12.2(13)T	The following modifications were made: • The output was modified for the Percentage-Based Policing and Shaping feature. • This command was modified as part of the Modular QoS CLI (MQC) Unconditional Packet Discard feature. Traffic classes can now be configured to discard packets belonging to a specified class. • This command was modified for the Enhanced Packet Marking feature. A mapping table (table map) can now be used to convert and propagate packet-marking values.
12.2(15)T	This command was modified to support display of Frame Relay voice-adaptive traffic-shaping information.
12.0(28)S	The output of this command was modified for the QoS: Percentage-Based Policing feature to display the committed (conform) burst (bc) and excess (peak) burst (be) sizes in milliseconds (ms).

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	This command was implemented on the Supervisor Engine 2 and integrated into Cisco IOS Release 12.2(17d)SXB.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB, and the command was modified to display information about Layer 2 Tunnel Protocol Version 3 (L2TPv3) tunnel marking.
12.2(31)SB2	This command was enhanced to display bandwidth-remaining ratios configured on traffic classes and ATM overhead accounting, and was implemented on the Cisco 10000 series router for the PRE3.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SRC	Support for the Cisco 7600 series router was added.
12.4(15)T2	This command was modified to display information about Generic Routing Encapsulation (GRE) tunnel marking. **Note** For this release, GRE-tunnel marking is supported on the Cisco MGX Route Processor Module (RPM-XF) platform *only* .
12.2(33)SB	This command was modified to display information about GRE-tunnel marking, and support for the Cisco 7300 series router was added. This command's output was modified on the Cisco 10000 series router for the PRE3 and PRE4.
Cisco IOS XE 2.1	This command was integrated into Cisco IOS XE Release 2.1 and was implemented on the Cisco ASR 1000 series router.
12.4(20)T	This command was modified. Support was added for hierarchical queueing framework (HQF) using the Modular Quality of Service (QoS) Command-Line Interface (CLI) (MQC).

Usage Guidelines

The **showpolicy-map** command displays the configuration of a policy map created using the **policy-map** command. You can use the **showpolicy-map** command to display all class configurations comprising any existing service policy map, whether or not that policy map has been attached to an interface. The command displays:

- ECN marking information only if ECN is enabled on the interface.
- Bandwidth-remaining ratio configuration and statistical information, if configured and used to determine the amount of unused (excess) bandwidth to allocate to a class queue during periods of congestion.

Cisco 10000 Series Router

In Cisco IOS Release 12.2(33)SB, the output of the show policy-map command is slightly different from previous releases when the policy is a hierarchical policy.

For example, in Cisco IOS Release 12.2(33)SB output similar to the following displays when you specify a hierarchical policy in the show policy-map command:

```
Router# show policy-map Bronze
policy-map bronze
 class class-default
 shape average 34386000
 service-policy Child
```

In Cisco IOS Release 12.2(31)SB, output similar to the following displays when you specify a hierarchical policy in the show policy-map command:

```
Router# show policy-map Gold
policy-map Gold
 Class class-default
 Average Rate Traffic Shaping
 cir 34386000 (bps)
 service-policy Child2
```

In Cisco IOS Release 12.2(33)SB, the output from the show policy-map command displays police actions on separate lines as shown in the following sample output:

```
Router# show policy-map Premium
Policy Map Premium
 Class P1
 priority
 police percent 50 25 ms 0 ms
 conform-action transmit
 exceed-action transmit
 violate-action drop
```

In Cisco IOS Release 12.2(31)SB, the output from the show policy-map command displays police actions on one line as shown in the following sample output:

```
Router# show policy-map Premium
Policy Map Premium
 Class P2
 priority
 police percent 50 25 ms 0 ms conform-action transmit exceed-action transmit violate- action
 drop
```

Examples

This section provides sample output from typical **showpolicy-map**commands. Depending upon the interface or platform in use and the options enabled (for example, Weighted Fair Queueing [WFQ]), the output you see may vary slightly from the ones shown below.

Weighted Fair Queueing: Example

The following example displays the contents of the service policy map called po1. In this example, WFQ is enabled.

```
Router# show policy-map po1
Policy Map po1
 Weighted Fair Queueing
    Class class1
       Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class2
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class3
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class4
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class5
```

```
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class6
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class7
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class8
         Bandwidth 937 (kbps)  Max thresh 64 (packets)
```

The following example displays the contents of all policy maps on the router. Again, WFQ is enabled.

```
Router# show policy-map

Policy Map poH1
 Weighted Fair Queueing
    Class class1
       Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class2
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class3
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class4
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class5
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class6
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class7
Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class8
         Bandwidth 937 (kbps)  Max thresh 64 (packets)
Policy Map policy2
 Weighted Fair Queueing
    Class class1
       Bandwidth 300 (kbps) Max thresh 64 (packets)
    Class class2
        Bandwidth 300  (kbps)  Max thresh 64 (packets)
    Class class3
        Bandwidth 300 (kbps)  Max thresh 64 (packets)
    Class class4
        Bandwidth 300 (kbps)  Max thresh 64 (packets)
    Class class5
        Bandwidth 300 (kbps)  Max thresh 64 (packets)
    Class class6
        Bandwidth 300 (kbps)  Max thresh 64 (packets)
```

The table below describes the significant fields shown in the display.

Table 12: show policy-map Field Descriptions--Configured for WFQ

Field	Description
Policy Map	Policy map name.
Class	Class name.
Bandwidth	Amount of bandwidth in kbps allocated to class.
Max thresh	Maximum threshold in number of packets.

Frame Relay Voice-Adaptive Traffic-Shaping: Example

The following sample output for the **show-policymap** command indicates that Frame Relay voice-adaptive traffic-shaping is configured in the class-default class in the policy map MQC-SHAPE-LLQ1 and that the deactivation timer is set to 30 seconds.

```
Router# show policy-map
  Policy Map VSD1
    Class VOICE1
      Strict Priority
      Bandwidth 10 (kbps) Burst 250 (Bytes)
    Class SIGNALS1
      Bandwidth 8 (kbps) Max Threshold 64 (packets)
    Class DATA1
      Bandwidth 15 (kbps) Max Threshold 64 (packets)
  Policy Map MQC-SHAPE-LLQ1
    Class class-default
      Traffic Shaping
         Average Rate Traffic Shaping
                 CIR 63000 (bps) Max. Buffers Limit 1000 (Packets)
                 Adapt to 8000 (bps)
                 Voice Adapt Deactivation Timer 30 Sec
      service-policy VSD1
```

Note In Cisco IOS Release 12.4(20)T, if an interface configured with a policy map is full of heavy traffic, the implicit policer allows the traffic as defined in the bandwidth statement of each traffic class.

The table below describes the significant fields shown in the display.

Table 13: show policy-map Field Descriptions--Configured for Frame Relay Voice-Adaptive Traffic-Shaping

Field	Description
Strict Priority	Indicates the queueing priority assigned to the traffic in this class.
Burst	Specifies the traffic burst size in bytes.
Traffic Shaping	Indicates that Traffic Shaping is enabled.
Average Rate Traffic Shaping	Indicates the type of Traffic Shaping enabled. Choices are Peak Rate Traffic Shaping or Average Rate Traffic Shaping.
CIR	Committed Information Rate (CIR) in bps.
Max. Buffers Limit	Maximum memory buffer size in packets.
Adapt to	Traffic rate when shaping is active.
Voice Adapt Deactivation Timer	Indicates that Frame Relay voice-adaptive traffic-shaping is configured, and that the deactivation timer is set to 30 seconds.
service-policy	Name of the service policy configured in the policy map “MQC-SHAPE-LLQ1”.

Traffic Policing: Example

The following is sample output from the **showpolicy-map** command. This sample output displays the contents of a policy map called policy1. In policy 1, traffic policing on the basis of a committed information rate (CIR) of 20 percent has been configured, and the bc and be have been specified in milliseconds. As part of the traffic policing configuration, optional conform, exceed, and violate actions have been specified.

```
Router# show policy-map policy1
  Policy Map policy1
    Class class1
     police cir percent 20 bc 300 ms pir percent 40 be 400 ms
       conform-action transmit
       exceed-action drop
       violate-action drop
```

The table below describes the significant fields shown in the display.

Table 14: show policy-map Field Descriptions--Configured for Traffic Policing

Field	Description
Policy Map	Name of policy map displayed.
Class	Name of the class configured in the policy map displayed.
police	Indicates that traffic policing on the basis of specified percentage of bandwidth has been enabled. The committed burst (Bc) and excess burst (Be) sizes have been specified in milliseconds (ms), and optional conform, exceed, and violate actions have been specified.

Two-Rate Traffic Policing: Example

The following is sample output from the **showpolicy-map** command when two-rate traffic policing has been configured. As shown below, two-rate traffic policing has been configured for a class called police. In turn, the class called police has been configured in a policy map called policy1. Two-rate traffic policing has been configured to limit traffic to an average committed rate of 500 kbps and a peak rate of 1 Mbps.

```
Router(config)# class-map police
Router(config-cmap)# match access-group 101
Router(config-cmap)# policy-map policy1
Router(config-pmap)# class police
Router(config-pmap-c)# police cir 500000 bc 10000 pir 1000000 be 10000 conform-action
transmit exceed-action set-prec-transmit 2 violate-action drop
Router(config-pmap-c)# interface serial3/0
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface serial3/0
Router(config-if)# service-policy output policy1
Router(config-if)# end
The following sample output shows the contents of the policy map called policy1 :
Router# show policy-map policy1

 Policy Map policy1
  Class police
   police cir 500000 conform-burst 10000 pir 1000000 peak-burst 10000 conform-action
   transmit exceed-action set-prec-transmit 2 violate-action drop
```

Traffic marked as conforming to the average committed rate (500 kbps) will be sent as is. Traffic marked as exceeding 500 kbps, but not exceeding 1 Mbps, will be marked with IP Precedence 2 and then sent. All traffic exceeding 1 Mbps will be dropped. The burst parameters are set to 10000 bytes.

The table below describes the significant fields shown in the display.

Table 15: show policy-map Field Descriptions--Configured for Two-Rate Traffic Policing

Field	Description
police	Indicates that the **police** command has been configured to enable traffic policing. Also, displays the specified CIR, conform burst size (bc), peak information rate (PIR), and peak burst (BE) size used for marking packets.
conform-action	Displays the action to be taken on packets conforming to a specified rate.
exceed-action	Displays the action to be taken on packets exceeding a specified rate.
violate-action	Displays the action to be taken on packets violating a specified rate.

Multiple Traffic Policing Actions: Example

The following is sample output from the **showpolicy-map** command when the Policer Enhancement--Multiple Actions feature has been configured. The following sample output from the **showpolicy-map**command displays the configuration for a service policy called police. In this service policy, traffic policing has been configured to allow multiple actions for packets marked as conforming to, exceeding, or violating the CIR or the PIR shown in the example.

```
Router# show policy-map police
  Policy Map police
    Class class-default
     police cir 1000000 bc 31250 pir 2000000 be 31250
       conform-action transmit
       exceed-action set-prec-transmit 4
       exceed-action set-frde-transmit
       violate-action set-prec-transmit 2
       violate-action set-frde-transmit
```

Packets conforming to the specified CIR (1000000 bps) are marked as conforming packets. These are transmitted unaltered.

Packets exceeding the specified CIR (but not the specified PIR, 2000000 bps) are marked as exceeding packets. For these packets, the IP Precedence level is set to 4, the discard eligibility (DE) bit is set to 1, and the packet is transmitted.

Packets exceeding the specified PIR are marked as violating packets. For these packets, the IP Precedence level is set to 2, the DE bit is set to 1, and the packet is transmitted.

Note Actions are specified by using the *action* argument of the **police** command. For more information about the available actions, see the **police** command reference page.

The table below describes the significant fields shown in the display.

Table 16: show policy-map Field Descriptions--Configured for Multiple Traffic Policing Actions

Field	Description
police	Indicates that the **police** command has been configured to enable traffic policing. Also, displays the specified CIR, BC, PIR, and BE used for marking packets.
conform-action	Displays the one or more actions to be taken on packets conforming to a specified rate.
exceed-action	Displays the one or more actions to be taken on packets exceeding a specified rate.
violate-action	Displays the one or more actions to be taken on packets violating a specified rate.

Explicit Congestion Notification: Example

The following is sample output from the **showpolicy-map** command when the WRED--Explicit Congestion Notification (ECN) feature has been configured. The words "explicit congestion notification" (along with the ECN marking information) included in the output indicate that ECN has been enabled.

```
Router# show policy-map
   Policy Map pol1
     Class class-default
       Weighted Fair Queueing
             Bandwidth 70 (%)
             exponential weight 9
             explicit congestion notification
             class    min-threshold    max-threshold    mark-probability
             ------------------------------------------------------------
             ------------------------------------------------------------

             0        -                -                1/10
             1        -                -                1/10
             2        -                -                1/10
             3        -                -                1/10
             4        -                -                1/10
             5        -                -                1/10
             6        -                -                1/10
             7        -                -                1/10
             rsvp     -                -                1/10
```

The table below describes the significant fields shown in the display.

Table 17: show policy-map Field Descriptions--Configured for ECN

Field	Description
explicit congestion notification	Indication that Explicit Congestion Notification is enabled.
class	IP precedence value.
min-threshold	Minimum threshold. Minimum WRED threshold in number of packets.
max-threshold	Maximum threshold. Maximum WRED threshold in number of packets.
mark-probability	Fraction of packets dropped when the average queue depth is at the maximum threshold.

Modular QoS CLI (MQC) Unconditional Packet Discard: Example

The following example displays the contents of the policy map called policy1. All the packets belonging to the class called c1 are discarded.

```
Router# show policy-map
 policy1
 Policy Map policy1
  Class c1
   drop
```

The table below describes the significant fields shown in the display.

Table 18: show policy-map Field Descriptions--Configured for MQC Unconditional Packet Discard

Field	Description
Policy Map	Name of the policy map being displayed.
Class	Name of the class in the policy map being displayed.
drop	Indicates that the packet discarding action for all the packets belonging to the specified class has been configured.

Percentage-Based Policing and Shaping: Example

The following example displays the contents of two service policy maps--one called policy1 and one called policy2. In policy1, traffic policing based on a CIR of 50 percent has been configured. In policy 2, traffic shaping based on an average rate of 35 percent has been configured.

```
Router# show policy-map policy1
Policy Map policy1
 class class1
    police cir percent 50
Router# show policy-map policy2
Policy Map policy2
 class class2
    shape average percent 35
```

The following example displays the contents of the service policy map called po1 :

```
Router# show policy-map po1
Policy Map po1
 Weighted Fair Queueing
    Class class1
Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class2
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class3
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class4
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
```

The following example displays the contents of all policy maps on the router:

```
Router# show policy-map

Policy Map poH1
 Weighted Fair Queueing
```

```
    Class class1
       Bandwidth 937 (kbps) Max thresh 64 (packets)
    Class class2
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class3
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
    Class class4
        Bandwidth 937 (kbps)  Max thresh 64 (packets)
Policy Map policy2
 Weighted Fair Queueing
    Class class1
       Bandwidth 300 (kbps) Max thresh 64 (packets)
    Class class2
        Bandwidth 300  (kbps)  Max thresh 64 (packets)
    Class class3
        Bandwidth 300 (kbps)  Max thresh 64 (packets)
    Class class4
        Bandwidth 300 (kbps)  Max thresh 64 (packets)
```

The table below describes the significant fields shown in the display.

Table 19: show policy-map Field Descriptions--Configured for Percentage-Based Policing and Shaping

Field	Description
Policy Map	Name of policy map displayed.
Weighted Fair Queueing	Indicates that weighted fair queueing (WFQ) has been enabled.
Class	Name of class configured in policy map displayed.
Bandwidth	Bandwidth, in kbps, configured for this class.
Max threshold	Maximum threshold. Maximum WRED threshold in number of packets.

Enhanced Packet Marking: Example

The following sample output from the **showpolicy-map**command displays the configuration for policy maps called policy1 and policy2.

In policy1 , a table map called table-map-cos1 has been configured to determine the precedence based on the class of service (CoS) value. Policy map policy 1 converts and propagates the packet markings defined in the table map called table-map-cos1.

The following sample output from the **showpolicy-map**command displays the configuration for service polices called policy1 and policy2 . In policy1 , a table map called table-map1 has been configured to determine the precedence according to the CoS value. In policy2 , a table map called table-map2 has been configured to determine the CoS value according to the precedence value.

```
Router# show policy-map policy1
  Policy Map policy1
    Class class-default
      set precedence cos table table-map1
Router# show policy-map policy2
   Policy Map policy2
    Class class-default
      set cos precedence table table-map2
```

The table below describes the fields shown in the display.

Table 20: show policy-map Field Descriptions--Configured for Enhanced Packet Marking

Field	Description
Policy Map	Name of the policy map being displayed.
Class	Name of the class in the policy map being displayed.
set precedence cos table table-map1 or set cos precedence table table-map2	Name of the set command used to set the specified value. For instance, set precedence cos table-map1 indicates that a table map called table-map1 has been configured to set the precedence value on the basis of the values defined in the table map. Alternately, set cos table table-map2 indicates that a table map called table-map2 has been configured to set the CoS value on the basis of the values defined in the table map.

Bandwidth-Remaining Ratio: Example

The following sample output for the show policy-map command indicates that the class-default class of the policy map named vlan10_policy has a bandwidth-remaining ratio of 10. When congestion occurs, the scheduler allocates class-default traffic 10 times the unused bandwidth allocated in relation to other subinterfaces.

```
Router# show policy-map vlan10_policy
  Policy Map vlan10_policy
    Class class-default
      Average Rate Traffic Shaping
      cir 1000000 (bps)
      bandwidth remaining ratio 10
      service-policy child_policy
```

The table below describes the fields shown in the display.

Table 21: show policy-map Field Descriptions--Configured for Bandwidth-Remaining Ratio

Field	Description
Policy Map	Name of the policy map being displayed.
Class	Name of the class in the policy map being displayed.
Average Rate Traffic Shaping	Indicates that Average Rate Traffic Shaping is configured.
cir	Committed information rate (CIR) used to shape traffic.
bandwidth remaining ratio	Indicates the ratio used to allocate excess bandwidth.

ATM Overhead Accounting: Example

The following sample output for the show policy-map command indicates that ATM overhead accounting is enabled for the class-default class. The BRAS-DSLAM encapsulation is dot1q and the subscriber encapsulation is snap-rbe for the AAL5 service.

```
Policy Map unit-test
Class class-default
```

```
Average Rate Traffic Shaping
cir 10% account dot1q aal5 snap-rbe
```

The table below describes the significant fields shown in the display.

Table 22: show policy-map Field Descriptions--Configured for ATM Overhead Accounting

Field	Description
Average Rate	Committed burst (Bc) is the maximum number of bits sent out in each interval.
cir 10%	Committed information rate (CIR) is 10 percent of the available interface bandwidth.
dot1q	BRAS-DSLAM encapsulation is 802.1Q VLAN.
aal5	DSLAM-CPE encapsulation type is based on the ATM Adaptation Layer 5 service. AAL5 supports connection-oriented variable bit rate (VBR) services.
snap-rbe	Subscriber encapsulation type.

Tunnel-Marking: Example

In this sample output of the**showpolicy-map** command, the character string "ip precedence tunnel 4" indicates that tunnel marking (either L2TPv3 or GRE) has been configured to set the IP precedence value to 4 in the header of a tunneled packet.

Note In Cisco IOS Release 12.4(15)T2, GRE-tunnel marking is supported on the RPM-XF platform *only* .

```
Router# show policy-map
Policy Map TUNNEL_MARKING
    Class MATCH_FRDE
      set ip precedence tunnel 4
```

The table below describes the fields shown in the display.

Table 23: show policy-map Field Descriptions--Configured for Tunnel Marking

Field	Description
Policy Map	Name of the policy map being displayed.
Class	Name of the class in the policy map being displayed.
set ip precedence tunnel	Indicates that tunnel marking has been configured.

HQF: Example 1

The following sample output from the **showpolicy-map**command displays the configuration for a policy map called test1:

```
Router# show policy-map test1
  Policy Map test1
    Class class-default
```

```
      Average Rate Traffic Shaping
      cir 1536000 (bps)
      service-policy test2
```

The table below describes the fields shown in the display.

Table 24: show policy-map Field Descriptions--Configured for HQF

Field	Description
Policy Map	Name of the policy map being displayed.
Class	Name of the class in the policy map being displayed.
Average Rate Traffic Shaping	Indicates that Average Rate Traffic Shaping is configured.
cir	Committed information rate (CIR) in bps.
service-policy	Name of the service policy configured in policy map “test1”.

HQF: Example 2

The following sample output from the **showpolicy-map**command displays the configuration for a policy map called test2:

```
Router# show policy-map test2
  Policy Map test2
    Class RT
      priority 20 (%)
    Class BH
      bandwidth 40 (%)
      queue-limit 128 packets
    Class BL
      bandwidth 35 (%)
       packet-based wred, exponential weight 9

      dscp    min-threshold    max-threshold    mark-probablity
      ----------------------------------------------------------
      af21 (18)     100              400              1/10
      default (0)   -                -                1/10
```

The table below describes the fields shown in the display.

Table 25: show policy-map Field Descriptions--Configured for HQF

Field	Description
Policy Map	Name of the policy map being displayed.
Class	Name of the class in the policy map being displayed.
Average Rate Traffic Shaping	Indicates that Average Rate Traffic Shaping is configured.
priority	Indicates the queueing priority percentage assigned to traffic in this class.
bandwidth	Indicates the bandwidth percentage allocated to traffic in this class.
queue-limit	Indicates the queue limit in packets for this traffic class.

Field	Description
packet-based wred, exponential weight	Indicates that random detect is being applied and the units used are packets. Exponential weight is a factor for calculating the average queue size used with WRED.
dscp	Differentiated services code point (DSCP). Values can be the following: • 0 to 63--Numerical DSCP values. The default value is 0. • af1 to af43--Assured forwarding (AF) DSCP values. • cs1 to cs7--Type of service (ToS) precedence values. • default--Default DSCP value. • ef--Expedited forwarding (EF) DSCP values.
min-threshold	Minimum threshold. Minimum WRED threshold in number of packets.
max-threshold	Maximum threshold. Maximum WRED threshold in number of packets.
mark-probability	Fraction of packets dropped when the average queue depth is at the maximum threshold.

Related Commands

Command	Description
bandwidth	Specifies or modifies the bandwidth allocated for a class belonging to a policy map, and enables ATM overhead accounting.
bandwidth remaining ratio	Specifies a bandwidth-remaining ratio for class queues and subinterface-level queues to determine the amount of unused (excess) bandwidth to allocate to the queue during congestion.
class (policy map)	Specifies the name of the class whose policy you want to create or change, and the default class (commonly known as the class-default class) before you configure its policy.
class-map	Creates a class map to be used for matching packets to a specified class.
drop	Configures a traffic class to discard packets belonging to a specific class.
police	Configures traffic policing.
police (two rates)	Configures traffic policing using two rates, the CIR and the PIR.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
random-detect ecn	Enables ECN.
shape	Shapes traffic to the indicated bit rate according to the algorithm specified, and enables ATM overhead accounting.

Command	Description
show policy-map class	Displays the configuration for the specified class of the specified policy map.
show policy-map interface	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.
show running-config	Displays the current configuration of the router. If configured, the command output includes information about ATM overhead accounting.
show table-map	Displays the configuration of a specified table map or of all table maps.
table-map (value mapping)	Creates and configures a mapping table for mapping and converting one packet-marking value to another.

show policy-map class

To display the configuration for the specified class of the specified policy map, use the **showpolicy-mapclass**command inEXEC mode.

show policy-map *policy-map* **class** *class-name*

Syntax Description

policy-map	The name of a policy map that contains the class configuration to be displayed.
class-name	The name of the class whose configuration is to be displayed.

Command Modes

EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.1	This command was implemented on Cisco ASR 1000 series routers.

Usage Guidelines

You can use the **showpolicy-mapclass** command to display any single class configuration for any service policy map, whether or not the specified service policy map has been attached to an interface.

Examples

The following example displays configurations for the class called class7 that belongs to the policy map called po1:

```
Router# show policy-map po1 class class7


Class class7
 Bandwidth 937 (kbps) Max Thresh 64 (packets)
```

Related Commands

Command	Description
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.

Command	Description
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.

show policy-map control-plane

To display the configuration and statistics for a traffic class or all traffic classes in the policy maps attached to the control plane for aggregate or distributed control plane services, use the **showpolicy-mapcontrol-plane** command in privileged EXEC mode.

Cisco 3660, 3800, 7200, 7400, and 7500 Series Routers
show policy-map control-plane [**type policy-type**] [{**all** | **slot** *slot-number*}] [{**host** | **transit** | **cef-exception**}] [{**input** [**class** *class-name*] | **output** [**class** *class-name*]}]

Cisco 7600 and ASR 1000 Series Routers
show policy-map control-plane [**all**] [{**input** [**class** *class-name*] | **output** [**class** *class-name*]}]

Syntax Description

type *policy-type*	(Optional) Specifies policy-map type for which you want statistics (for example, port-filter or queue-threshold).
all	(Optional) Displays all QoS control plane policies used in aggregate and distributed control plane (CP) services.
slot *slot-number*	(Optional) Displays information about the quality of service (QoS) policy used to perform distributed CP services on the specified line card.
host	(Optional) Displays policy-map and class-map statistics for the host subinterface.
transit	(Optional) Displays policy-map and class-map statistics for the transit subinterface.
cef-exception	(Optional) Displays policy-map and class-map statistics for the Cef-exception subinterface.
input	(Optional) Displays statistics for the attached input policy.
output	(Optional) Displays statistics for the attached output policy. **Note** The output keyword is supported only in Cisco IOS Release 12.3(4)T and later Cisco IOS 12.3T releases.
class *class-name*	(Optional) Name of the class whose configuration and statistics are to be displayed.

Command Default

Information displays for all classes of the policy map of the control plane.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(18)S	This command was introduced.
12.3(4)T	This command was integrated into Cisco IOS Release 12.3(4)T, and support for the **output** keyword was added.
12.0(29)S	This command was integrated into Cisco IOS Release 12.0(29)S.

Release	Modification
12.2(18)SXD1	This command was integrated into Cisco IOS Release 12.2(18)SXD1.
12.0(30)S	The**slot***slot-number*parameter was added to support distributed CP services.
12.4(4)T	Support was added for the**type***policy-type*keyword and argument combination and for the **host**, **transit**, and **cef-exception** keywords.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.2	This command was implemented on Cisco ASR 1000 series routers.

Usage Guidelines

The**showpolicy-mapcontrol-plane** command displays information for aggregate and distributed control-plane policing services that manage the number or rate of control-plane (CP) packets sent to the process level of the route processor.

Information for distributed control-plane service is displayed for a specified line card. Distributed CP services are performed on a line card's distributed switch engine and manage CP traffic sent from all interfaces on the line card to the route processor, where aggregate CP services (for CP packets received from all line cards on the router) are performed.

Examples

The following example shows that the policy map TEST is associated with the control plane. This policy map polices traffic that matches the class map TEST, while allowing all other traffic (that matches the class map called "class-default") to go through as is.

```
Router# show policy-map control-plane

Control Plane
Service-policy input:TEST
Class-map:TEST (match-all)
      20 packets, 11280 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match:access-group 101
      police:
        8000 bps, 1500 limit, 1500 extended limit
        conformed 15 packets, 6210 bytes; action:transmit
        exceeded 5 packets, 5070 bytes; action:drop
        violated 0 packets, 0 bytes; action:drop
        conformed 0 bps, exceed 0 bps, violate 0 bps
Class-map:class-default (match-any)
      105325 packets, 11415151 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match:any
```

The table below describes the significant fields shown in the display.

Table 26: show policy-map control-plane Field Descriptions

Field	Description
Fields Associated with Classes or Service Policies	
Service-policy input	Name of the input service policy that is applied to the control plane. (This field will also show the output service policy, if configured.)

Field	Description
Class-map	Class of traffic being displayed. Traffic is displayed for each configured class. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
offered rate	Rate, in kbps, at which packets are coming into the class.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Match	Match criteria for the specified class of traffic. For more information about the variety of match criteria options available, see the "Applying QoS Features Using the MQC" module in the *Cisco IOS Quality of Service Solutions Configuration Guide* .
Fields Associated with Traffic Policing	
police	Indicates that the **police** command has been configured to enable traffic policing.
conformed	Displays the action to be taken on packets that conform to a specified rate. Displays the number of packets and bytes on which the action was taken.
exceeded	Displays the action to be taken on packets that exceed a specified rate. Displays the number of packets and bytes on which the action was taken.
violated	Displays the action to be taken on packets that violate a specified rate. Displays the number of packets and bytes on which the action was taken.

Related Commands

Command	Description
control-plane	Enters control-plane configuration mode to apply a QoS policy to police traffic destined for the control plane.
service-policy (control-plane)	Attaches a policy map to the control plane for aggregate or distributed control-plane services.

show policy-map interface

To display the statistics and the configurations of the input and output policies that are attached to an interface, use the **show policy-map interface** command in user EXEC or privileged EXEC mode.

ATM Shared Port Adapters
show policy-map interface *slot/subslot/port* **.**[*subinterface*]

Cisco CMTS Routers
show policy-map interface *interface-type slot/subslot/port*

Cisco 3660, 3845, 7200, 7400, 7500, Cisco ASR 903 Series Routers, and Cisco ASR 1000 Series Routers
show policy-map interface *type type-parameter* [**vc** [*vpi*][*/*]*vci*] [**dlci** *dlci*] [{**input** | **output**}] [**class** *class-name*]

Cisco 6500 Series Switches
show policy-map interface [{*interface-type interface-number* | **vlan** *vlan-id*}] [**detailed**] [{**input** | **output**} [**class** *class-name*]]
show policy-map interface [**port-channel** *channel-number* [**class** *class-name*]]

Cisco 7600 Series Routers
show policy-map interface [{*interface-type interface-number* | **null 0** | **vlan** *vlan-id*}] [{**input** | **output**}]

Syntax Description

slot	(CMTS and ATM shared port adapter only) Chassis slot number. See the appropriate hardware manual for slot information. For SIPs, see the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs and SPAs" topic in the platform-specific SPA software configuration guide.
/subslot	(CMTS and ATM shared port adapter only) Secondary slot number on an SPA interface processor (SIP) where a SPA is installed. See the platform-specific SPA hardware installation guide and the corresponding "Specifying the Interface Address on an SPA" topic in the platform-specific SPA software configuration guide for subslot information.
port	(CMTS and ATM shared port adapter only) Port or interface number. See the appropriate hardware manual for port information. For SPAs, see the corresponding "Specifying the Interface Address" topics in the platform-specific SPA software configuration guide.
.subinterface	(ATM shared port adapter only—Optional) Subinterface number. The number that precedes the period must match the number to which this subinterface belongs. The range is 1 to 4,294,967,293.
type	Type of interface or subinterface whose policy configuration is to be displayed.
type-parameter	Port, connector, interface card number, class-map name or other parameter associated with the interface or subinterface type.
vc	(Optional) For ATM interfaces only, shows the policy configuration for a specified PVC.

vpi /	(Optional) ATM network virtual path identifier (VPI) for this permanent virtual circuit (PVC). On the Cisco 7200 and 7500 series routers, this value ranges from 0 to 255. The *vpi* and *vci* arguments cannot both be set to 0; if one is 0, the other cannot be 0. The absence of both the forward slash (/) and a *vpi* value defaults the *vpi* value to 0. If this value is omitted, information for all virtual circuits (VCs) on the specified ATM interface or subinterface is displayed.
vci	(Optional) ATM network virtual channel identifier (VCI) for this PVC. This value ranges from 0 to 1 less than the maximum value set for this interface by the **atmvc-per-vp** command. Typically, the lower values 0 to 31 are reserved for specific traffic (F4 Operation, Administration, and Maintenance [OAM], switched virtual circuit [SVC] signaling, Integrated Local Management Interface [ILMI], and so on) and should not be used. The VCI is a 16-bit field in the header of the ATM cell. The VCI value is unique only on a single link, not throughout the ATM network, because it has local significance only. The *vpi* and *vci* arguments cannot both be set to 0; if one is 0, the other cannot be 0.
dlci	(Optional) Indicates a specific PVC for which policy configuration will be displayed.
dlci	(Optional) A specific data-link connection identifier (DLCI) number used on the interface. Policy configuration for the corresponding PVC will be displayed when a DLCI is specified.
input	(Optional) Indicates that the statistics for the attached input policy will be displayed.
output	(Optional) Indicates that the statistics for the attached output policy will be displayed.
class *class-name*	(Optional) Displays the QoS policy actions for the specified class.
interface-type	(Optional) Interface type; possible valid values are **atm**, **ethernet**, **fastethernet**, **ge-wan gigabitethernet**, **pos**, **pseudowire** and **tengigabitethernet**.
interface-number	(Optional) Module and port number; see the "Usage Guidelines" section for valid values.
vlan *vlan-id*	(Optional) Specifies the VLAN ID; valid values are from 1 to 4094.
detailed	(Optional) Displays additional statistics.
port-channel *channel-number*	(Optional) Displays the EtherChannel port-channel interface.
null 0	(Optional) Specifies the null interface; the only valid value is 0.

Command Default

This command displays the packet statistics of all classes that are configured for all service policies on the specified interface or subinterface or on a specific permanent virtual circuit (PVC) on the interface.

When used with the ATM shared port adapter, this command has no default behavior or values.

Command Modes

Privileged EXEC (#)

ATM Shared Port Adapter

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was integrated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was integrated into Cisco IOS Release 12.0(7)S.
12.0(28)S	This command was modified for the QoS: Percentage-Based Policing feature to include milliseconds when calculating the committed (conform) burst (bc) and excess (peak) burst (be) sizes.
12.1(1)E	This command was integrated into Cisco IOS Release 12.1(1)E.
12.1(2)T	This command was modified to display information about the policy for all Frame Relay PVCs on the interface or, if a DLCI is specified, the policy for that specific PVC. This command was also modified to display the total number of packets marked by the quality of service (QoS) set action.
12.1(3)T	This command was modified to display per-class accounting statistics.
12.2(4)T	This command was modified for two-rate traffic policing and can display burst parameters and associated actions.
12.2(8)T	This command was modified for the Policer Enhancement—Multiple Actions feature and the WRED—Explicit Congestion Notification (ECN) feature. For the Policer Enhancement—Multiple Actions feature, the command was modified to display the multiple actions configured for packets conforming to, exceeding, or violating a specific rate. For the WRED—Explicit Congestion Notification (ECN) feature, the command displays ECN marking information.

Release	Modification
12.2(13)T	The following modifications were made: • This command was modified for the Percentage-Based Policing and Shaping feature. • This command was modified for the Class-Based RTP and TCP Header Compression feature. • This command was modified as part of the Modular QoS CLI (MQC) Unconditional Packet Discard feature. Traffic classes in policy maps can now be configured to discard packets belonging to a specified class. • This command was modified to display the Frame Relay DLCI number as a criterion for matching traffic inside a class map. • This command was modified to display Layer 3 packet length as a criterion for matching traffic inside a class map. • This command was modified for the Enhanced Packet Marking feature. A mapping table (table map) can now be used to convert and propagate packet-marking values.
12.2(14)SX	This command was modified. Support for this command was introduced on Cisco 7600 series routers.
12.2(15)T	This command was modified to display Frame Relay voice-adaptive traffic-shaping information.
12.2(17d)SXB	This command was implemented on the Supervisor Engine 2 and integrated into Cisco IOS Release 12.2(17d)SXB.
12.3(14)T	This command was modified to display bandwidth estimation parameters.
12.2(18)SXE	This command was integrated into Cisco IOS Release 12.2(18)SXE. This command was modified to display aggregate WRED statistics for the ATM shared port adapter. Note that changes were made to the syntax, defaults, and command modes. These changes are labelled “ATM Shared Port Adapter.”
12.4(4)T	This command was modified. The **typeaccess-control** keywords were added to support flexible packet matching.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB, and the following modifications were made: • This command was modified to display either legacy (undistributed processing) QoS or hierarchical queueing framework (HQF) parameters on Frame Relay interfaces or PVCs. • This command was modified to display information about Layer 2 Tunnel Protocol Version 3 (L2TPv3) tunnel marking.

Release	Modification
12.2(31)SB2	The following modifications were made: • This command was enhanced to display statistical information for each level of priority service configured and information about bandwidth-remaining ratios, and this command was implemented on the Cisco 10000 series router for the PRE3. • This command was modified to display statistics for matching packets on the basis of VLAN identification numbers. As of Cisco IOS Release 12.2(31)SB2, matching packets on the basis of VLAN identification numbers is supported on Cisco 10000 series routers only.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC.
12.4(15)T2	This command was modified to display information about Generic Routing Encapsulation (GRE) tunnel marking. **Note** As of this release, GRE-tunnel marking is supported on the Cisco MGX Route Processor Module (RPM-XF) platform *only* .
12.2(33)SB	This command was modified to display information about GRE-tunnel marking, and support for the Cisco 7300 series router was added.
Cisco IOS XE 2.1	This command was integrated into Cisco IOS XE Release 2.1 and was implemented on the Cisco ASR 1000 series router.
12.4(20)T	This command was modified. Support was added for hierarchical queueing framework (HQF) using the Modular Quality of Service (QoS) Command-Line Interface (CLI) (MQC).
12.2(33)SXI	This command was implemented on the Catalyst 6500 series switch and modified to display the strict level in the priority feature and the counts per level.
12.2(33)SRE	This command was modified to automatically round off the bc and be values, in the MQC police policy map, to the interface's MTU size.
Cisco IOS XE Release 2.6	The command output was modified to display information about subscriber QoS statistics.
12.2(54)SG	This command was modified to display only the applicable count of policer statistics.
12.2(33)SCF	This command was integrated into Cisco IOS Release 12.2(33)SCF.
Cisco IOS XE Release 3.7S	This command was implemented on Cisco ASR 903 Series Routers.
Cisco IOS XE Release 3.8S	This command was modified. The *pseudowire* interface type was added.
Cisco IOS XE Release 3.8S	This command was modified. The *pseudowire* interface type was added on Cisco 1000 Series Routers.

Release	Modification
Cisco IOS Release 15.3(1)S	This command was modified. The *pseudowire* interface type was added.

Usage Guidelines

Cisco 3660, 3845, 7200, 7400, 7500, Cisco ASR 903 Series Routers, and Cisco ASR 1000 Series Routers

The **show policy-map interface** command displays the packet statistics for classes on the specified interface or the specified PVC only if a service policy has been attached to the interface or the PVC.

The counters displayed after the **show policy-map interface** command is entered are updated only if congestion is present on the interface.

The **show policy-map interface** command displays policy information about Frame Relay PVCs only if Frame Relay Traffic Shaping (FRTS) is enabled on the interface.

The **show policy-map interface** command displays ECN marking information only if ECN is enabled on the interface.

To determine if shaping is active with HQF, check the queue depth field of the "(queue depth/total drops/no-buffer drops)" line in the **show policy-map interface** command output.

In HQF images for Cisco IOS Releases 12.4(20)T and later, the packets delayed and the bytes delayed counters were removed for traffic shaping classes.

Cisco 7600 Series Routers and Catalyst 6500 Series Switches

The pos, atm, and ge-wan interfaces are not supported on Cisco 7600 series routers or Catalyst 6500 series switches that are configured with a Supervisor Engine 720

Cisco 7600 series routers and Catalyst 6500 series switches that are configured with a Supervisor Engine 2 display packet counters.

Cisco 7600 series routers and Catalyst 6500 series switches that are configured with a Supervisor Engine 720 display byte counters.

The output does not display policed-counter information; 0 is displayed in its place (for example, 0 packets, 0 bytes). To display dropped and forwarded policed-counter information, enter the **show mls qos** command.

On the Cisco 7600 series router, for OSM WAN interfaces only, if you configure policing within a policy map, the hardware counters are displayed and the class-default counters are not displayed. If you do not configure policing within a policy map, the class-default counters are displayed.

On the Catalyst 6500 series switch, the **show policy-map interface** command displays the strict level in the priority feature and the counts per level.

The *interface-number* argument designates the module and port number. Valid values for *interface-number* depend on the specified interface type and the chassis and module that are used. For example, if you specify a Gigabit Ethernet interface and have a 48-port 10/100BASE-T Ethernet module that is installed in a 13-slot chassis, valid values for the module number are from 1 to 13 and valid values for the port number are from 1 to 48.

HQF

When you configure HQF, the **show policy-map interface** command displays additional fields that include the differentiated services code point (DSCP) value, WRED statistics in bytes, transmitted packets by WRED, and a counter that displays packets output/bytes output in each class.

Examples

This section provides sample output from typical **show policy-map interface** commands. Depending upon the interface or platform in use and the options enabled, the output you see may vary slightly from the ones shown below.

Weighted Fair Queueing (WFQ) on Serial Interface: Example

The following sample output of the **show policy-map interface** command displays the statistics for the serial 3/1 interface, to which a service policy called mypolicy (configured as shown below) is attached. Weighted fair queueing (WFQ) has been enabled on this interface. See the table below for an explanation of the significant fields that commonly appear in the command output.

```
policy-map mypolicy
 class voice
  priority 128
 class gold
  bandwidth 100
 class silver
  bandwidth 80
  random-detect
Router# show policy-map interface serial3/1 output

 Serial3/1
  Service-policy output: mypolicy
    Class-map: voice (match-all)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: ip precedence 5
      Weighted Fair Queueing
        Strict Priority
        Output Queue: Conversation 264
        Bandwidth 128 (kbps) Burst 3200 (Bytes)
        (pkts matched/bytes matched) 0/0
        (total drops/bytes drops) 0/0
    Class-map: gold (match-all)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: ip precedence 2
      Weighted Fair Queueing
        Output Queue: Conversation 265
        Bandwidth 100 (kbps) Max Threshold 64 (packets)
        (pkts matched/bytes matched) 0/0
        (depth/total drops/no-buffer drops) 0/0/0
    Class-map: silver (match-all)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: ip precedence 1
      Weighted Fair Queueing
        Output Queue: Conversation 266
        Bandwidth 80 (kbps)
        (pkts matched/bytes matched) 0/0
        (depth/total drops/no-buffer drops) 0/0/0
         exponential weight: 9
         mean queue depth: 0
class     Transmitted       Random drop      Tail drop    Minimum Maximum  Mark
          pkts/bytes        pkts/bytes       pkts/bytes    thresh  thresh  prob
0             0/0               0/0              0/0          20      40  1/10
1             0/0               0/0              0/0          22      40  1/10
2             0/0               0/0              0/0          24      40  1/10
3             0/0               0/0              0/0          26      40  1/10
```

```
4             0/0               0/0               0/0            28      40  1/10
5             0/0               0/0               0/0            30      40  1/10
6             0/0               0/0               0/0            32      40  1/10
7             0/0               0/0               0/0            34      40  1/10
rsvp          0/0               0/0               0/0            36      40  1/10
Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
```

Traffic Shaping on Serial Interface: Example

The following sample output from the **show policy-map interface** command displays the statistics for the serial 3/2 interface, to which a service policy called p1 (configured as shown below) is attached. Traffic shaping has been enabled on this interface. See the table below for an explanation of the significant fields that commonly appear in the command output.

Note In HQF images for Cisco IOS Releases 12.4(20)T and later, the packets delayed and bytes delayed counters were removed for traffic shaping classes.

```
policy-map p1
 class c1
  shape average 320000
Router# show policy-map interface serial3/2 output

 Serial3/2
  Service-policy output: p1
    Class-map: c1 (match-all)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: ip precedence 0
      Traffic Shaping
        Target    Byte   Sustain   Excess    Interval  Increment Adapt
        Rate      Limit  bits/int  bits/int  (ms)      (bytes)   Active
        320000    2000   8000      8000      25        1000      -
        Queue     Packets   Bytes     Packets   Bytes     Shaping
        Depth                         Delayed   Delayed   Active
        0         0         0         0         0         no
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
```

The table below describes significant fields commonly shown in the displays. The fields in the table are grouped according to the relevant QoS feature. A number in parentheses may appear next to the service-policy output name, class-map name, and match criteria information. The number is for Cisco internal use only and can be disregarded.

Table 27: show policy-map interface Field Descriptions

Field	Description
Fields Associated with Classes or Service Policies	

Field	Description
Service-policy output	Name of the output service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets and bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation (GRE) tunnel and an IP Security (IPSec) tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPSec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Note In distributed architecture platforms (such as the Cisco 7500 series platform), the value of the transfer rate, calculated as the difference between the offered rate and the drop rate counters, can sporadically deviate from the average by up to 20 percent or more. This can occur while no corresponding burst is registered by independent traffic analyser equipment.	

Field	Description
Match	Match criteria specified for the class of traffic. Choices include criteria such as IP precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental (EXP) value, access groups, and QoS groups. For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide* .
Fields Associated with Queueing (if Enabled)	
Output Queue	The weighted fair queueing (WFQ) conversation to which this class of traffic is allocated.
Bandwidth	Bandwidth, in either kbps or percentage, configured for this class and the burst size.
pkts matched/bytes matched	Number of packets (also shown in bytes) matching this class that were placed in the queue. This number reflects the total number of matching packets queued at any time. Packets matching this class are queued only when congestion exists. If packets match the class but are never queued because the network was not congested, those packets are not included in this total. However, if process switching is in use, the number of packets is always incremented even if the network is not congested.
depth/total drops/no-buffer drops	Number of packets discarded for this class. No-buffer indicates that no memory buffer exists to service the packet.
Fields Associated with Weighted Random Early Detection (WRED) (if Enabled)	
exponential weight	Exponent used in the average queue size calculation for a WRED parameter group.
mean queue depth	Average queue depth based on the actual queue depth on the interface and the exponential weighting constant. It is a fluctuating average. The minimum and maximum thresholds are compared against this value to determine drop decisions.
class	IP precedence level.
Transmitted pkts/bytes	Number of packets (also shown in bytes) passed through WRED and not dropped by WRED. **Note** If there is insufficient memory in the buffer to accommodate the packet, the packet can be dropped *after* the packet passes through WRED. Packets dropped because of insufficient memory in the buffer (sometimes referred to as "no-buffer drops") are not taken into account by the WRED packet counter.

Field	Description
Random drop pkts/bytes	Number of packets (also shown in bytes) randomly dropped when the mean queue depth is between the minimum threshold value and the maximum threshold value for the specified IP precedence level.
Tail drop pkts/bytes	Number of packets dropped when the mean queue depth is greater than the maximum threshold value for the specified IP precedence level.
Minimum thresh	Minimum threshold. Minimum WRED threshold in number of packets.
Maximum thresh	Maximum threshold. Maximum WRED threshold in number of packets.
Mark prob	Mark probability. Fraction of packets dropped when the average queue depth is at the maximum threshold.
Fields Associated with Traffic Shaping (if Enabled)	
Target Rate	Rate used for shaping traffic.
Byte Limit	Maximum number of bytes that can be transmitted per interval. Calculated as follows: ((Bc+Be) /8) x 1
Sustain bits/int	Committed burst (Bc) rate.
Excess bits/int	Excess burst (Be) rate.
Interval (ms)	Time interval value in milliseconds (ms).
Increment (bytes)	Number of credits (in bytes) received in the token bucket of the traffic shaper during each time interval.
Queue Depth	Current queue depth of the traffic shaper.
Packets	Total number of packets that have entered the traffic shaper system.
Bytes	Total number of bytes that have entered the traffic shaper system.
Packets Delayed	Total number of packets delayed in the queue of the traffic shaper before being transmitted.
Bytes Delayed	Total number of bytes delayed in the queue of the traffic shaper before being transmitted.
Shaping Active	Indicates whether the traffic shaper is active. For example, if a traffic shaper is active, and the traffic being sent exceeds the traffic shaping rate, a “yes” appears in this field.

Precedence-Based Aggregate WRED on ATM Shared Port Adapter: Example

The following sample output of the **show policy-map interface** command displays the statistics for the ATM shared port adapter interface 4/1/0.10, to which a service policy called prec-aggr-wred (configured as shown below) is attached. Because aggregate WRED has been enabled on this interface, the classthrough Mark Prob statistics are aggregated by subclasses. See the table below for an explanation of the significant fields that commonly appear in the command output.

```
Router(config)# policy-map prec-aggr-wred
Router(config-pmap)# class class-default
Router(config-pmap-c)# random-detect aggregate
Router(config-pmap-c)# random-detect precedence values 0 1 2 3 minimum thresh 10
maximum-thresh 100 mark-prob 10
Router(config-pmap-c)# random-detect precedence values 4 5 minimum-thresh 40 maximum-thresh
 400 mark-prob 10
Router(config-pmap-c)# random-detect precedence values 6 minimum-thresh 60 maximum-thresh
600 mark-prob 10
Router(config-pmap-c)# random-detect precedence values 7 minimum-thresh 70 maximum-thresh
700 mark-prob 10
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface ATM4/1/0.10 point-to-point
Router(config-if)# ip address 10.0.0.2 255.255.255.0
Router(config-if)# pvc 10/110
Router(config-if)# service-policy output prec-aggr-wred


Router# show policy-map interface atm4/1/0.10

 ATM4/1/0.10: VC 10/110 -
  Service-policy output: prec-aggr-wred
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
        Exp-weight-constant: 9 (1/512)
        Mean queue depth: 0
        class       Transmitted     Random drop      Tail drop     Minimum   Maximum  Mark
 pkts/bytes pkts/bytes pkts/bytes thresh thresh prob

        0  1  2  3       0/0              0/0              0/0           10     100  1/10
        4  5             0/0              0/0              0/0           40     400  1/10
        6                0/0              0/0              0/0           60     600  1/10
        7                0/0              0/0              0/0           70     700  1/10
```

DSCP-Based Aggregate WRED on ATM Shared Port Adapter: Example

The following sample output of the **show policy-map interface** command displays the statistics for the ATM shared port adapter interface 4/1/0.11, to which a service policy called dscp-aggr-wred (configured as shown below) is attached. Because aggregate WRED has been enabled on this interface, the class through Mark Prob statistics are aggregated by subclasses. See the table below for an explanation of the significant fields that commonly appear in the command output.

```
Router(config)# policy-map dscp-aggr-wred
Router(config-pmap)# class class-default
Router(config-pmap-c)# random-detect dscp-based aggregate minimum-thresh 1 maximum-thresh
10 mark-prob 10
```

```
Router(config-pmap-c)# random-detect dscp values 0 1 2 3 4 5 6 7 minimum-thresh 10
maximum-thresh 20 mark-prob 10
Router(config-pmap-c)# random-detect dscp values 8 9 10 11 minimum-thresh 10 maximum-thresh
 40 mark-prob 10
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# interface ATM4/1/0.11 point-to-point
Router(config-subif)# ip address 10.0.0.2 255.255.255.0
Router(config-subif)# pvc 11/101
Router(config-subif)# service-policy output dscp-aggr-wred
Router# show policy-map interface atm4/1/0.11

 ATM4/1/0.11: VC 11/101 -
  Service-policy output: dscp-aggr-wred
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
        Exp-weight-constant: 0 (1/1)
        Mean queue depth: 0
        class       Transmitted     Random drop      Tail drop     Minimum   Maximum  Mark
                   pkts/bytes pkts/bytes pkts/bytes thresh thresh prob
        default          0/0               0/0              0/0            1      10  1/10
        0  1  2  3
        4  5  6  7       0/0               0/0              0/0           10      20  1/10
        8  9  10 11      0/0               0/0              0/0           10      40  1/10
```

The table below describes the significant fields shown in the display when aggregate WRED is configured for an ATM shared port adapter.

Table 28: show policy-map interface Field Descriptions—Configured for Aggregate WRED on ATM Shared Port Adapter

Field	Description
exponential weight	Exponent used in the average queue size calculation for a Weighted Random Early Detection (WRED) parameter group.
mean queue depth	Average queue depth based on the actual queue depth on the interface and the exponential weighting constant. It is a fluctuating average. The minimum and maximum thresholds are compared against this value to determine drop decisions.
Note When Aggregate Weighted Random Early Detection (WRED) is enabled, the following WRED statistics will be aggregated based on their subclass (either their IP precedence or differentiated services code point (DSCP) value).	
class	IP precedence level or differentiated services code point (DSCP) value.

Field	Description
Transmitted pkts/bytes	Number of packets (also shown in bytes) passed through WRED and not dropped by WRED. **Note** If there is insufficient memory in the buffer to accommodate the packet, the packet can be dropped *after* the packet passes through WRED. Packets dropped because of insufficient memory in the buffer (sometimes referred to as "no-buffer drops") are not taken into account by the WRED packet counter.
Random drop pkts/bytes	Number of packets (also shown in bytes) randomly dropped when the mean queue depth is between the minimum threshold value and the maximum threshold value for the specified IP precedence level or DSCP value.
Tail drop pkts/bytes	Number of packets dropped when the mean queue depth is greater than the maximum threshold value for the specified IP precedence level or DSCP value.
Minimum thresh	Minimum threshold. Minimum WRED threshold in number of packets.
Maximum thresh	Maximum threshold. Maximum WRED threshold in number of packets.
Mark prob	Mark probability. Fraction of packets dropped when the average queue depth is at the maximum threshold.

Frame Relay Voice-Adaptive Traffic-Shaping: Example

The following sample output shows that Frame Relay voice-adaptive traffic shaping is currently active and has 29 seconds left on the deactivation timer. With traffic shaping active and the deactivation time set, this means that the current sending rate on DLCI 201 is minCIR, but if no voice packets are detected for 29 seconds, the sending rate will increase to CIR.

Note In HQF images for Cisco IOS Releases 12.4(20)T and later, the packets delayed and bytes delayed counters were removed for traffic shaping classes.

```
Router# show policy interface Serial3/1.1

 Serial3/1.1:DLCI 201 -
  Service-policy output:MQC-SHAPE-LLQ1

    Class-map:class-default (match-any)
      1434 packets, 148751 bytes
      30 second offered rate 14000 bps, drop rate 0 bps
      Match:any
      Traffic Shaping
           Target/Average   Byte   Sustain   Excess    Interval  Increment
             Rate           Limit  bits/int  bits/int  (ms)      (bytes)
            63000/63000     1890   7560      7560      120       945
```

```
Adapt  Queue     Packets   Bytes     Packets   Bytes     Shaping
Active Depth                         Delayed   Delayed   Active
BECN   0         1434      162991    26        2704      yes
Voice Adaptive Shaping active, time left 29 secs
```

The table below describes the significant fields shown in the display. Significant fields that are not described in the table below are described in the table above (for "show policy-map interface Field Descriptions").

Table 29: show policy-map interface Field Descriptions—Configured for Frame Relay Voice-Adaptive Traffic Shaping

Field	Description
Voice Adaptive Shaping active/inactive	Indicates whether Frame Relay voice-adaptive traffic shaping is active or inactive.
time left	Number of seconds left on the Frame Relay voice-adaptive traffic shaping deactivation timer.

Two-Rate Traffic Policing: Example

The following is sample output from the **show policy-map interface** command when two-rate traffic policing has been configured. In the example below, 1.25 Mbps of traffic is sent ("offered") to a policer class.

```
Router# show policy-map interface serial3/0


 Serial3/0
  Service-policy output: policy1
   Class-map: police (match all)
    148803 packets, 36605538 bytes
    30 second offered rate 1249000 bps, drop rate 249000 bps
    Match: access-group 101
    police:
     cir 500000 bps, conform-burst 10000, pir 1000000, peak-burst 100000
     conformed 59538 packets, 14646348 bytes; action: transmit
     exceeded 59538 packets, 14646348 bytes; action: set-prec-transmit 2
     violated 29731 packets, 7313826 bytes; action: drop
     conformed 499000 bps, exceed 500000 bps violate 249000 bps
   Class-map: class-default (match-any)
    19 packets, 1990 bytes
    30 seconds offered rate 0 bps, drop rate 0 bps
    Match: any
```

The two-rate traffic policer marks 500 kbps of traffic as conforming, 500 kbps of traffic as exceeding, and 250 kbps of traffic as violating the specified rate. Packets marked as conforming will be sent as is, and packets marked as exceeding will be marked with IP Precedence 2 and then sent. Packets marked as violating the specified rate are dropped.

The table below describes the significant fields shown in the display.

Table 30: show policy-map interface Field Descriptions—Configured for Two-Rate Traffic Policing

Field	Description
police	Indicates that the **police** command has been configured to enable traffic policing. Also, displays the specified CIR, conform burst size, peak information rate (PIR), and peak burst size used for marking packets.
conformed	Displays the action to be taken on packets conforming to a specified rate. Displays the number of packets and bytes on which the action was taken.
exceeded	Displays the action to be taken on packets exceeding a specified rate. Displays the number of packets and bytes on which the action was taken.
violated	Displays the action to be taken on packets violating a specified rate. Displays the number of packets and bytes on which the action was taken.

Multiple Traffic Policing Actions: Example

The following is sample output from the **show policy-map** command when the Policer Enhancement—Multiple Actions feature has been configured. The sample output from the **show policy-map interface** command displays the statistics for the serial 3/2 interface, to which a service policy called "police" (configured as shown below) is attached.

```
policy-map police
 class class-default
  police cir 1000000 pir 2000000
   conform-action transmit
   exceed-action set-prec-transmit 4
   exceed-action set-frde-transmit
   violate-action set-prec-transmit 2
   violate-action set-frde-transmit

Router# show policy-map interface serial3/2

Serial3/2: DLCI 100 -
Service-policy output: police
    Class-map: class-default (match-any)
      172984 packets, 42553700 bytes
      5 minute offered rate 960000 bps, drop rate 277000 bps
      Match: any
     police:
         cir 1000000 bps, bc 31250 bytes, pir 2000000 bps, be 31250 bytes
       conformed 59679 packets, 14680670 bytes; actions:
         transmit
exceeded 59549 packets, 14649054 bytes; actions:
         set-prec-transmit 4
         set-frde-transmit
       violated 53758 packets, 13224468 bytes; actions:
         set-prec-transmit 2
         set-frde-transmit
       conformed 340000 bps, exceed 341000 bps, violate 314000 bps
```

The sample output from **show policy-map interface** command shows the following:

- 59679 packets were marked as conforming packets (that is, packets conforming to the CIR) and were transmitted unaltered.

- 59549 packets were marked as exceeding packets (that is, packets exceeding the CIR but not exceeding the PIR). Therefore, the IP Precedence value of these packets was changed to an IP Precedence level of 4, the discard eligibility (DE) bit was set to 1, and the packets were transmitted with these changes.
- 53758 packets were marked as violating packets (that is, exceeding the PIR). Therefore, the IP Precedence value of these packets was changed to an IP Precedence level of 2, the DE bit was set to 1, and the packets were transmitted with these changes.

Note Actions are specified by using the *action* argument of the **police** command. For more information about the available actions, see the **police** command reference page.

The table below describes the significant fields shown in the display.

Table 31: show policy-map interface Field Descriptions—Configured for Multiple Traffic Policing Actions

Field	Description
police	Indicates that the **police** command has been configured to enable traffic policing. Also, displays the specified CIR, conform burst size (BC), PIR, and peak burst size (BE) used for marking packets.
conformed, packets, bytes, actions	Displays the number of packets (also shown in bytes) marked as conforming to a specified rate and the actions taken on the packet. If there are multiple actions, each action is listed separately.
exceeded, packets, bytes, actions	Displays the number of packets (also shown in bytes) marked as exceeding a specified rate and the actions taken on the packet. If there are multiple actions, each action is listed separately.
violated, packets, bytes, actions	Displays the number of packets (also shown in bytes) marked as violating a specified rate and the actions taken on the packet. If there are multiple actions, each action is listed separately.

Explicit Congestion Notification: Example

The following is sample output from the **show policy-map interface** command when the WRED — Explicit Congestion Notification (ECN) feature has been configured. The words "explicit congestion notification" included in the output indicate that ECN has been enabled.

```
Router# show policy-map interface Serial4/1

 Serial4/1
  Service-policy output:policy_ecn
        Class-map:prec1 (match-all)
          1000 packets, 125000 bytes
          30 second offered rate 14000 bps, drop rate 5000 bps
          Match:ip precedence 1
          Weighted Fair Queueing
            Output Queue:Conversation 42
            Bandwidth 20 (%)
```

```
        Bandwidth 100 (kbps)
        (pkts matched/bytes matched) 989/123625
    (depth/total drops/no-buffer drops) 0/455/0
         exponential weight:9
         explicit congestion notification
         mean queue depth:0
class    Transmitted  Random drop  Tail drop   Minimum     Maximum     Mark
         pkts/bytes   pkts/bytes    pkts/bytes threshold   threshold   probability
  0        0/0          0/0          0/0          20          40         1/10
  1      545/68125      0/0          0/0          22          40         1/10
  2        0/0          0/0          0/0          24          40         1/10
  3        0/0          0/0          0/0          26          40         1/10
  4        0/0          0/0          0/0          28          40         1/10
  5        0/0          0/0          0/0          30          40         1/10
  6        0/0          0/0          0/0          32          40         1/10
  7        0/0          0/0          0/0          34          40         1/10
rsvp       0/0          0/0          0/0          36          40         1/10
class    ECN Mark
        pkts/bytes
  0      0/0
  1     43/5375
  2      0/0
  3      0/0
  4      0/0
  5      0/0
  6      0/0
  7      0/0
rsvp     0/0
```

The table below describes the significant fields shown in the display.

Table 32: show policy-map interface Field Descriptions—Configured for ECN

Field	Description
explicit congestion notification	Indication that Explicit Congestion Notification is enabled.
mean queue depth	Average queue depth based on the actual queue depth on the interface and the exponential weighting constant. It is a moving average. The minimum and maximum thresholds are compared against this value to determine drop decisions.
class	IP precedence value.
Transmitted pkts/bytes	Number of packets (also shown in bytes) passed through WRED and not dropped by WRED. **Note** If there is insufficient memory in the buffer to accommodate the packet, the packet can be dropped *after* the packet passes through WRED. Packets dropped because of insufficient memory in the buffer (sometimes referred to as "no-buffer drops") are not taken into account by the WRED packet counter.
Random drop pkts/bytes	Number of packets (also shown in bytes) randomly dropped when the mean queue depth is between the minimum threshold value and the maximum threshold value for the specified IP precedence value.
Tail drop pkts/bytes	Number of packets dropped when the mean queue depth is greater than the maximum threshold value for the specified IP precedence value.

Field	Description
Minimum threshold	Minimum WRED threshold in number of packets.
Maximum threshold	Maximum WRED threshold in number of packets.
Mark probability	Fraction of packets dropped when the average queue depth is at the maximum threshold.
ECN Mark pkts/bytes	Number of packets (also shown in bytes) marked by ECN.

Class-Based RTP and TCP Header Compression: Example

The following sample output from the **show policy-map interface** command shows the RTP header compression has been configured for a class called "prec2" in the policy map called "p1".

The **show policy-map interface** command output displays the type of header compression configured (RTP), the interface to which the policy map called "p1" is attached (Serial 4/1), the total number of packets, the number of packets compressed, the number of packets saved, the number of packets sent, and the rate at which the packets were compressed (in bits per second (bps)).

In this example, User Datagram Protocol (UDP)/RTP header compressions have been configured, and the compression statistics are included at the end of the display.

```
Router# show policy-map interface Serial4/1

Serial4/1
Service-policy output:p1
    Class-map:class-default (match-any)
      1005 packets, 64320 bytes
      30 second offered rate 16000 bps, drop rate 0 bps
      Match:any
compress:
          header ip rtp
          UDP/RTP Compression:
          Sent:1000 total, 999 compressed,
                41957 bytes saved, 17983 bytes sent
                3.33 efficiency improvement factor
                99% hit ratio, five minute miss rate 0 misses/sec, 0 max
                 rate 5000 bps
```

The table below describes the significant fields shown in the display.

Table 33: show policy-map interface Field Descriptions—Configured for Class-Based RTP and TCP Header Compression

Field	Description
Service-policy output	Name of the output service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.

Field	Description
offered rate	Rate, in kbps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation (GRE) tunnel and an IP Security (IPSec) tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPSec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
UDP/RTP Compression	Indicates that RTP header compression has been configured for the class.
Sent total	Count of every packet sent, both compressed packets and full-header packets.
Sent compressed	Count of number of compressed packets sent.
bytes saved	Total number of bytes saved (that is, bytes not needing to be sent).
bytes sent	Total number of bytes sent for both compressed and full-header packets.
efficiency improvement factor	The percentage of increased bandwidth efficiency as a result of header compression. For example, with RTP streams, the efficiency improvement factor can be as much as 2.9 (or 290 percent).
hit ratio	Used mainly for troubleshooting purposes, this is the percentage of packets found in the context database. In most instances, this percentage should be high.
five minute miss rate	The number of new traffic flows found in the last five minutes.
misses/sec max	The average number of new traffic flows found per second, and the highest rate of new traffic flows to date.
rate	The actual traffic rate (in bits per second) after the packets are compressed.

Note A number in parentheses may appear next to the service-policy output name and the class-map name. The number is for Cisco internal use only and can be disregarded.

Modular QoS CLI (MQC) Unconditional Packet Discard: Example

The following sample output from the **show policy-map interface** command displays the statistics for the Serial2/0 interface, to which a policy map called "policy1" is attached. The discarding action has been specified for all the packets belonging to a class called "c1." In this example, 32000 bps of

traffic is sent ("offered") to the class and all of them are dropped. Therefore, the drop rate shows 32000 bps.

```
Router# show policy-map interface

 Serial2/0
 Serial2/0
  Service-policy output: policy1
    Class-map: c1 (match-all)
       10184 packets, 1056436 bytes
       5 minute offered rate 32000 bps, drop rate 32000 bps
       Match: ip precedence 0
       drop
```

The table below describes the significant fields shown in the display.

Table 34: show policy-map interface Field Descriptions—Configured for MQC Unconditional Packet Discard

Field	Description
Service-policy output	Name of the output service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation (GRE) tunnel and an IP Security (IPSec) tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPSec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.

Field	Description
Note In distributed architecture platforms (such as the Cisco 7500), the value of the transfer rate, calculated as the difference between the offered rate and the drop rate counters, can sporadically deviate from the average by up to 20 percent or more. This can occur while no corresponding burst is registered by independent traffic analyser equipment.	
Match	Match criteria specified for the class of traffic. Choices include criteria such as the Layer 3 packet length, IP precedence, IP DSCP value, MPLS experimental value, access groups, and QoS groups. For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide* .
drop	Indicates that the packet discarding action for all the packets belonging to the specified class has been configured.

Note A number in parentheses may appear next to the service-policy output name and the class-map name. The number is for Cisco internal use only and can be disregarded.

Percentage-Based Policing and Shaping: Example

The following sample output from the **show policy-map interface** command shows traffic policing configured using a CIR based on a bandwidth of 20 percent. The CIR and committed burst (Bc) in milliseconds (ms) are included in the display.

```
Router# show policy-map interface Serial3/1

  Service-policy output: mypolicy
    Class-map: gold (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
      police:
          cir 20 % bc 10 ms
          cir 2000000 bps, bc 2500 bytes
```

```
      pir 40 % be 20 ms
      pir 4000000 bps, be 10000 bytes
  conformed 0 packets, 0 bytes; actions:
   transmit
  exceeded 0 packets, 0 bytes; actions:
    drop
   violated 0 packets, 0 bytes; actions:
    drop
   conformed 0 bps, exceed 0 bps, violate 0 bps
```

The table below describes the significant fields shown in the display. A number in parentheses may appear next to the service-policy output name and the class-map name. The number is for Cisco internal use only and can be disregarded.

Table 35: show policy-map interface Field Descriptions—Configured for Percentage-Based Policing and Shaping.

Field	Description
Service-policy output	Name of the output service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation (GRE) tunnel and an IP Security (IPSec) tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPSec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
police	Indicates that traffic policing based on a percentage of bandwidth has been enabled. Also, displays the bandwidth percentage, the CIR, and the committed burst (Bc) size in ms.
conformed, actions	Displays the number of packets and bytes marked as conforming to the specified rates, and the action to be taken on those packets.
exceeded, actions	Displays the number of packets and bytes marked as exceeding the specified rates, and the action to be taken on those packets.

Traffic Shaping: Example

The following sample output from the **show policy-map interface** command (shown below) displays the statistics for the serial 3/2 interface. Traffic shaping has been enabled on this interface, and an average rate of 20 percent of the bandwidth has been specified.

Note In HQF images for Cisco IOS Releases 12.4(20)T and later, the packets delayed and bytes delayed counters were removed for traffic shaping classes.

```
Router# show policy-map interface Serial3/2

Serial3/2
  Service-policy output: p1
    Class-map: c1 (match-all)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
      Traffic Shaping
        Target/Average      Byte   Sustain    Excess      Interval  Increment  Adapt
        Rate              Limit  bits/int  bits/int    (ms)     (bytes)   Active
         20 %                       10 (ms)    20 (ms)
        201500/201500       1952   7808       7808        38         976       -
        Queue     Packets   Bytes     Packets   Bytes     Shaping
        Depth                         Delayed   Delayed   Active
        0         0         0         0         0         no
```

The table below describes the significant fields shown in the display. A number in parentheses may appear next to the service-policy output name, class-map name, and match criteria information. The number is for Cisco internal use only and can be disregarded.

Table 36: show policy-map interface Field Descriptions—Configured for Percentage-Based Policing and Shaping (with Traffic Shaping Enabled).

Field	Description
Service-policy output	Name of the output service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.

Field	Description
offered rate	Rate, in kbps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation (GRE) tunnel and an IP Security (IPSec) tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPSec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Match	Match criteria specified for the class of traffic. Choices include criteria such as the Layer 3 packet length, IP precedence, IP DSCP value, MPLS experimental value, access groups, and quality of service (QoS) groups. For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Quality of Service Solutions Configuration Guide*.
Traffic Shaping	Indicates that traffic shaping based on a percentage of bandwidth has been enabled.
Target/Average Rate	Rate (percentage) used for shaping traffic and the number of packets meeting that rate.
Byte Limit	Maximum number of bytes that can be transmitted per interval. Calculated as follows: ((Bc+Be) /8) x 1
Sustain bits/int	Committed burst (Bc) rate.
Excess bits/int	Excess burst (Be) rate.
Interval (ms)	Time interval value in milliseconds (ms).
Increment (bytes)	Number of credits (in bytes) received in the token bucket of the traffic shaper during each time interval.
Adapt Active	Indicates whether adaptive shaping is enabled.
Queue Depth	Current queue depth of the traffic shaper.
Packets	Total number of packets that have entered the traffic shaper system.
Bytes	Total number of bytes that have entered the traffic shaper system.
Packets Delayed	Total number of packets delayed in the queue of the traffic shaper before being transmitted. **Note** In Cisco IOS Release 12.4(20)T, this counter was removed.

Field	Description
Bytes Delayed	Total number of bytes delayed in the queue of the traffic shaper before being transmitted. **Note** In Cisco IOS Release 12.4(20)T, this counter was removed.
Shaping Active	Indicates whether the traffic shaper is active. For example, if a traffic shaper is active, and the traffic being sent exceeds the traffic shaping rate, a "yes" appears in this field.

Packet Classification Based on Layer 3 Packet Length: Example

The following sample output from the **show policy-map interface** command displays the packet statistics for the Ethernet4/1 interface, to which a service policy called "mypolicy" is attached. The Layer 3 packet length has been specified as a match criterion for the traffic in the class called "class1".

```
Router# show policy-map interface Ethernet4/1

  Ethernet4/1
  Service-policy input: mypolicy
    Class-map: class1 (match-all)
       500 packets, 125000 bytes
       5 minute offered rate 4000 bps, drop rate 0 bps
       Match: packet length min 100 max 300
       QoS Set
         qos-group 20
           Packets marked 500
```

The table below describes the significant fields shown in the display. A number in parentheses may appear next to the service-policy input name, class-map name, and match criteria information. The number is for Cisco internal use only and can be disregarded.

Table 37: show policy-map interface Field Descriptions—Configured for Packet Classification Based on Layer 3 Packet Length.

Field	Description
Service-policy input	Name of the input service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.

Field	Description
offered rate	Rate, in kbps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation (GRE) tunnel and an IP Security (IPSec) tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPSec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Match	Match criteria specified for the class of traffic. Choices include criteria such as the Layer 3 packet length, IP precedence, IP DSCP value, MPLS experimental value, access groups, and QoS groups.
QoS Set, qos-group, Packets marked	Indicates that class-based packet marking based on the QoS group has been configured. Includes the qos-group number and the number of packets marked.

Enhanced Packet Marking: Example

The following sample output of the **show policy-map interface** command shows the service policies attached to a FastEthernet subinterface. In this example, a service policy called “policy1” has been attached. In “policy1”, a table map called “table-map1” has been configured. The values in “table-map1” will be used to map the precedence values to the corresponding class of service (CoS) values.

```
Router# show policy-map interface

 FastEthernet1/0.1
  Service-policy input: policy1
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
      QoS Set
        precedence cos table table-map1
          Packets marked 0
```

The table below describes the fields shown in the display. A number in parentheses may appear next to the service-policy input name and the class-map name. The number is for Cisco internal use only and can be disregarded.

Table 38: show policy-map interface Field Descriptions—Configured for Enhanced Packet Marking.

Field	Description
Service-policy input	Name of the input service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of the packets coming into the class.
Match	Match criteria specified for the class of traffic. Choices include criteria such as Precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental value, access groups, and quality of service (QoS) group (set). For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Quality of Service Solutions Configuration Guide*.
QoS Set	Indicates that QoS group (set) has been configured for the particular class.
precedence cos table table-map1	Indicates that a table map (called "table-map1") has been used to determine the precedence value. The precedence value will be set according to the CoS value defined in the table map.
Packets marked	Total number of packets marked for the particular class.

Traffic Policing: Example

The following is sample output from the **show policy-map interface** command. This sample displays the statistics for the serial 2/0 interface on which traffic policing has been enabled. The committed (conform) burst (bc) and excess (peak) burst (be) are specified in milliseconds (ms).

```
Router# show policy-map interface serial2/0

 Serial2/0
  Service-policy output: policy1 (1050)
    Class-map: class1 (match-all) (1051/1)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: ip precedence 0  (1052)
      police:
          cir 20 % bc 300 ms
          cir 409500 bps, bc 15360 bytes
          pir 40 % be 400 ms
          pir 819000 bps, be 40960 bytes
        conformed 0 packets, 0 bytes; actions:
          transmit
        exceeded 0 packets, 0 bytes; actions:
          drop
        violated 0 packets, 0 bytes; actions:
          drop
```

```
    conformed 0 bps, exceed 0 bps, violate 0 bps
  Class-map: class-default (match-any) (1054/0)
    0 packets, 0 bytes
    5 minute offered rate 0 bps, drop rate 0 bps
    Match: any  (1055)
      0 packets, 0 bytes
      5 minute rate 0 bps
```

In this example, the CIR and PIR are displayed in bps, and both the committed burst (bc) and excess burst (be) are displayed in bits.

The CIR, PIR bc, and be are calculated on the basis of the formulas described below.

Formula for Calculating the CIR: Example

When calculating the CIR, the following formula is used:

- CIR percentage specified (as shown in the output from the **show policy-map** command) * bandwidth (BW) of the interface (as shown in the output from the**show interfaces** command) = total bits per second

According to the output from the **show interfaces** command for the serial 2/0 interface, the interface has a bandwidth (BW) of 2048 kbps.

```
Router# show interfaces serial2/0

Serial2/0 is administratively down, line protocol is down
  Hardware is M4T
  MTU 1500 bytes, BW 2048 Kbit, DLY 20000 usec, rely 255/255, load 1/255
```

The following values are used for calculating the CIR:

20 % * 2048 kbps = 409600 bps

Formula for Calculating the PIR: Example

When calculating the PIR, the following formula is used:

- PIR percentage specified (as shown in the output from the **show policy-map** command) * bandwidth (BW) of the interface (as shown in the output from the**show interfaces** command) = total bits per second

According to the output from the **show interfaces** command for the serial 2/0 interface, the interface has a bandwidth (BW) of 2048 kbps.

```
Router# show interfaces serial2/0

Serial2/0 is administratively down, line protocol is down
  Hardware is M4T
  MTU 1500 bytes, BW 2048 Kbit, DLY 20000 usec, rely 255/255, load 1/255
```

The following values are used for calculating the PIR:

40 % * 2048 kbps = 819200 bps

Note Discrepancies between this total and the total shown in the output from the **show policy-map interface** command can be attributed to a rounding calculation or to differences associated with the specific interface configuration.

Formula for Calculating the Committed Burst (bc): Example

When calculating the bc, the following formula is used:

- The bc in milliseconds (as shown in the **show policy-map** command) * the CIR in bits per seconds = total number bytes

The following values are used for calculating the bc:

300 ms * 409600 bps = 15360 bytes

Formula for Calculating the Excess Burst (be): Example

When calculating the bc and the be, the following formula is used:

- The be in milliseconds (as shown in the **show policy-map** command) * the PIR in bits per seconds = total number bytes

The following values are used for calculating the be:

400 ms * 819200 bps = 40960 bytes

The table below describes the significant fields shown in the display.

Table 39: show policy-map interface Field Descriptions

Field	Description
Service-policy output	Name of the output service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets and bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.

Field	Description
Match	Match criteria specified for the class of traffic. Choices include criteria such as the Layer 3 packet length, IP precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental value, access groups, and quality of service (QoS) groups. For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Quality of Service Solutions Configuration Guide* .
police	Indicates that traffic policing has been enabled. Display includes the CIR, PIR (in both a percentage of bandwidth and in bps) and the bc and be in bytes and milliseconds. Also displays the optional conform, exceed, and violate actions, if any, and the statistics associated with these optional actions.

Bandwidth Estimation: Example

The following sample output from the **show policy-map interface** command displays statistics for the Fast Ethernet 0/1 interface on which bandwidth estimates for quality of service (QoS) targets have been generated.

The Bandwidth Estimation section indicates that bandwidth estimates for QoS targets have been defined. These targets include the packet loss rate, the packet delay rate, and the timeframe in milliseconds. Confidence refers to the drop-one-in value (as a percentage) of the targets. Corvil Bandwidth means the bandwidth estimate in kilobits per second.

When no drop or delay targets are specified, "none specified, falling back to drop no more than one packet in 500" appears in the output.

```
Router# show policy-map interface FastEthernet0/1

 FastEthernet0/1
  Service-policy output: my-policy
    Class-map: icmp (match-all)
      199 packets, 22686 bytes
      30 second offered rate 0 bps, drop rate 0 bps
      Match: access-group 101
      Bandwidth Estimation:
        Quality-of-Service targets:
          drop no more than one packet in 1000 (Packet loss < 0.10%)
          delay no more than one packet in 100 by 40 (or more) milliseconds
            (Confidence: 99.0000%)
        Corvil Bandwidth: 1 kbits/sec
    Class-map: class-default (match-any)
      112 packets, 14227 bytes
      30 second offered rate 0 bps, drop rate 0 bps
      Match: any
      Bandwidth Estimation:
        Quality-of-Service targets:
          <none specified, falling back to drop no more than one packet in 500
        Corvil Bandwidth: 1 kbits/sec
```

Shaping with HQF Enabled: Example

The following sample output from the **show policy-mapinterface** command shows that shaping is active (as seen in the queue depth field) with HQF enabled on the serial 4/3 interface. All traffic is classified to the class-default queue.

Note In HQF images for Cisco IOS Releases 12.4(20)T and later, the packets delayed and bytes delayed counters were removed for traffic shaping classes.

```
Router# show policy-map interface serial4/3

 Serial4/3
  Service-policy output: shape
    Class-map: class-default (match-any)
      2203 packets, 404709 bytes
      30 second offered rate 74000 bps, drop rate 14000 bps
      Match: any
      Queueing
      queue limit 64 packets
      (queue depth/total drops/no-buffer drops) 64/354/0
      (pkts output/bytes output) 1836/337280
      shape (average) cir 128000, bc 1000, be 1000
      target shape rate 128000
        lower bound cir 0,  adapt to fecn 0
      Service-policy : LLQ
        queue stats for all priority classes:

          queue limit 64 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
          (pkts output/bytes output) 0/0
        Class-map: c1 (match-all)
          0 packets, 0 bytes
          30 second offered rate 0 bps, drop rate 0 bps
          Match: ip precedence 1
          Priority: 32 kbps, burst bytes 1500, b/w exceed drops: 0
        Class-map: class-default (match-any)
          2190 packets, 404540 bytes
          30 second offered rate 74000 bps, drop rate 14000 bps
          Match: any
          queue limit 64 packets
          (queue depth/total drops/no-buffer drops) 63/417/0
          (pkts output/bytes output) 2094/386300
```

Packets Matched on the Basis of VLAN ID Number: Example

Note As of Cisco IOS Release 12.2(31)SB2, matching packets on the basis of VLAN ID numbers is supported on the Catalyst 1000 platform only.

The following is a sample configuration in which packets are matched and classified on the basis of the VLAN ID number. In this sample configuration, packets that match VLAN ID number 150 are placed in a class called “class1.”

```
Router# show class-map

Class Map match-all class1 (id 3)
Match vlan 150
```

Class1 is then configured as part of the policy map called "policy1." The policy map is attached to Fast Ethernet subinterface 0/0.1.

The following sample output of the **show policy-map interface** command displays the packet statistics for the policy maps attached to Fast Ethernet subinterface 0/0.1. It displays the statistics for policy1, in which class1 has been configured.

```
Router# show policy-map interface

FastEthernet0/0.1
! Policy-map name.
Service-policy input: policy1
! Class configured in the policy map.
Class-map: class1 (match-all)
0 packets, 0 bytes
5 minute offered rate 0 bps, drop rate 0 bps
! VLAN ID 150 is the match criterion for the class.
Match: vlan 150
police:
cir 8000000 bps, bc 512000000 bytes
conformed 0 packets, 0 bytes; actions:
transmit
exceeded 0 packets, 0 bytes; actions:
drop
conformed 0 bps, exceed 0 bps
Class-map: class-default (match-any)
10 packets, 1140 bytes
5 minute offered rate 0 bps, drop rate 0 bps
Match: any
10 packets, 1140 bytes
5 minute rate 0 bps
```

The table below describes the significant fields shown in the display. A number in parentheses may appear next to the service-policy input name and the class-map name. The number is for Cisco internal use only and can be disregarded.

Table 40: show policy-map interface Field Descriptions—Packets Matched on the Basis of VLAN ID Number.

Field	Description
Service-policy input	Name of the input service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of the packets coming into the class.

Field	Description
Match	Match criteria specified for the class of traffic. Choices include criteria such as VLAN ID number, precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental value, access groups, and quality of service (QoS) group (set). For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide* .

Cisco 7600 Series Routers: Example

The following example shows how to display the statistics and the configurations of all the input and output policies that are attached to an interface on a Cisco 7600 series router:

```
Router# show policy-map interface

 FastEthernet5/36
  service-policy input: max-pol-ipp5
    class-map: ipp5 (match-all)
      0 packets, 0 bytes
      5 minute rate 0 bps
      match: ip precedence 5
  class ipp5
    police 2000000000 2000000 conform-action set-prec-transmit 6 exceed-action p
policed-dscp-transmit
```

The following example shows how to display the input-policy statistics and the configurations for a specific interface on a Cisco 7600 series router:

```
Router# show policy-map interface fastethernet 5/36 input

 FastEthernet5/36
  service-policy input: max-pol-ipp5
    class-map: ipp5 (match-all)
      0 packets, 0 bytes
      5 minute rate 0 bps
      match: ip precedence 5
  class ipp5
    police 2000000000 2000000 conform-action set-prec-transmit 6 exceed-action p
policed-dscp-transmit
```

The table below describes the significant fields shown in the display.

Table 41: show policy-map interface Field Descriptions—Cisco 7600 Series Routers

Field	Description
service-policy input	Name of the input service policy applied to the specified interface.
class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.

Field	Description
minute rate	Rate, in kbps, of the packets coming into the class.
match	Match criteria specified for the class of traffic. Choices include criteria such as VLAN ID number, precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental value, access groups, and quality of service (QoS) group (set). For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide* .
class	Precedence value.
police	Indicates that the **police** command has been configured to enable traffic policing.

Cisco 7200 Series Routers: Example

The following example shows the automatic rounding-off of the **bc** and **be** values, in the MQC police policy-map, to the interface's MTU size in a Cisco 7200 series router. The rounding-off is done only when the bc and be values are lesser than the interface's MTU size.

```
Router# show policy-map interface

Service-policy output: p2
Service-policy output: p2
    Class-map: class-default (match-any)
      2 packets, 106 bytes
      30 second offered rate 0000 bps, drop rate 0000 bps
      Match: any
        2 packets, 106 bytes
        30 second rate 0 bps
      police:
          cir 10000 bps, bc 4470 bytes
          pir 20000 bps, be 4470 bytes
        conformed 0 packets, 0 bytes; actions:
          transmit
        exceeded 0 packets, 0 bytes; actions:
          drop
        violated 0 packets, 0 bytes; actions:
          drop
        conformed 0000 bps, exceed 0000 bps, violate 0000 bps
```

Multiple Priority Queues on Serial Interface: Example

The following sample output from the show policy-map interface command shows the types of statistical information that displays when multiple priority queues are configured. Depending upon the interface in use and the options enabled, the output that you see may vary slightly from the output shown below.

```
Router# show policy-map interface

Serial2/1/0
Service-policy output: P1
Queue statistics for all priority classes:
```

```
.
.
.
Class-map: Gold (match-all)
0 packets, 0 bytes   /*Updated for each priority level configured.*/
5 minute offered rate 0 bps, drop rate 0 bps
Match: ip precedence 2
Priority: 0 kbps, burst bytes 1500, b/w exceed drops: 0
Priority Level 4:
0 packets, 0 bytes
```

Bandwidth-Remaining Ratios: Example

The following sample output from the show policy-map interface command indicates that bandwidth-remaining ratios are configured for class queues. As shown in the example, the classes precedence_0, precedence_1, and precedence_2 have bandwidth-remaining ratios of 20, 40, and 60, respectively.

```
Router# show policy-map interface GigabitEthernet1/0/0.10

  Service-policy output: vlan10_policy
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      30 second offered rate 0 bps, drop rate 0 bps
      Match: any
        0 packets, 0 bytes
        30 second rate 0 bps
      Queueing
      queue limit 250 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      shape (average) cir 1000000, bc 4000, be 4000
      target shape rate 1000000
      bandwidth remaining ratio 10
      Service-policy : child_policy
        Class-map: precedence_0 (match-all)
          0 packets, 0 bytes
          30 second offered rate 0 bps, drop rate 0 bps
          Match: ip precedence 0
          Queueing
          queue limit 62 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
          (pkts output/bytes output) 0/0
          shape (average) cir 500000, bc 2000, be 2000
          target shape rate 500000
          bandwidth remaining ratio 20
        Class-map: precedence_1 (match-all)
          0 packets, 0 bytes
          30 second offered rate 0 bps, drop rate 0 bps
          Match: ip precedence 1
          Queueing
          queue limit 62 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
          (pkts output/bytes output) 0/0
          shape (average) cir 500000, bc 2000, be 2000
          target shape rate 500000
          bandwidth remaining ratio 40
        Class-map: precedence_2 (match-all)
          0 packets, 0 bytes
          30 second offered rate 0 bps, drop rate 0 bps
          Match: ip precedence 2
```

```
    Queueing
    queue limit 62 packets
    (queue depth/total drops/no-buffer drops) 0/0/0
    (pkts output/bytes output) 0/0
    shape (average) cir 500000, bc 2000, be 2000
    target shape rate 500000
    bandwidth remaining ratio 60
  Class-map: class-default (match-any)
    0 packets, 0 bytes
    30 second offered rate 0 bps, drop rate 0 bps
    Match: any
      0 packets, 0 bytes
      30 second rate 0 bps

    queue limit 62 packets
    (queue depth/total drops/no-buffer drops) 0/0/0
    (pkts output/bytes output) 0/0
```

The table below describes the significant fields shown in the display.

Table 42: show policy-map interface Field Descriptions—Configured for Bandwidth-Remaining Ratios

Field	Description
Service-policy output	Name of the output service policy applied to the specified interface.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
bandwidth remaining ratio	Indicates the ratio used to allocate excess bandwidth.

Tunnel Marking: Example

In this sample output of the **show policy-map interface** command, the character string “ip dscp tunnel 3” indicates that L2TPv3 tunnel marking has been configured to set the DSCP value to 3 in the header of a tunneled packet.

```
Router# show policy-map interface

 Serial0
  Service-policy input: tunnel
    Class-map: frde (match-all)
      0 packets, 0 bytes
      30 second offered rate 0 bps, drop rate 0 bps
      Match: fr-de
      QoS Set
        ip dscp tunnel 3
          Packets marked 0
    Class-map: class-default (match-any)
      13736 packets, 1714682 bytes
      30 second offered rate 0 bps, drop rate 0 bps
      Match: any
        13736 packets, 1714682 bytes
        30 second rate 0 bps
```

The table below describes the significant fields shown in the display.

Table 43: show policy-map interface Field Descriptions—Configured for Tunnel Marking

Field	Description
service-policy input	Name of the input service policy applied to the specified interface.
class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
match	Match criteria specified for the class of traffic. In this example, the Frame Relay Discard Eligible (DE) bit has been specified as the match criterion. For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide*.
ip dscp tunnel	Indicates that tunnel marking has been configured to set the DSCP in the header of a tunneled packet to a value of 3.

Traffic Shaping Overhead Accounting for ATM: Example

The following output from the show policy-map interface command indicates that ATM overhead accounting is enabled for shaping and disabled for bandwidth:

```
Router# show policy-map interface

Service-policy output:unit-test
Class-map: class-default (match-any)
100 packets, 1000 bytes
30 second offered rate 800 bps, drop rate 0 bps
Match: any
shape (average) cir 154400, bc 7720, be 7720
target shape rate 154400
overhead accounting: enabled
bandwidth 30% (463 kbps)
overhead accounting: disabled
queue limit 64 packets
(queue depth/total drops/no-buffer drops) 0/0/0
(packets output/bytes output) 100/1000
```

The table below describes the significant fields shown in the display.

Table 44: show policy-map interface Field Descriptions—Configured for Traffic Shaping Overhead Accounting for ATM

Field	Description
service-policy output	Name of the output service policy applied to the specified interface.
class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
match	Match criteria specified for the class of traffic. In this example, the Frame Relay Discard Eligible (DE) bit has been specified as the match criterion. For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide*.
target shape rate	Indicates that traffic shaping is enabled at the specified rate.
overhead accounting	Indicates whether overhead accounting is enabled or disabled for traffic shaping.
bandwidth	Indicates the percentage of bandwidth allocated for traffic queueing.
overhead accounting:	Indicates whether overhead accounting is enabled or disabled for traffic queueing.

HQF: Example

The following output from the show policy-map interface command displays the configuration for Fast Ethernet interface 0/0:

Note In HQF images for Cisco IOS Releases 12.4(20)T and later releases, the packets delayed and bytes delayed counters were removed for traffic shaping classes.

```
Router# show policy-map interface FastEthernet0/0
 FastEthernet0/0

  Service-policy output: test1

    Class-map: class-default (match-any)
      129 packets, 12562 bytes
      30 second offered rate 0 bps, drop rate 0 bps
      Match: any
      Queueing
      queue limit 64 packets
```

```
(queue depth/total drops/no-buffer drops) 0/0/0
(pkts output/bytes output) 129/12562
shape (average) cir 1536000, bc 6144, be 6144
target shape rate 1536000

Service-policy : test2

  queue stats for all priority classes:

    queue limit 64 packets
    (queue depth/total drops/no-buffer drops) 0/0/0
    (pkts output/bytes output) 0/0

  Class-map: RT (match-all)
    0 packets, 0 bytes
    30 second offered rate 0 bps, drop rate 0 bps
    Match: ip dscp ef (46)
    Priority: 20% (307 kbps), burst bytes 7650, b/w exceed drops: 0


  Class-map: BH (match-all)
    0 packets, 0 bytes
    30 second offered rate 0 bps, drop rate 0 bps
    Match: ip dscp af41 (34)
    Queueing
    queue limit 128 packets
    (queue depth/total drops/no-buffer drops) 0/0/0
    (pkts output/bytes output) 0/0
    bandwidth 40% (614 kbps)

  Class-map: BL (match-all)
    0 packets, 0 bytes
    30 second offered rate 0 bps, drop rate 0 bps
    Match: ip dscp af21 (18)
    Queueing
    queue limit 64 packets
    (queue depth/total drops/no-buffer drops) 0/0/0
    (pkts output/bytes output) 0/0
    bandwidth 35% (537 kbps)
      Exp-weight-constant: 9 (1/512)
      Mean queue depth: 0 packets
      dscp     Transmitted   Random drop   Tail drop   Minimum   Maximum   Mark
               pkts/bytes    pkts/bytes    pkts/bytes  thresh    thresh    prob

      af21     0/0           0/0           0/0         100       400       1/10

  Class-map: class-default (match-any)
    129 packets, 12562 bytes
    30 second offered rate 0 bps, drop rate 0 bps
    Match: any

    queue limit 64 packets
    (queue depth/total drops/no-buffer drops) 0/0/0
    (pkts output/bytes output) 129/12562
```

The table below describes the significant fields shown in the display.

Table 45: show policy-map interface Field Descriptions—Configured for HQF

Field	Description
FastEthernet	Name of the interface.

Field	Description
service-policy output	Name of the output service policy applied to the specified interface.
class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Match	Match criteria specified for the class of traffic. **Note** For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide*.
Queueing	Indicates that queueing is enabled.
queue limit	Maximum number of packets that a queue can hold for a class policy configured in a policy map.
bandwidth	Indicates the percentage of bandwidth allocated for traffic queueing.
dscp	Differentiated services code point (DSCP). Values can be the following: • 0 to 63—Numerical DSCP values. The default value is 0. • af1 to af43—Assured forwarding (AF) DSCP values. • cs1 to cs7—Type of service (ToS) precedence values. • default—Default DSCP value. • ef—Expedited forwarding (EF) DSCP values.

Account QoS Statistics for the Cisco ASR 1000 Series Aggregation Services Routers: Example

The following example shows the new output fields associated with the QoS: Policies Aggregation Enhancements feature beginning in Cisco IOS XE Release 2.6 for subscriber statistics. The new output fields begin with the label "Account QoS Statistics."

```
Router# show policy-map interface port-channel 1.1

Port-channel1.1
   Service-policy input: input_policy
     Class-map: class-default (match-any)
       0 packets, 0 bytes
       5 minute offered rate 0000 bps, drop rate 0000 bps
```

```
      Match: any
      QoS Set
      dscp default
      No packet marking statistics available
  Service-policy output: Port-channel_1_subscriber
    Class-map: EF (match-any)
      105233 packets, 6734912 bytes
      5 minute offered rate 134000 bps, drop rate 0000 bps
      Match: dscp ef (46)
      Match: access-group name VLAN_REMARK_EF
      Match: qos-group 3
      Account QoS statistics
        Queueing
          Packets dropped 0 packets/0 bytes
      QoS Set
      cos 5
      No packet marking statistics available
      dscp ef
      No packet marking statistics available
    Class-map: AF4 (match-all)
      105234 packets, 6734976 bytes
      5 minute offered rate 134000 bps, drop rate 0000 bps
      Match: dscp cs4 (32)
      Account QoS statistics
        Queueing
          Packets dropped 0 packets/0 bytes
      QoS Set
      cos 4
      No packet marking statistics available
    Class-map: AF1 (match-any)
      315690 packets, 20204160 bytes
      5 minute offered rate 402000 bps, drop rate 0000 bps
      Match: dscp cs1 (8)
      Match: dscp af11 (10)
      Match: dscp af12 (12)
      Account QoS statistics
        Queueing
          Packets dropped 0 packets/0 bytes
      QoS Set
      cos 1
      No packet marking statistics available
    Class-map: class-default (match-any) fragment Port-channel_BE
      315677 packets, 20203328 bytes
      5 minute offered rate 402000 bps, drop rate 0000 bps
      Match: any
      Queueing
        queue limit 31250 bytes
        (queue depth/total drops/no-buffer drops) 0/0/0
        (pkts output/bytes output) 315679/20203482
        bandwidth remaining ratio 1
```

Cisco Catalyst 4000 Series Routers: Example

The following example shows how to display the policer statistics (the packet and byte count). The output displays only the applicable count (either packets or bytes) with the actual number.

```
Router# show policy-map interface GigabitEthernet 3/1 input

GigabitEthernet3/1
  Service-policy input: in1
    Class-map: p1 (match-all)
```

```
    0 packets
    Match:  precedence 1
         QoS Set
           ip precedence 7
    police:
        cir 20 %
        cir 200000000 bps, bc 6250000 bytes
      conformed 0 bytes; actions:
        transmit
      exceeded 0 bytes; actions:
        drop
      conformed 0000 bps, exceed 0000 bps
  Class-map: class-default (match-any)
    10000000 packets
    Match: any
    police:
        cir 20 %
        cir 200000000 bps, bc 6250000 bytes
      conformed 174304448 bytes; actions:
        transmit
      exceeded 465695552 bytes; actions:
        drop
      conformed 4287000 bps, exceed 11492000 bps
```

Cisco CMTS Routers: Example

The following example shows how to display the statistics and the configurations of the input and output service policies that are attached to an interface:

```
Router# show policy-map interface GigabitEthernet 1/2/0

Load for five secs: 1%/0%; one minute: 1%; five minutes: 1%
Time source is hardware calendar, *23:02:40.857 pst Thu Mar 3 2011

 GigabitEthernet1/2/0

  Service-policy input: policy-in

    Class-map: class-exp-0 (match-all)
      6647740 packets, 9304674796 bytes
      30 second offered rate 3234000 bps, drop rate 0 bps
      Match: mpls experimental topmost 0
      QoS Set
        precedence 3
          Packets marked 6647740

    Class-map: class-default (match-any)
      1386487 packets, 1903797872 bytes
      30 second offered rate 658000 bps, drop rate 0 bps
      Match: any

  Service-policy output: policy-out

    Class-map: class-pre-1 (match-all)
      2041355 packets, 2857897000 bytes
      30 second offered rate 986000 bps, drop rate 0 bps

      Match: ip precedence 1
      QoS Set
        mpls experimental topmost 1
          Packets marked 2041355
```

```
    Class-map: class-default (match-any)
      6129975 packets, 8575183331 bytes
      30 second offered rate 2960000 bps, drop rate 0 bps
      Match: any
```

The table below describes the significant fields shown in the display.

Table 46: show policy-map interface Field Descriptions—Cisco Catalyst 4000 Series Routers

Field	Description
class-map	Displays the class of traffic. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
conformed	Displays the action to be taken on packets conforming to a specified rate. Also displays the number of packets and bytes on which the action was taken.
drop	Indicates that the packet discarding action for all the packets belonging to the specified class has been configured.
exceeded	Displays the action to be taken on packets exceeding a specified rate. Displays the number of packets and bytes on which the action was taken.
match	Match criteria specified for the class of traffic.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
police	Indicates that the **police** command has been configured to enable traffic policing. Also displays the specified CIR, conform burst size, peak information rate (PIR), and peak burst size used for marking packets.
QoS Set	Indicates that QoS group (set) has been configured for the particular class.
service-policy input	Name of the input service policy applied to the specified interface.

Displaying Pseudowire Policy Map Information: Example

The following example shows how to display the class maps configured for a pseudowire interface:

```
Router# show policy-map interface pseudowire2
 pseudowire2
  Service-policy output: pw_brr

    Class-map: prec1 (match-all)
      0 packets, 0 bytes
      30 second offered rate 0000 bps, drop rate 0000 bps
      Match: ip precedence 1
      Queueing
      queue limit 4166 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      bandwidth remaining ratio 1
```

```
    Class-map: prec2 (match-all)
      0 packets, 0 bytes
      30 second offered rate 0000 bps, drop rate 0000 bps
      Match: ip precedence 2
      Queueing
      queue limit 4166 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      bandwidth remaining ratio 2

    Class-map: prec3 (match-all)
      0 packets, 0 bytes
      30 second offered rate 0000 bps, drop rate 0000 bps
      Match: ip precedence 3
      Queueing
      queue limit 4166 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      bandwidth remaining ratio 3

    Class-map: class-default (match-any)
      0 packets, 0 bytes
      30 second offered rate 0000 bps, drop rate 0000 bps
      Match: any
      Queueing
      queue limit 4166 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      bandwidth remaining ratio 4
Device#
```

The table below describes the significant fields shown in the display.

Table 47: show policy-map interface Field Descriptions—Pseudowire Policy Map Information

Field	Description
bandwidth	Indicates the percentage of bandwidth allocated for traffic queueing.
Class-map	Displays the class of traffic. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
Match	Match criteria specified for the class of traffic.
packets, bytes	Number of the packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
Queueing	Indicates that queueing is enabled.
queue limit	Maximum number of packets that a queue can hold for a class policy configured in a policy map.
service-policy output	Name of the output service policy applied to the specified interface.

Related Commands

Command	Description
bandwidth remaining ratio	Specifies a bandwidth-remaining ratio for class queues and subinterface-level queues to determine the amount of unused (excess) bandwidth to allocate to the queue during congestion.
class-map	Creates a class map to be used for matching packets to a specified class.
compression header ip	Configures RTP or TCP IP header compression for a specific class.
drop	Configures a traffic class to discard packets belonging to a specific class.
match fr-dlci	Specifies the Frame Relay DLCI number as a match criterion in a class map.
match packet length (class-map)	Specifies the length of the Layer 3 packet in the IP header as a match criterion in a class map.
police	Configures traffic policing.
police (percent)	Configures traffic policing on the basis of a percentage of bandwidth available on an interface.
police (two rates)	Configures traffic policing using two rates, the CIR and the PIR.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
priority	Specifies that low-latency behavior must be given to a traffic class and configures multiple priority queues.
random-detect ecn	Enables ECN.
shape (percent)	Specifies average or peak rate traffic shaping on the basis of a percentage of bandwidth available on an interface.
show class-map	Display all class maps and their matching criteria.
show frame-relay pvc	Displays statistics about PVCs for Frame Relay interfaces.
show interfaces	Displays statistics for all interfaces configured on a router or access server.
show mls qos	Displays MLS QoS information.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map class	Displays the configuration for the specified class of the specified policy map.
show table-map	Displays the configuration of a specified table map or of all table maps.

Command	Description
table-map (value mapping)	Creates and configures a mapping table for mapping and converting one packet-marking value to another.

show policy-map interface brief

To display information about only the active policy maps attached to an interface, use the **showpolicy-mapinterfacebrief**command in privileged EXEC mode.

show policy-map interface [{**input** | **output**}] **brief** [*policy-map-name*] [**vrf** [*vrf-id*]] [**timestamp**]

Syntax Description

input	(Optional) Indicates that only the information about the active input policy maps will be displayed.
output	(Optional) Indicates that only the information about the active output policy maps will be displayed.
brief	Indicates that the name of all the active policy maps (both input and output policy maps) and the interfaces to which the policy maps are attached will be displayed. The active input policy maps will be displayed first, followed by the output policy maps.
policy-map-name	(Optional) Name of an active policy map to be displayed.
vrf	(Optional) Indicates that the active policy maps for Virtual Private Network (VPN) routing and forwarding (VRF) instances will be displayed.
vrf-id	(Optional) A specific VRF identifier.
timestamp	(Optional) Indicates that the date and time when the policy map was attached will be displayed, along with the ID of the user who attached the policy map.

Command Default

If no optional keywords or arguments are specified, all policy maps (even those that are not active) are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(28)SB	This command was introduced.
12.2(33)SRB	This command was integrated into Cisco IOS Release 12.2(33)SRB.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.

Usage Guidelines

The **showpolicy-mapinterfacebrief**command displays the name of the active policy maps and the interfaces to which those policy maps are attached. An active policy map is one that is attached to an interface.

The optional keywords and arguments allow you to tailor the information displayed about VPNs, time stamps, and user IDs.

If you do not specify any optional keywords or arguments, all policy maps (even those that are not active) are displayed.

VPN Information Reported

The **showpolicy-mapinterfacebrief**command can be used for VRF interfaces in applications that use VPNs. To specify VRF interfaces, use the **vrf** keyword with the *vrf-id* argument.

Time-stamp and User ID Information Reported

If the optional **timestamp** keyword is used with the **showpolicy-mapinterfacebrief**command, the time and date when a policy map was attached to an interface appear in the display. In addition to the time and date information, the name (that is, the user ID) of the person who attached the policy map to the interface will be displayed.

Note If the network software is reloaded (reinstalled), the time-stamp information (the time and date information) obtained will not be retained for any of the policy maps attached to interfaces on the network. Instead, the time and date information displayed will be the time and date when the software was reloaded.

Method for Obtaining User Information

The user information included in the display is obtained from the information that you enter when you log in to the router. For example, if you are using the SSH Secure Shell utility to log in to a router, you would typically enter your username and password. However, it is not always possible to obtain the user information. Instances where user information cannot be obtained include the following:

- Not all routers require user information when you log in. Therefore, you may not be prompted to enter your username when you log in to a router.
- If you are connecting to a console port using the Telnet utility in a DOS environment, you do not need to enter user information.
- The user information cannot be retrieved because of system constraints or other factors.

If the user information cannot be obtained, the words “by unknown” will be displayed.

Hierarchical Policy Map Information

For a hierarchical policy map structure, only the information about the parent policy maps is displayed. Information about child policy maps is not displayed.

ATM PVCs

For ATM permanent virtual circuits (PVCs), policy maps do not remain associated with the interface if the ATM PVC is not working properly (that is, the ATM PVC is “down”). Therefore, if an ATM PVC is down, and a policy map is attached to an interface, the **showpolicy-mapinterfacebrief**command does not include information about the policy maps in the command output.

Examples

The information that is displayed by the **showpolicy-mapinterfacebrief**command varies according to the optional keywords and arguments that you specify.

The following sections list the significant keyword and argument combinations used with the command and describe the corresponding information displayed.

show policy-map interface brief Command Example

The **showpolicy-mapinterfacebrief** command displays *all* the attached policy maps (both input policy maps and output policy maps) along with the information about the interfaces to which the policy maps are attached. The input policy maps are displayed first, followed by the output policy maps.

```
Service-policy input: policyname1
interface s2/0/1
interface s6/0/0
Service-policy output: policyname1interface s2/0/1 interface s6/0/0
```

show policy-map interface brief timestamp Command Example

The **showpolicy-mapinterfacebrieftimestamp** command displays *all* the attached policy maps (both input policy maps and output policy maps) along with the information about the interfaces to which the policy maps are attached. The input policy maps are displayed first, followed by the output policy maps.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

```
Service-policy input: parentpolicy1
Service-policy input: childpolicy1
interface s2/0/1 - applied 20:43:04 on 25/12/01 by user1
interface s6/0/1 - applied 19:43:04 on 25/12/01 by user1
Service-policy output: policyname2
interface s2/0/2 - applied 21:47:04 on 24/12/01 by user1
interface s6/0/1 - applied 19:43:04 on 25/12/01 by user1
```

show policy-map interface brief policy-map-name Command Example

The **showpolicy-mapinterfacebrief***policy-map-name* command displays the policy map attached as *either* an input policy map *or* an output policy map, along with the information about the interface to which the policy map is attached. Only the policy map specified by the *policy-map-name* argument is displayed.

For example, the display for the **showpolicy-mapinterfacebriefpolicyname1** command is as follows:

```
Service-policy input: policyname1
interface s2/0/1
interface s6/0/0
Service-policy output: policyname1
interface s1/0/2
interface s3/0/0
```

show policy-map interface brief policy-map-name timestamp Command Example

The **showpolicy-mapinterfacebrief***policy-map-name***timestamp** command displays the policy map attached as *either* an input policy map *or* an output policy map, along with the information about the

interface to which it is attached. Only the policy map specified by the *policy-map-name* argument is displayed.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

For example, the display for the **showpolicy-mapinterfacebriefpolicyname2timestamp** command is as follows:

```
Service-policy input: policyname2
interface s2/0/2 - applied 21:47:04 on 24/12/01 by user1
interface s6/0/1 - applied 19:43:04 on 25/12/01 by user1
Service-policy output: policyname2
interface s4/0/2 - applied 12:47:04 on 24/12/01 by user1
interface s7/0/1 - applied 14:43:04 on 25/12/01 by user1
```

show policy-map interface output brief Command Example

The **showpolicy-mapinterfaceoutputbrief** command displays the attached *output* policy maps, along with the information about the interfaces to which they are attached.

```
Service-policy output: policyname1
```

show policy-map interface output brief timestamp Command Example

The **showpolicy-mapinterfaceoutputbrieftimestamp** command displays the attached *output* policy maps, along with the information about the interfaces to which they are attached.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

```
Service-policy output: policyname2
interface s2/0/2 - applied 21:47:04 on 24/12/01 by user1
interface s6/0/1 - applied 19:43:04 on 25/12/01 by user1
```

show policy-map interface input brief Command Example

The **showpolicy-mapinterfaceinputbrief** command displays the attached *input* policy maps, along with the information about the interfaces to which they are attached.

```
Service-policy input: policyname2
interface s2/0/2
interface s6/0/1
```

show policy-map interface input brief timestamp Command Example

The **showpolicy-mapinterfaceinputbrieftimestamp** command displays the attached *input* policy maps, along with the information about the interfaces to which they are attached.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

```
Service-policy input: policyname2
interface s2/0/2 - applied 21:47:04 on 24/12/01 by user1
interface s6/0/1 - applied 19:43:04 on 25/12/01 by user1
```

show policy-map interface output brief policy-map-name Command Example

The **showpolicy-mapinterfaceoutputbrief***policy-map-name* command displays the attached *output* policy map, along with the information about the interface to which it is attached. Only the policy map specified by the *policy-map-name* argument is displayed.

For example, the display for the **showpolicy-mapinterfaceoutputbriefpolicyname1**command is as follows:

```
Service-policy output: policyname1
interface s2/0/1
interface s6/0/0
```

show policy-map interface output brief policy-map-name timestamp Command Example

The **showpolicy-mapinterfaceoutputbrief***policy-map-name***timestamp** command displays the attached *output* policy map, along with the information about the interface to which it is attached. Only the policy map specified by the *policy-map-name* argument is displayed.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

For example, the display for the **showpolicy-mapinterfaceoutputbriefpolicyname2timestamp** command is as follows:

```
Service-policy output: policyname2
interface s2/0/2 - applied 21:47:04 on 24/12/01 by user1
interface s6/0/1 - applied 19:43:04 on 25/12/01 by user1
```

show policy-map interface input brief policy-map-name Command Example

The **showpolicy-mapinterfaceinputbrief***policy-map-name* command displays the attached *input* policy map, along with the information about the interface to which it is attached. Only the policy map specified by the *policy-map-name* argument is displayed.

For example, the display for the **showpolicy-mapinterfaceinputbriefpolicyname1** command is as follows:

```
Service-policy input: policyname1
interface s2/0/1
interface s6/0/0
```

show policy-map interface input brief policy-map-name timestamp Command Example

The **showpolicy-mapinterfaceinputbrief***policy-map-name***timestamp** command displays the attached *input* policy map, along with the information about the interface to which it is attached. Only the policy map specified by the *policy-map-name* argument is displayed.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

For example, the display for the **showpolicy-mapinterfaceinputbriefpolicyname2timestamp** command is as follows:

```
Service-policy input: policyname2
interface s2/0/2 - applied 21:47:04 on 24/12/01 by user1
interface s6/0/1 - applied 19:43:04 on 25/12/01 by user1
```

show policy-map interface brief vrf Command Example

The**showpolicy-mapinterfacebriefvrf** command displays *all* the policy maps (both input policy maps and output policy maps), along with information about the interfaces and the VRFs to which the policy maps are attached.

```
Service-policy input: policyname1
VRFA   interface s2/0/1
VRFB   interface s6/0/0
Service-policy output: policyname2
VRFC   interface s2/0/2
VRFB   interface s6/0/1
```

show policy-map interface brief vrf timestamp Command Example

The **showpolicy-mapinterfacebriefvrftimestamp** command displays *all* the policy maps (both input policy maps and output policy maps), along with information about the interfaces and the VRFs to which the policy maps are attached.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

```
Service-policy input: policyname1
VRFA   interface s2/0/1 - applied 21:47:04 on 23/12/01 by user1
VRFB   interface s6/0/0 - applied 21:47:04 on 23/12/01 by user1
Service-policy output: policyname2
VRFC   interface s2/0/3 - applied 20:47:04 on 23/12/01 by user1
VRFD   interface s6/0/2 - applied 20:49:04 on 21/12/01 by user1
```

In some network configurations, the policy map may be attached to the interface initially, and then at a later time, the interface can be configured to act as a VRF interface. In this kind of network configuration, the time-stamp information displays the time when the policy map was attached to the interface. The display does not include the time when the interface was configured to act as a VRF interface. Displaying only the time when the policy map is attached to the interface also applies to the scenarios that are described in the following paragraph for other network configurations.

In other network configurations, a VRF may be attached to multiple interfaces as described in the following scenarios:

- The policy map is also attached to both the interfaces and the VRFs. In this network configuration, all the interfaces should be shown in the display for the VRF, under the policy map name, as follows:

```
Service-policy input: policyname1
```

```
VRF1 interface s2/0/1 - applied 21:47:37 on 23/12/01 by user1
     interface atm0/0 - applied 11:37:57 on 21/11/01 by user1
```

- The policy map is not attached to all interfaces to which the specific VRF is attached. In this network configuration, only the VRF interfaces that have that policy map configured are displayed.

show policy-map interface brief policy-map-name vrf timestamp Command Example

The **showpolicy-mapinterfacebrief***policy-map-name***vrftimestamp** command displays the policy maps attached as *either* an input policy map *or* an output policy map, along with information about the interface and VRF to which the policy map is attached. Only the policy map specified by the *policy-map-name* argument is displayed.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

For example, the display for the **showpolicy-mapinterfacebriefpolicyname1vrftimestamp** command is as follows:

```
Service-policy input: policyname1
VRF1   interface s2/0/1 - applied 21:47:04 on 23/12/01 by user1
Service-policy output: policyname1
VRF2   interface s6/0/1 - applied 21:47:04 on 23/12/01 by user1
```

show policy-map interface brief policy-map-name vrf vrf-id timestamp Command Example

The **showpolicy-mapinterfacebrief***policy-map-name***vrf***vrf-id***timestamp** command displays *all* the policy maps (both the input policy maps and the output policy maps), along with information about the interface and VRF to which the policy maps are attached. Only the policy map and VRF specified by the *policy-map-name* argument and the *vrf-id* argument are displayed.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

For example, the display for **showpolicy-mapinterfacebriefpolicyname1vrfVRFAtimestamp**command is as follows:

```
Service-policy input: policyname1
VRFA   interface s2/0/1 - applied 21:47:04 on 23/12/01 by user1
Service-policy output: policyname1
VRFA   interface s6/0/1 - applied 21:47:04 on 23/12/01 by user1
```

show policy-map interface output brief vrf Command Example

The **showpolicy-mapinterfaceoutputbriefvrf** command displays the attached *output* policy maps, along with information about the interface and VRF to which the policy maps are attached.

```
Service-policy output: policyname2
VRFC   interface s2/0/2
VRFA   interface s6/0/1
```

show policy-map interface output brief vrf timestamp Command Example

The **showpolicy-mapinterfaceoutputbriefvrftimestamp**command displays the attached *output* policy maps, along with information about the interface and VRF to which the policy maps are attached.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

```
Service-policy output: policyname2
VRFC   interface s2/0/2 - applied 21:47:04 on 23/12/01 by user1
VRFA   interface s6/0/1 - applied 21:47:04 on 23/12/01 by user1
```

show policy-map interface input brief vrf Command Example

The **showpolicy-mapinterfaceinputbriefvrf** command displays the attached *input* policy maps, along with information about the interface and VRF to which the policy maps are attached.

```
Service-policy input: policyname1
VRFA   interface s2/0/1
VRFB   interface s6/0/0
Service-policy input: policyname2
VRFC   interface s2/0/2
VRFB   interface s6/0/1
```

show policy-map interface input brief vrf timestamp Command Example

The **showpolicy-mapinterfaceinputbriefvrftimestamp** command displays the attached *input* policy maps, along with information about the interface and VRF to which the policy maps are attached.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

```
Service-policy input: policyname1
VRFA   interface s2/0/1 - applied 21:47:04 on 23/12/01 by user1
VRFB   interface s6/0/0 - applied 21:47:04 on 23/12/01 by user1
Service-policy input: policyname2
VRFC   interface s2/0/3 - applied 20:47:04 on 23/12/01 by user1
VRFD   interface s6/0/2 - applied 20:49:04 on 21/12/01 by user1
```

show policy-map interface input brief vrf vrf-id Command Example

The **showpolicy-mapinterfaceinputbriefvrf***vrf-id* command displays the attached *input* policy maps, along with information about the interface and VRF to which the policy maps are attached. Only the policy maps attached to the VRF specified by the *vrf-id* argument are displayed.

For example, the display for the **showpolicy-mapinterfaceinputbriefvrfVRFA** command is as follows:

```
Service-policy input: policyname1
VRFA   interface s2/0/1
```

```
Service-policy input: policyname2
VRFA   interface s6/0/1
```

show policy-map interface output brief vrf vrf-id Command Example

The **showpolicy-mapinterfaceoutputbriefvrf***vrf-id* command displays the attached *output* policy maps, along with information about the interface and VRF to which the policy maps are attached. Only the policy maps attached to the VRF specified by the *vrf-id* argument are displayed.

For example, the display for the **showpolicy-mapinterfaceoutputbriefvrfVRFB** command is as follows:

```
Service-policy output: policyname1
VRFB   interface s2/0/1
Service-policy output: policyname2
VRFB   interface s6/0/1
```

show policy-map interface input brief vrf vrf-id timestamp Command Example

The **showpolicy-mapinterfaceinputbriefvrf***vrf-id***timestamp** command displays the attached *input* policy maps, along with information about the interface and VRF to which the policy maps are attached. Only the policy maps attached to the VRF specified by the *vrf-id* argument are displayed.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

For example, the display for the **showpolicy-mapinterfaceinputbriefvrfVRFAtimestamp** command is as follows:

```
Service-policy input: policyname1
VRFA   interface s2/0/1 - applied 21:47:04 on 23/12/01 by user1
Service-policy input: policyname2
VRFA   interface s6/0/1 - applied 21:47:04 on 23/12/01 by user1
```

show policy-map interface output brief vrf vrf-id timestamp Command Example

The **showpolicy-mapinterfaceoutputbriefvrf***vrf-id***timestamp** command displays the attached *output* policy maps, along with information about the interface and VRF to which the policy maps are attached. Only the policy maps attached to the VRF specified by the *vrf-id* argument are displayed.

The **timestamp** keyword displays the time and date when the policy map was attached to the specific interface, along with the user ID of the person who attached the policy map to the interface.

For example, the display for the **showpolicy-mapinterfaceoutputbriefvrfVRFBtimestamp**command is as follows:

```
Service-policy output: policyname1
VRFB   interface s2/0/1 - applied 21:47:04 on 23/12/01 by user1
Service-policy output: policyname2
VRFB   interface s6/0/1 - applied 21:47:04 on 23/12/01 by user1
```

The table below describes the significant fields shown in the various displays.

Table 48: show policy-map interface brief Field Descriptions

Field	Description
Service-policy output: policyname2	Output policy map name.
Service-policy input: policyname2	Input policy map name.
interface s2/0/1	Interface to which the policy map is attached.
VRFA	VRF to which the policy map is attached.
applied 21:47:04 on 23/12/01	Time and date when the policy map was attached to the interface or VRF.
by user1	User ID of the person who attached the policy map to the interface or VRF.

Related Commands

Command	Description
show policy-map interface	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.

show policy-map interface port-channel

To verify the policy map configuration for an EFP, use the **show policy-map interface port-channel** command.

show policy-map interface port-channel

Command Default

There is no default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
XE 3.18 SP	Support for this command was introduced on ASR 900 Series Routers.

Examples

The following example shows how to verify the policy map configuration for an EFP:

```
Router#show policy-map int po2 service instance 1 output
Port-channel2: EFP 1
Service-policy output: l1c
Class-map: qos4 (match-all)
0 packets, 0 bytes
5 minute offered rate 0000 bps, drop rate 0000 bps
Match: qos-group 4
Queueing
queue limit 74472 us/ 1024000 bytes
(queue depth/total drops/no-buffer drops) 0/0/0
(pkts output/bytes output) 0/0
bandwidth 11% (110000 kbps)
Class-map: qos1 (match-all)
0 packets, 0 bytes
5 minute offered rate 0000 bps, drop rate 0000 bps
Match: qos-group 1
Queueing
queue limit 68266 us/ 1024000 bytes
(queue depth/total drops/no-buffer drops) 0/0/0
(pkts output/bytes output) 0/0
bandwidth 12% (120000 kbps)
Class-map: qos2 (match-all)
0 packets, 0 bytes
5 minute offered rate 0000 bps, drop rate 0000 bps
Match: qos-group 2
Queueing
queue limit 43115 us/ 1024000 bytes
(queue depth/total drops/no-buffer drops) 0/0/0
(pkts output/bytes output) 0/0
bandwidth 19% (190000 kbps)
Class-map: class-default (match-any)
0 packets, 0 bytes
5 minute offered rate 0000 bps, drop rate 0000 bps
Match: any
Queueing
queue limit 54613 us/ 1024000 bytes
(queue depth/total drops/no-buffer drops) 0/0/0
(pkts output/bytes output) 0/0
bandwidth 15% (150000 kbps)
```

show policy-map interface service group

To display the policy-map information for service groups that have members attached to an interface, use the **showpolicy-mapinterfaceservicegroup**command in privileged EXEC mode.

show policy-map interface *type number* **service group** [*service-group-identifier*]

Syntax Description

type	Interface type. For more information, use the question mark (?) online help function.
number	Interface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.
service-group-identifier	(Optional) Service-group number. Enter the number of an existing service group

Command Default

If a service group number is not specified, policy-map information for all service groups is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Usage Guidelines

Use the **showpolicy-mapinterfaceservicegroup** command to display information about one or more service groups with members that are attached to an interface or port-channel. The information displayed includes the policy maps attached to the interface or port-channel, the QoS features configured in those policy maps (for example, traffic policing or traffic queueing), and the corresponding packet statistics. Before using this command, the policy maps and service groups must be created.

Examples

The following is an example of the **showpolicy-mapinterfaceservicegroup** command. In this example, service group 1 is specified. Service group 1 contains two policy maps (service policies), policy1 and policy2. Traffic policing is enabled in the policy1 policy map. Traffic queueing is enabled in the policy2 policy map.

```
Router# show policy-map interface gigabitEthernet 9/5 service group 1

 GigabitEthernet9/5: Service Group 1

  Service-policy input: policy1

    Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0000 bps, drop rate 0000 bps
      Match: any
      police:
          cir 200000 bps, bc 6250 bytes
        conformed 0 packets, 0 bytes; actions:
          transmit
        exceeded 0 packets, 0 bytes; actions:
          drop
```

```
      conformed 0000 bps, exceed 0000 bps

Service-policy output: policy2

Counters last updated 00:00:34 ago

  Class-map: class-default (match-any)
    0 packets, 0 bytes
    5 minute offered rate 0000 bps, drop rate 0000 bps
    Match: any
    Queueing
    queue limit 131072 packets
    (queue depth/total drops/no-buffer drops) 0/0/0
    (pkts output/bytes output) 0/0
    bandwidth remaining ratio 2
```

The table below describes the significant fields shown in the display.

Table 49: show policy-map interface service group Field Descriptions

Field	Description
GigabitEthernet9/5: Service Group 1	Interface and service-group number.
Service-policy input: policy1 Service-policy output: policy2	Service-policy (policy-map) names and whether the policy is in the input (ingress) or the output (egress) direction on the interface.
police	Indicates that traffic policing is enabled. Statistics associated with traffic policing are also displayed.
Queueing	Indicates that a traffic queueing mechanism is enabled. Statistics associated with traffic queueing are also displayed.

Related Commands

Command	Description
show policy-map interface	Displays the statistics and the configurations of the input and output policies that are attached to an interface.
show policy-map interface service instance	Displays the policy-map information for a given service instance under an interface or port-channel.

show policy-map interface service instance

To display the policy-map information for a given service instance under a port channel, use the show policy-map interface service instance command in user EXEC or privileged EXEC mode.

show policy-map interface x service instance y

Syntax Description

x	The number of the interface or the port channel.
y	The number of the service instance.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
12.2(33)SRC	This command was introduced on the Cisco 7600 series routers.

Examples

The following example shows the policy-map output for a hierarchical policy on a given service instance 1 under port channel 1:

```
Router# show policy-map interface port-channel 1 service instance 1
Port-channel1: EFP 1
  Service-policy output: hqos-pc-brr
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
      Queueing
      queue limit 5000 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      shape (average) cir 20000000, bc 80000, be 80000
      target shape rate 20000000
      bandwidth remaining ratio 2
      Service-policy : flat-pc-brr
        Class-map: cos5 (match-all)
          0 packets, 0 bytes
          5 minute offered rate 0 bps, drop rate 0 bps

          Match: cos  5
          Queueing
          queue limit 2500 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
(pkts output/bytes output) 0/0
          shape (average) cir 10000000, bc 40000, be 40000
          target shape rate 10000000
        Class-map: class-default (match-any)
          0 packets, 0 bytes
          5 minute offered rate 0 bps, drop rate 0 bps
          Match: any
          Queueing
          queue limit 2500 packets
```

```
(queue depth/total drops/no-buffer drops) 0/0/0
(pkts output/bytes output) 0/0
shape (average) cir 10000000, bc 40000, be 40000
target shape rate 10000000
```

The table below describes the significant fields shown in the display.

Table 50: show policy-map interface service instance Field DescriptionsA number in parentheses may appear next to the service-policy output name, class-map name, and match criteria information. The number is for Cisco internal use only and can be disregarded.

Field	Description
Fields Associated with Classes or Service Policies	
Service-policy output	Name of the output service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets and bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation (GRE) tunnel and an IP Security (IPSec) tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPSec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Match	Match criteria specified for the class of traffic. Choices include criteria such as IP precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental (EXP) value, access groups, and QoS groups. For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide* .
Fields Associated with Queueing (if Enabled)	
Output Queue	The weighted fair queueing (WFQ) conversation to which this class of traffic is allocated.

Field	Description
Bandwidth	Bandwidth, in either kbps or percentage, configured for this class and the burst size.
pkts matched/bytes matched	Number of packets (also shown in bytes) matching this class that were placed in the queue. This number reflects the total number of matching packets queued at any time. Packets matching this class are queued only when congestion exists. If packets match the class but are never queued because the network was not congested, those packets are not included in this total. However, if process switching is in use, the number of packets is always incremented even if the network is not congested.
depth/total drops/no-buffer drops	Number of packets discarded for this class. No-buffer indicates that no memory buffer exists to service the packet.
Fields Associated with Weighted Random Early Detection (WRED) (if Enabled)	
exponential weight	Exponent used in the average queue size calculation for a WRED parameter group.
mean queue depth	Average queue depth based on the actual queue depth on the interface and the exponential weighting constant. It is a fluctuating average. The minimum and maximum thresholds are compared against this value to determine drop decisions.
class	IP precedence level.
Transmitted pkts/bytes	Number of packets (also shown in bytes) passed through WRED and not dropped by WRED. **Note** If there is insufficient memory in the buffer to accommodate the packet, the packet can be dropped *after* the packet passes through WRED. Packets dropped because of insufficient memory in the buffer (sometimes referred to as "no-buffer drops") are not taken into account by the WRED packet counter.
Random drop pkts/bytes	Number of packets (also shown in bytes) randomly dropped when the mean queue depth is between the minimum threshold value and the maximum threshold value for the specified IP precedence level.
Tail drop pkts/bytes	Number of packets dropped when the mean queue depth is greater than the maximum threshold value for the specified IP precedence level.
Minimum thresh	Minimum threshold. Minimum WRED threshold in number of packets.
Maximum thresh	Maximum threshold. Maximum WRED threshold in number of packets.
Mark prob	Mark probability. Fraction of packets dropped when the average queue depth is at the maximum threshold.

Field	Description
Fields Associated with Traffic Shaping (if Enabled)	
Target Rate	Rate used for shaping traffic.
Byte Limit	Maximum number of bytes that can be transmitted per interval. Calculated as follows: ((Bc+Be) /8) x 1
Sustain bits/int	Committed burst (Bc) rate.
Excess bits/int	Excess burst (Be) rate.
Interval (ms)	Time interval value in milliseconds (ms).
Increment (bytes)	Number of credits (in bytes) received in the token bucket of the traffic shaper during each time interval.
Queue Depth	Current queue depth of the traffic shaper.
Packets	Total number of packets that have entered the traffic shaper system.
Bytes	Total number of bytes that have entered the traffic shaper system.
Packets Delayed	Total number of packets delayed in the queue of the traffic shaper before being transmitted.
Bytes Delayed	Total number of bytes delayed in the queue of the traffic shaper before being transmitted.
Shaping Active	Indicates whether the traffic shaper is active. For example, if a traffic shaper is active, and the traffic being sent exceeds the traffic shaping rate, a “yes” appears in this field.

Related Commands

Command	Description
show policy-map interface	Displays the statistics and the configurations of the input and output policies that are attached to an interface.

show policy-map mgre

To display statistics about a specific QoS policy as it is applied to a tunnel endpoint, use the **showpolicy-mapmgre**command in user EXEC or privileged EXEC mode.

show policy-map mgre [*tunnel-interface-name*] [*tunnel-destination overlay-address*]

Syntax Description

tunnel-interface-name	(Optional) Name of a tunnel interface.
tunnel-destination overlay-address	(Optional) Tunnel destination overlay address (such as the tunnel endpoint address).

Command Default

All existing policy map configurations are displayed.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.4(22)T	This command was introduced.

Usage Guidelines

You can specify the tunnel destination overlay address to display the output from a particular session.

Examples

The following is sample output from the **showpolicy-mapmgre**command:

```
Router# show policy-map mgre tunnel 0 192.168.1.2
Tunnel0  <--> 192.168.1.2
  Service-policy output: set_out
    Class-map: test (match-all)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: access-group 101
      QoS Set
        precedence 3
          Packets marked 0
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
```

The table below describes the significant fields shown in the display.

Table 51: show policy-map mgre Field Description

Field	Description
Tunnel0	Name of the tunnel endpoint.
192.168.1.2	Tunnel destination overlay address.
Service-policy output	Name of the output service policy applied to the specified interface or VC.

Field	Description
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets and bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in kbps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation (GRE) tunnel and an IP Security (IPSec) tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPSec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Match	Match criteria specified for the class of traffic. Choices include criteria such as IP precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental (EXP) value, access groups, and QoS groups. For more information about the variety of match criteria that are available, see the "Classifying Network Traffic" module in the *Cisco IOS Quality of Service Solutions Configuration Guide* .
QoS Set, qos-group, Packets marked	Indicates that class-based packet marking based on the QoS group has been configured. Includes the qos-group number and the number of packets marked.

Related Commands

Command	Description
ip nhrp group	Configures a NHRP group on a spoke.
ip nhrp map	Statically configures the IP-to-NBMA address mapping of IP destinations connected to an NBMA network.
ip nhrp map group	Adds NHRP groups to QoS policy mappings on a hub.
show dmvpn	Displays DMVPN-specific session information.
show ip nhrp	Displays NHRP mapping information.
show ip nhrp group-map	Displays the details of NHRP group mappings on a hub and the list of tunnels using each of the NHRP groups defined in the mappings.

show policy-map multipoint

To display the statistics about a specific quality of service (QoS) for a multipoint tunnel interface, use the **showpolicy-mapmultipoint**command in privileged EXEC mode.

show policy-map multipoint [**tunnel** *interface-number* [*tunnel-destination-address*]] [**input** [**class** *class-name*]] [**output** [**class** *class-name*]]

Syntax Description

tunnel	(Optional) Displays the tunnel interface.
interface-number	(Optional) Module and port number.
tunnel-destination- address	(Optional) Tunnel destination overlay address (such as the tunnel endpoint address).
input	(Optional) Indicates that the statistics for the attached input policy will be displayed.
output	(Optional) Indicates that the statistics for the attached output policy will be displayed.
class *class-name*	(Optional) Displays the QoS policy actions for the specified class.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(22)T	This command was introduced.

Usage Guidelines

Use the **showpolicy-mapmultipoint**command to display the quality of service (QoS) policy map for a multipoint tunnel interface.

Examples

The following is sample output from the **showpolicy-mapmultipoint**command:

```
Router# show
policy-map multipoint
Interface Tunnel1 <--> 10.1.1.1
  Service-policy output: parent-policy-out
    Class-map: class-default (match-any)
      9839 packets, 869608 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
      Queueing
      queue limit 250 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 5000/710000
      shape (average) cir 1000000, bc 4000, be 4000
      target shape rate 1000000
      Service-policy : child-policy-out
        queue stats for all priority classes:
          Queueing
```

```
          queue limit 300 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
          (pkts output/bytes output) 5000/710000
Interface Tunnel1 <--> 10.1.2.1
  Service-policy output: parent-policy-out
    Class-map: class-default (match-any)
      4723 packets, 479736 bytes
      5 minute offered rate 0 bps, drop rate 0 bps
      Match: any
      Queueing
      queue limit 250 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      shape (average) cir 1000000, bc 4000, be 4000
      target shape rate 1000000
      Service-policy : child-policy-out
        queue stats for all priority classes:

          queue limit 300 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
          (pkts output/bytes output) 0/0
```

Related Commands

Command	Description
show platform qos policy-map	Displays the type and number of policy maps that are configured on the router.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.

show policy-map session

To display the quality of service (QoS) policy map in effect for the Subscriber Service Switch (SSS) session, use the**showpolicy-mapsession**command in user EXEC or privileged EXEC mode.

show policy-map session [**uid** *uid-number*] [{**input class** *class-name* | **output class** *class-name*}]

Syntax Description

uid	(Optional) Defines a unique session ID.
uid-number	(Optional) Unique session ID. Range is from 1 to 65535.
input	(Optional) Displays the upstream traffic of the unique session.
output	(Optional) Displays the downstream traffic of the unique session.
class	(Optional) Identifies the class that is part of the QoS policy-map definition.
class-name	(Optional) Class name that is part of the QoS policy-map definition.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.3(8)T	This command was introduced.
12.2(28)SB	This command was integrated into Cisco IOS Release 12.2(28)SB. This command was also modified to include per-session traffic shaping and traffic queueing statistics, if applicable.
12.2(33)SRC	This command was integrated into Cisco IOS Release 12.2(33)SRC, and support for the Cisco 7600 series router was added.
12.2(33)SB	Support for the Cisco 7300 series router was added. This command was also modified to include traffic shaping overhead accounting for ATM statistics, if applicable.

Usage Guidelines

Use the **showpolicy-mapsession** command with the **uid** keyword to verify the QoS policy map of a unique session ID in the input and output streams in the SSS session. Use the **showpolicy-mapsession** command with the optional **class***class-name*keywordargument combination to display statistics for a particular class. If you use the **showpolicy-mapsession** command without the **class***class-name*keyword argument combination, statistics for all the classes defined in the QoS policy map display.

Examples

This section contains sample output from the **showpolicy-mapsession** command.

Note The output of the **showpolicy-mapsession** command varies according to the QoS feature configured in the policy map. For instance, if traffic shaping or traffic queueing is configured in the policy maps, the statistics for those features will be included and the output will vary accordingly from what is shown in this section. Additional self-explanatory fields may appear, but the output will be very similar.

The following example from the **showpolicy-mapsession** command displays QoS policy-map statistics for traffic in the downstream direction for the QoS policy maps configured:

```
Router# show policy-map session uid 401 output
 SSS session identifier 401 -
  Service-policy output: downstream-policy
    Class-map: customer1234 (match-any)
      4464 packets, 249984 bytes
      5 minute offered rate 17000 bps, drop rate 0 bps
      Match: ip dscp cs1  cs2  cs3  cs4
        4464 packets, 249984 bytes
        5 minute rate 17000 bps
      QoS Set
        dscp af11
          Packets marked 4464
    Class-map: customer56 (match-any)
      2232 packets, 124992 bytes
      5 minute offered rate 8000 bps, drop rate 0 bps
      Match: ip dscp cs5  cs6
        2232 packets, 124992 bytes
        5 minute rate 8000 bps
      police:
          cir 20000 bps, bc 10000 bytes
          pir 40000 bps, be 10000 bytes
        conformed 2232 packets, 124992 bytes; actions:
          set-dscp-transmit af21
        exceeded 0 packets, 0 bytes; actions:
          set-dscp-transmit af22
        violated 0 packets, 0 bytes; actions:
          set-dscp-transmit af23
        conformed 8000 bps, exceed 0 bps, violate 0 bps
    Class-map: customer7 (match-any)
      1116 packets, 62496 bytes
      5 minute offered rate 4000 bps, drop rate 4000 bps
      Match: ip dscp cs7
        1116 packets, 62496 bytes
        5 minute rate 4000 bps
      drop
    Class-map: class-default (match-any)
      1236 packets, 68272 bytes
      5 minute offered rate 4000 bps, drop rate 0 bps
      Match: any
```

The table below describes the significant fields shown in the display.

Table 52: show policy-map session Field Descriptions -- Traffic in the Downstream Direction

Field	Description
SSS session identifier	Unique session identifier.

Field	Description
Service-policy output	Name of the output service policy applied to the specified interface or virtual circuit (VC).
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets and bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in bps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation [GRE] tunnel and an IP Security [IPsec] tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPsec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
drop rate	Rate, in bps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Match	Match criteria specified for the class of traffic. Choices include criteria such as IP precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental (EXP) value, access groups, and QoS groups. For more information about the variety of availablematch criteria options, see the "Applying QoS Features Using the MQC" module of the *Cisco IOS Quality of Service Solutions Configuration Guide* .
QoS Set	Indicates that packet marking is in place.
dscp	Value used in packet marking.
Packets marked	The number of packets marked.
police	Indicates that the **police** command has been configured to enable traffic policing. Also, displays the specified committed information rate (CIR), conform burst (bc) size, peak information rate (PIR), and peak burst (be) size used for marking packets.
conformed	Displays the action to be taken on packets that conform to a specified rate. Displays the number of packets and bytes on which the action was taken.
exceeded	Displays the action to be taken on packets that exceed a specified rate. Displays the number of packets and bytes on which the action was taken.
violated	Displays the action to be taken on packets that violate a specified rate. Displays the number of packets and bytes on which the action was taken.

The following example from the **showpolicy-mapsession**command displays QoS policy-map statistics for traffic in the upstream direction for all the QoS policy maps configured:

```
Router# show policy-map
 session
 uid
 401
 input
 SSS session identifier 401 -
  Service-policy input: upstream-policy
    Class-map: class-default (match-any)
      1920 packets, 111264 bytes
      5 minute offered rate 7000 bps, drop rate 5000 bps
      Match: any
      police:
          cir 8000 bps, bc 1500 bytes
        conformed 488 packets, 29452 bytes; actions:
          transmit
        exceeded 1432 packets, 81812 bytes; actions:
          drop
        conformed 7000 bps, exceed 5000 bps
```

The table below describes the significant fields shown in the display.

Table 53: show policy-map session Field Descriptions -- Traffic in the Upstream Direction

Field	Description
SSS session identifier	Unique session identifier.
Service-policy input	Name of the input service policy applied to the specified interface or VC.
Class-map	Class of traffic being displayed. Output is displayed for each configured class in the policy. The choice for implementing class matches (for example, match-all or match-any) can also appear next to the traffic class.
packets and bytes	Number of packets (also shown in bytes) identified as belonging to the class of traffic being displayed.
offered rate	Rate, in bps, of packets coming in to the class. **Note** If the packets are compressed over an outgoing interface, the improved packet rate achieved by packet compression is not reflected in the offered rate. Also, if the packets are classified *before* they enter a combination of tunnels (for example, a generic routing encapsulation [GRE] tunnel and an IP Security [IPsec] tunnel), the offered rate does not include all the extra overhead associated with tunnel encapsulation in general. Depending on the configuration, the offered rate may include no overhead, may include the overhead for only *one* tunnel encapsulation, or may include the overhead for *all* tunnel encapsulations. In most of the GRE and IPsec tunnel configurations, the offered rate includes the overhead for GRE tunnel encapsulation only.
drop rate	Rate, in bps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.

Field	Description
Match	Match criteria specified for the class of traffic. Choices include criteria such as IP precedence, IP differentiated services code point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental (EXP) value, access groups, and QoS groups. For more information about the variety of available match criteria options, see the "Applying QoS Features Using the MQC" module of the *Cisco IOS Quality of Service Solutions Configuration Guide* .
police	Indicates that the **police** command has been configured to enable traffic policing. Also, displays the specified committed information rate (CIR), conform burst (bc) size, peak information rate (PIR), and peak burst (be) size used for marking packets.
conformed	Displays the action to be taken on packets that conform to a specified rate. Displays the number of packets and bytes on which the action was taken.
exceeded	Displays the action to be taken on packets that exceed a specified rate. Displays the number of packets and bytes on which the action was taken.
violated	Displays the action to be taken on packets that violate a specified rate. Displays the number of packets and bytes on which the action was taken.

Per-Session Shaping and Queueing Output: Example

The following is sample output of the **showpolicy-mapsession** command when per-session traffic shaping and traffic queueing are enabled. With per-session traffic shaping and queueing configured, traffic shaping and traffic queueing statistics are included in the output.

Note The QoS: Per-Session Shaping and Queueing on LNS feature does not support packet marking. That is, this feature does not support the use of the **set** command to mark packets. Therefore, statistics related to packet marking are not included in the output.

```
Router# show policy-map session
uid 1 output
 SSS session identifier 1 -
  Service-policy output: parent
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      30 second offered rate 0 bps, drop rate 0 bps
      Match: any
        0 packets, 0 bytes
        30 second rate 0 bps
      Queueing
      queue limit 128 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      shape (average) cir 512000, bc 12800, be 12800
      target shape rate 512000
      Service-policy : child
        Class-map: prec0 (match-all)
          0 packets, 0 bytes
          30 second offered rate 0 bps, drop rate 0 bps
```

```
          Match: ip precedence 0
          Queueing
          queue limit 38 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
          (pkts output/bytes output) 0/0
          bandwidth 30% (153 kbps)
  Class-map: prec2 (match-all)
          0 packets, 0 bytes
          30 second offered rate 0 bps, drop rate 0 bps
          Match: ip precedence 2
          Queueing
          queue limit 44 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
          (pkts output/bytes output) 0/0
          shape (average) cir 212000, bc 7632, be 7632
          target shape rate 212000
        Class-map: class-default (match-any)
          0 packets, 0 bytes
          30 second offered rate 0 bps, drop rate 0 bps
          Match: any
            0 packets, 0 bytes
            30 second rate 0 bps
          queue limit 44 packets
          (queue depth/total drops/no-buffer drops) 0/0/0
          (pkts output/bytes output) 0/0
```

The table below describes the significant fields related to per-session traffic shaping and queueing shown in the display.

Table 54: show policy-map session Field Descriptions--Per-Session Traffic Shaping and Queueing Configured

Field	Description
Queueing	Indicates that traffic queueing is enabled.
queue limit	Displays the queue limit, in packets.
queue depth	Current queue depth of the traffic shaper.
shape (average) cir, bc, be	Indicates that average rate traffic shaping is enabled. Displays the committed information rate (CIR), the committed burst (bc) rate, and the excess burst (be) rate in bytes.
target shape rate	Displays the traffic shaping rate, in bytes.

Traffic Shaping Overhead Accounting for ATM: Example

The following output from the show policy-map session command indicates that ATM overhead accounting is enabled for shaping.

```
Router# show policy-map session
uid 2
output

SSS session identifier 2 -
Service-policy output:  ATM_OH_POLICY
    Class-map: class-default (match-any)
      0 packets, 0 bytes
      30 second offered rate 0 bps, drop rate 0 bps
      Match: any
```

```
Queueing
queue limit 2500 packets
(queue depth/total drops/no-buffer drops) 0/0/0
(pkts output/bytes output) 0/0
shape (average) cir 10000000, bc 40000, be 40000
target shape rate 10000000
 Overhead Accounting Enabled
```

The table below describes the significant fields displayed.

Table 55: show policy-map session Field Descriptions--Traffic Shaping Overhead Accounting for ATM Configured

Field	Description
target shape rate	Displays the traffic shaping rate, in bytes.
Overhead Accounting Enabled	Indicates that overhead accounting is enabled.

Related Commands

Command	Description
show policy-map interface	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.
show sss session	Displays SSS session status.

show policy-map target service-group

To display the policy-map information about service groups comprising Ethernet Virtual Circuits (EVCs), sub interfaces or sessions as members on the main interface or port channel, use the **showpolicy-maptargetservice-group** command in privileged EXEC mode.

show policy-map target service-group [*service-group-identifier*]

Syntax Description

service-group-identifier	Service group identification number.

Command Default

Policy-map information for all existing service groups is displayed.

Command Modes

Privileged EXEC(#)

Command History

Release	Modification
15.1(1)S	This command is introduced.

Usage Guidelines

You should create the service groups and policy maps before using this command.

Examples

This is a sample output of the **showpolicy-maptargetservice-group**command.

```
Router# show policy-map target service-group 1000
Port-channel1: Service Group 1000
Service-policy output: policy1
Counters last updated 02:04:11 ago
Class-map: class-default (match-any)
      0 packets, 0 bytes
      30 second offered rate 0000 bps, drop rate 0000 bps
      Match: any
      Queueing
      queue limit 768 packets
      (queue depth/total drops/no-buffer drops) 0/0/0
      (pkts output/bytes output) 0/0
      shape (average) cir 20000000, bc 80000, be 80000
      target shape rate 20000000
```

The table below describes the fields shown in the **showpolicy-maptargetservice-group**command.

Table 56: Field Descriptions

Field	Description
Port-channel: Service Group	Specifies the interface type and service-group number.
Service-policy output	Specifies the output service-policy name.
Class-map	Specifies the class of traffic.
Queuing	Indicates that a traffic queuing mechanism is enabled. Statistics for traffic queuing are also displayed.

Related Commands

Command	Description
show policy-map interface	Displays the statistics and the configurations of the input and output policies that are attached to an interface.
show policy-map interface service instance	Displays the policy-map information for a given service instance under an interface or port-channel.

show policy-map type access-control

To display the access control for a specific policy map, use the **showpolicy-maptypeaccess-control**command in privileged EXEC mode.

show policy-map type access-control [{[{*policy-map-name* [**class** *class-map-name*] | **apn** *index-number*}] **control-plane** [{**all** | **subinterface**}] [{**input** [**class** *class-map-name*] | **output** [**class** *class-map-name*]}] | **interface** *type number* [{**vc** *vpivci* | **vp** *vpi* [*subinterface*] | **input** [**class** *class-map-name*] | **output** [**class** *class-map-name*]}] **session** [**uid** *id*] [{**input** [**class** *class-map-name*] | **output** [*class class-map-name*]}]}]

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show policy-map type access-control [**control-plane** [{**all** [{**brief** {**timestamp** | **vrfs timestamp**} | **class** *class-map-name* | **service-instance** [*target-identifier*]}] | **interface** [*type number* [**service-instance** [*target-identifier*]]] | **session** [**uid** [**id**]] [{**input** [**class** *class-map-name*] | **output class** [*class-map-name*]}]}]]

Syntax Description

policy-map name	(Optional) Policy-map name.
class *class-map-name*	(Optional) Displays the Quality of Service (QoS) policy actions for the specified class.
apn *index-number*	(Optional) Displays information about the Access Point Name (APN)-related policy.
control-plane	(Optional) Displays information about control plane policy.
all	(Optional) Displays all control plane policies.
subinterface	(Optional) Displays statistics and policy details for an individual class for one of the following subinterfaces: **cef-exception**, **host**, **transit**.
input	(Optional) Indicates that the statistics for the attached input policy are displayed.
output	(Optional) Indicates that the statistics for the attached output policy are displayed.
interface [*typenumber*]	(Optional) Displays information about the Cisco IOS QoS policy interface.
vc	(Optional) Displays the service policy for a specified virtual channel (VC).
vpi /	(Optional) Virtual path identifier (VPI) for this permanent virtual circuit (PVC). The absence of the slash mark ("/") and a VPI value defaults the VPI value to 0. On the Cisco 7200 and 7500 series routers, this value ranges from 0 to 255. The *vpi* and *vci* arguments cannot both be set to 0; if one is 0, the other cannot be 0.
vci	(Optional) Virtual channel identifier (VCI) for this PVC. This value ranges from 0 to 1 less than the maximum value set for this interface by the **atmvc-per-vp** command. Typically, lower values 0 to 31 are reserved for specific traffic (F4 Operation, Administration, and Maintenance (OAM), switched virtual circuit (SVC) signaling, Integrated Local Management Interface (ILMI), and so on) and should not be used.

session	(Optional) Displays information about the session QoS policy.
uid [*id*]	(Optional) Displays the session user identifier (uid) for a policy map based on the Subscriber Service Switch (SSS) unique identifier.
brief	(Optional) Dispays a brief description of policy maps.
timestamp	Displays time when the policy map was attached to the interface.
vrfs	Displays information about the interface associated with a virtual private network (VPN).
service instance	(Optional) Displays information about the service instance for an interface.
target-identifier	(Optional) Target identifier for a service instance.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(22)T	This command was introduced.
Cisco IOS XE Release 2.1	This command was implemented on Cisco ASR Aggregation Services 1000 series routers.
15.0(1)M	The command was modified. The output was modified to display encrypted filter information.

Usage Guidelines

Use this command to display the access control for a specific policy-map.

Examples

The following is sample output from the **showpolicy-maptypeaccess-control**command. The fields are self-explanatory.

```
Router# show policy-map type access-control
Policy Map type access-control tcp_policy
    Class psirt1 (encrypted FPM filter)
      drop
    Class psirt2 (encrypted FPM filter)
      drop
    Class psirt11 (encrypted FPM filter)
      drop
  Policy Map type access-control udp_policy
    Class slammer
      drop
  Policy Map type access-control fpm-policy
    Class ip_tcp_stack
      service-policy tcp_policy
    Class ip_udp_stack
      service-policy udp_policy
```

Related Commands

Command	Description
show platform qos policy-map	Displays the type and number of policy maps that are configured on the router.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.

show policy-map type nat

To display the policy-map for Network Address Translation (NAT), use the **showpolicy-maptypeNAT** command in privileged EXEC mode.

```
show policy-map nat policymap-name
[class classmap-name]
|apn index-number | interface type-number
[input class classmap-name]
|outputclass classmap-name
[session uid id]
input [class classmap-name] | output class classmap-name
```

Syntax Description

policymap-name	(Optional) Policy-map name.
class *classmap-name*	(Optional) Displays the QoS policy actions for the specified class.
apn *index-number*	(Optional) Displays Access Point Name (APN) related policy information.
interface [*typenumber*]	(Optional) Displays Cisco IOS Quality of Service (QoS) Policy Interface information .
session	(Optional) Displays session QoS Policy information.
uid [*id*]	Displays session user identifier (uid) for a policy-map based on the Subscriber Service Switch (SSS) unique identifier.
input	(Optional) Indicates that the statistics for the attached input policy is displayed.
output	(Optional) Indicates that the statistics for the attached output policy is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(11)T	This command was introduced.

Examples

The following is sample output from the **showpolicy-maptypeNAT**command:

```
Router# show policy-map type NAT
Policy Map ipnat-policyxx-in2out
Class ipnat-default
Class ipnat-class-acl-1
Class ipnat-class-acl-2
Class ipnat-class-acl-3
Policy Map ipnat-policyxx-out2in
Class ipnat-default
```

Related Commands

Command	Description
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.
show platform qos policy-map	Displays the type and number of policy maps that are configured on the router.

show policy-map type port-filter

To display information about policing of packets going to closed or nonlistened TCP/UDP ports, use the **showpolicy-maptypeport-filter**command in privileged EXEC mode.

show queue *interface-name interface-number queue-number* **vc** *vc vpi/vci*

Syntax Description

policy-map-name	(Optional) Policy-map name.
class *class-map-name*	(Optional) Displays the QoS policy actions for the specified class.
apn *index-number*	(Optional) Displays Access Point Name (APN) related policy information.
control-plane	(Optional) Displays information about control plane policy.
all	(Optional) Displays all control plane policies.
subinterface	(Optional) Displays statistics and policy details for an individual class for one of the following subinterfaces: **cef-exception**, **host**, **transit**.
interface [*typenumber*]	(Optional) Displays Cisco IOS QoS policy interface information.
	(Optional) Displays the service policy for a specified virtual channel (VC).
vpi **/** **vc**	(Optional) virtual path identifier (VPI) for this PVC. The absence of the "/" and a vpi value defaults the vpi value to 0. On the Cisco 7200 and 7500 series routers, this value ranges from 0 to 255. The vpi and vci arguments cannot both be set to 0; if one is 0, the other cannot be 0.
vci	(Optional) virtual channel identifier (VCI) for this PVC. This value ranges from 0 to 1 less than the maximum value set for this interface by the atm vc-per-vp command. Typically, lower values 0 to 31 are reserved for specific traffic (F4 Operation, Administration, and Maintenance (OAM), switched virtual circuit (SVC) signalling, Integrated Local Management Interface (ILMI), and so on) and should not be used.
vp	Optional) Displays the service policy for a specified virtual path (VP).
session	(Optional) Displays session QoS Policy information.
uid [*id*]	Displays the session user identifier (uid) for a policy map based on the Subscriber Service Switch (SSS) unique identifier.
input	(Optional) Indicates that the statistics for the attached input policy is displayed.
output	(Optional) Indicates that the statistics for the attached output policy is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(22)T	This command was introduced.

Usage Guidelines

Port filtering feature allows policing of packets going to closed or nonlistened TCP/UDP ports, while queue thresholding limits the number of packets for a specified protocol that is allowed in the control-plane IP input queue.

Examples

The following example shows sample output for the **showpolicy-maptypeport-filter**command.

```
Router# show policy-map type port-filter
Policy Map type port-filter p1
Policy Map type port-filter p4
```

Related Commands

Command	Description
show platform qos policy-map	Displays the type and number of policy maps that are configured on the router.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.

show protocol phdf

To display protocol information from a specific protocol header description file (PHDF), use the **showprotocolphdf**command in privileged EXEC mode.

show protocol phdf *protocol-name*

Syntax Description

protocol-name	Loaded PHDF.

Command Modes

Privileged EXEC

Command History

Release	Modification
12.4(4)T	This command was introduced.
12.2(18)ZY	This command integrated into Cisco IOS Release 12.2(18)ZY on the Catalyst 6500 series of switches equipped with the Programmable Intelligent Services Accelerator (PISA).

Examples

The following example shows how to define FPM traffic classes for slammer packets (UDP port 1434). The match criteria defined within the class maps is for slammer packets with an IP length not to exceed 404 bytes, UDP port 1434, and pattern 0x4011010 at 224 bytes from start of IP header. This example also shows how to define the service policy "fpm-policy" and apply it to the gigabitEthernet interface. Show commands have been issued to verify the FPM configuration. (Note that PHDFs are not displayed in show output because they are in XML format.)

```
Router(config)# load protocol disk2:ip.phdf
Router(config)# load protocol disk2:udp.phdf
Router(config)# class-map type stack match-all ip-udp
Router(config-cmap)# description "match UDP over IP packets"
Router(config-cmap)# match field ip protocol eq 0x11 next udp
Router(config)# class-map type access-control match-all slammer
Router(config-cmap)# description "match on slammer packets"
Router(config-cmap)# match field udp dest-port eq 0x59A
Router(config-cmap)# match field ip length eq 0x194
Router(config-cmap)# match start 13-start offset 224 size 4 eq 0x4011010
Router(config)# policy-map type access-control fpm-udp-policy
Router(config-pmap)# description "policy for UDP based attacks"
Router(config-pmap)# class slammer
Router(config-pmap-c)# drop
Router(config)# policy-map type access-control fpm-policy
Router(config-pmap)# description "drop worms and malicious attacks"
Router(config-pmap)# class ip-udp
Router(config-pmap-c)# service-policy fpm-udp-policy
Router(config)# interface gigabitEthernet 0/1
Router(config-if)# service-policy type access-control input fpm-policy
Router# show protocols phdf ip
Protocol ID: 1
Protocol name: IP
Description: Definition-for-the-IP-protocol
Original file name: disk2:ip.phdf
```

```
Header length: 20
Constraint(s):
Total number of fields: 12
Field id: 0, version, IP-version
Fixed offset. offset 0
Constant length. Length: 4
Field id: 1, ihl, IP-Header-Length
Fixed offset. offset 4
Constant length. Length: 4
Field id: 2, tos, IP-Type-of-Service
Fixed offset. offset 8
Constant length. Length: 8
Field id: 3, length, IP-Total-Length
Fixed offset. offset 16
Constant length. Length: 16
Field id: 4, identification, IP-Identification
Fixed offset. offset 32
Constant length. Length: 16
Field id: 5, flags, IP-Fragmentation-Flags
Fixed offset. offset 48
Constant length. Length: 3
Field id: 6, fragment-offset, IP-Fragmentation-Offset
Fixed offset. offset 51
Constant length. Length: 13
Field id: 7, ttl, Definition-for-the-IP-TTL
Fixed offset. offset 64
Constant length. Length: 8
Field id: 8, protocol, IP-Protocol
Fixed offset. offset 72
Constant length. Length: 8
Field id: 9, checksum, IP-Header-Checksum
Fixed offset. offset 80
Constant length. Length: 16
Field id: 10, source-addr, IP-Source-Address
Fixed offset. offset 96
Constant length. Length: 32
Field id: 11, dest-addr, IP-Destination-Address
Fixed offset. offset 128
Constant length. Length: 32
Router# show protocols phdf udp
Protocol ID: 3
Protocol name: UDP
Description: UDP-Protocol
Original file name: disk2:udp.phdf
Header length: 8
Constraint(s):
Total number of fields: 4
Field id: 0, source-port, UDP-Source-Port
Fixed offset. offset 0
Constant length. Length: 16
Field id: 1, dest-port, UDP-Destination-Port
Fixed offset. offset 16
Constant length. Length: 16
Field id: 2, length, UDP-Length
Fixed offset. offset 32
Constant length. Length: 16
Field id: 3, checksum, UDP-Checksum
Fixed offset. offset 48
Constant length. Length: 16
```

Related Commands

Command	Description
load protocol	Loads a PHDF onto a router.

show qbm client

To display quality of service (QoS) bandwidth manager (QBM) clients (applications) and their IDs, use the **showqbmclient**command in user EXEC or privileged EXEC mode.

show qbm client

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.
Cisco IOS XE Releas 2.6	This command was integrated into Cisco IOS XE Release 2.6.

Usage Guidelines

Use the **showqbmclient** command to confirm that a subset of Cisco IOS software has registered with QBM.

A subset of Cisco IOS software becomes a client of QBM by calling a QBM registration application programming interface (API) and receiving an ID. If the subset has not registered, then it is not a client.

Examples

The following is sample output from the**showqbmclient** command when RSVP aggregation is enabled:

```
Router# show qbm client
Client Name                              Client ID
RSVP BW Admit                            1
RSVP rfc3175 AggResv                     2
```

The table below describes the significant fields shown in the display.

Table 57: show qbm client command Field Descriptions

Field	Description
Client Name	The name of the application. • RSVP BW Admit--The RSVP QBM client used for admitting bandwidth into QBM bandwidth pools. • RSVP rfc3175 AggResv--RSVP aggregation as defined in RFC 3175, *AggregationofRSVPforIPv4andIPv6Reservations*. • This client is used to create and maintain QBM bandwidth pools for RSVP aggregate reservations.
Client ID	The identifier of the application. One client ID exists per client.

Related Commands

Command	Description
debug qbm	Enables debugging output for QBM options.
show qbm pool	Displays allocated QBM pools and associated objects.

show qbm pool

To display allocated quality of service (QoS) bandwidth manager (QBM) pools and identify the objects with which they are associated, use the **showqbmpool** command in user EXEC or privileged EXEC mode.

show qbm pool [**id** *pool-id*]

Syntax Description

id *pool-id*	(Optional) Displays the identifier for a specified bandwidth pool that is performing admission control. The values must be between 0x0 and 0xffffffff; there is no default.

Command Default

If you enter the **showqbmpool**command without the optional keyword/argument combination, the command displays information for all configured QBM pools.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRC	This command was introduced.
Cisco IOS XE Release 2.6	This command was integrated into Cisco IOS XE Release 2.6.

Usage Guidelines

Use the **showqbmpool** command to display information for all configured QBM pools or for a specified pool. If you enter a pool ID that does not exist, you receive an error message.

This command is useful for troubleshooting QBM operation.

Examples

The following sample output is from the **showqbmpool** command when RSVP aggregation is enabled:

```
Router# show qbm pool
Total number of pools allocated:  1
Pool ID 0x00000009
Associated object:  'RSVP 3175 AggResv 192.168.40.1->192.168.50.1_ef(46)'
  Minimum:         300Kbps
  Oper Status:     OPERATIONAL
  Oper Minimum:    300Kbps
Used Bandwidth:  80Kbps
```

The table below describes the significant fields shown in the display.

Table 58: show qbm pool command Field Descriptions

Field	Description
Total number of pools allocated	The number of QBM pools configured.
Pool ID	The QBM pool identifier.

Field	Description
Associated object	The application (or client) associated with the QBM pool. This string is provided by the client and as a result, the client chooses the string, not QBM. For example, RSVP 3175 AggResv 192.168.40.1->192.168.50.1_ef(46) means the QBM pool is associated with the RSVP aggregate reservation with source endpoint (aggregator) having IP address 192.168.40.1, destination endpoint (deaggregator) having IP address 192.168.50.1, and differentiated services code point (DSCP) expedited forwarding (EF).
Minimum	The pool's minimum bandwidth guarantee. (Units may vary.)
Oper Status	Status of the application. Values are the following: • OPERATIONAL--Application is enabled. • NON-OPERATIONAL--Application is disabled.
Oper Minimum	Defines the minimum bandwidth guarantee that the pool is able to enforce. This value may differ from the pool's minimum bandwidth guarantee because of operational conditions. For example, if the pool is associated with an interface and the interface is down, its Oper Status is NON-OPERATIONAL, then the operational minimum is N/A.
Used Bandwidth	The bandwidth reserved by applications/clients using this pool. N/A displays instead of 0 when the pool's Oper Status is NON-OPERATIONAL.

The following sample output is from the **showqbmpool** command with a specified pool ID:

```
Router# show qbm pool id 0x000000006
Pool ID 0x00000009
Associated object:  'RSVP 3175 AggResv 192.168.40.1->192.168.50.1_ef(46)'
  Minimum:         300Kbps
  Oper Status:     OPERATIONAL
  Oper Minimum:    300Kbps
Used Bandwidth:  80Kbps
```

See the table above for a description of the fields.

Related Commands

Command	Description
debug qbm	Enables debugging output for QBM options.
show qbm client	Displays registered QBM clients.

show qdm status

To display the status of the active Quality of Service Device Manager (QDM) clients that are connected to the router, use the **showqdmstatus** command in EXEC mode.

show qdm status

Syntax Description

This command has no arguments or keywords.

Command Modes

EXEC

Command History

Release	Modification
12.1(1)E	This command was introduced.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	This command was implemented on the Supervisor Engine 2 and integrated into Cisco IOS Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.

Usage Guidelines

The **showqdmstatus** command can be used on the Cisco 7600 series router.

The output of the **showqdmstatus**command includes the following information:

- Number of connected clients
- Client IDs
- Version of the client software
- IP addresses of the connected clients
- Duration of the connection

Note QDM is not supported on Optical Service Module (OSM) interfaces.

Examples

The following example illustrates the **showqdmstatus**output when two QDM clients are connected to the router:

```
Router# show qdm status
Number of QDM Clients :2
QDM Client v1.0(0.13)-System_1 @ 172.16.0.0 (id:30)
     connected since 09:22:36 UTC Wed Mar 15 2000
QDM Client v1.0(0.12)-System_2 @ 172.31.255.255 (id:29)
     connected since 17:10:23 UTC Tue Mar 14 2000
```

Related Commands

Command	Description
disconnect qdm	Disconnects a QDM client.

show queue

Note Effective with Cisco IOS XE Release 2.6, Cisco IOS Release 15.0(1)S, and Cisco IOS Release 15.1(3)T, the **showqueue**command is hidden. Although this command is still available in Cisco IOS software, the CLI interactive Help does not display it if you attempt to view it by entering a question mark at the command line. This command will be completely removed in a future release, which means that you will need to use the appropriate replacement command (or sequence of commands). For more information (including a list of replacement commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* or the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS Quality of Service Solutions Configuration Guide*.

Note Effective with Cisco IOS XE Release 3.2S, the **showqueue**command is replaced by a modular QoS CLI (MQC) command (or sequence of MQC commands). For the appropriate replacement command (or sequence of commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* .

To display the contents of packets inside a queue for a particular interface or virtual circuit (VC), use the **showqueue**command in user EXEC or privileged EXECmode.

show queue *interface-name interface-number* [**queue-number**][**vc vpi/ vci**]

Syntax Description

interface-name	The name of the interface.
interface-number	The number of the interface.
queue-number	(Optional) The number of the queue. The queue number is a number from 1 to 16.
vc	(Optional) For ATM interfaces only, shows the fair queueing configuration for a specified permanent virtual circuit (PVC). The name can be up to 16 characters long.
vpi /	(Optional) ATM network virtual path identifier (VPI) for this PVC. The absence of the "/" and a *vpi* value defaults the *vpi* value to 0. On the Cisco 7200 and Cisco 7500 series routers, this value ranges from 0 to 255. The *vpi* and *vci* arguments cannot both be set to 0; if one is 0, the other cannot be 0. If this value is omitted, information for all VCs on the specified ATM interface or subinterface is displayed.

vci	(Optional) ATM network virtual channel identifier (VCI) for this PVC. This value ranges from 0 to 1 less than the maximum value set for this interface by the **atmvc-per-vp** command. Typically, lower values 0 to 31 are reserved for specific traffic (F4 Operation, Administration, and Maintenance (OAM), switched virtual circuit (SVC) signalling, Integrated Local Management Interface (ILMI), and so on) and should not be used. The VCI is a 16-bit field in the header of the ATM cell. The VCI value is unique only on a single link, not throughout the ATM network, because it has local significance only. The *vpi* and *vci* arguments cannot both be set to 0; if one is 0, the other cannot be 0.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
10.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T, but without support for hierarchical queueing framework (HQF). See the "Usage Guidelines" for additional information.
Cisco IOS XE Release 2.6	This command was modified. This command was hidden.
15.0(1)S	This command was modified. This command was hidden.
15.1(3)T	This command was modified. This command was hidden.
Cisco IOS XE Release 3.2S	This command was replaced by an MQC command (or sequence of MQC commands).

Usage Guidelines

This command displays the contents of packets inside a queue for a particular interface or VC.

This command does not support VIP-distributed Weighted Random Early Detection WRED (DWRED). You can use the **vc** keyword and the **showqueue** command arguments to display output for a PVC only on Enhanced ATM port adapters (PA-A3) that support per-VC queueing.

This command does not support HQF. Use the **showpolicy-map** and the **showpolicy-mapinterface** commands to gather HQF information and statistics.

Examples

The following examples show sample output when the **showqueue** command is entered and either weighted fair queueing (WFQ), WRED, or flow-based WRED are configured.

WFQ Example

The following is sample output from the **showqueue**command for PVC 33 on the atm2/0.33 ATM subinterface. Two conversations are active on this interface. WFQ ensures that both data streams receive equal bandwidth on the interface while they have messages in the pipeline.

```
Router# show queue
 atm2/0.33 vc 33
Interface ATM2/0.33 VC 0/33
  Queueing strategy: weighted fair
  Total output drops per VC: 18149
  Output queue: 57/512/64/18149 (size/max total/threshold/drops)
     Conversations  2/2/256 (active/max active/max total)
     Reserved Conversations 3/3 (allocated/max allocated)
  (depth/weight/discards/tail drops/interleaves) 29/4096/7908/0/0
  Conversation 264, linktype: ip, length: 254
  source: 10.1.1.1, destination: 10.0.2.20, id: 0x0000, ttl: 59,
  TOS: 0 prot: 17, source port 1, destination port 1
  (depth/weight/discards/tail drops/interleaves) 28/4096/10369/0/0
  Conversation 265, linktype: ip, length: 254
  source: 10.1.1.1, destination: 10.0.2.20, id: 0x0000, ttl: 59,
  TOS: 32 prot: 17, source port 1, destination port 2
```

The table below describes the significant fields shown in the display.

Table 59: show queue Field Descriptions for WFQ

Field	Description
Queueing strategy	Type of queueing active on this interface.
Total output drops per VC	Total output packet drops.
Output queue	Output queue size, in packets. Max total defines the aggregate queue size of all the WFQ flows. Threshold is the individual queue size of each conversation. Drops are the dropped packets from all the conversations in WFQ.
Conversations	WFQ conversation number. A conversation becomes inactive or times out when its queue is empty. Each traffic flow in WFQ is based on a queue and represented by a conversation. Max active is the number of active conversations that have occurred since the queueing feature was configured. Max total is the number of conversations allowed simultaneously.
Reserved Conversations	Traffic flows not captured by WFQ, such as class-based weighted fair queueing (CBWFQ) configured by the bandwidth command or a Resource Reservation Protocol (RSVP) flow, have a separate queue that is represented by a reserved conversation. Allocated is the current number of reserved conversations. Max allocated is the maximum number of allocated reserved conversations that have occurred.
depth	Queue depth for the conversation, in packets.
weight	Weight used in WFQ.
discards	Number of packets dropped from the conversation’s queue.

Field	Description
tail drops	Number of packets dropped from the conversation when the queue is at capacity.
interleaves	Number of packets interleaved.
linktype	Protocol name.
length	Packet length.
source	Source IP address.
destination	Destination IP address.
id	Packet ID.
ttl	Time to live count.
TOS	IP type of service.
prot	Layer 4 protocol number.

Flow-Based WRED Example

The following is sample output from the **showqueue** command issued for serial interface 1 on which flow-based WRED is configured. The output shows information for each packet in the queue; the data identifies the packet by number, the flow-based queue to which the packet belongs, the protocol used, and so forth.

```
Router# show queue Serial1
   Output queue for Serial1 is 2/0

   Packet 1, flow id:160, linktype:ip, length:118, flags:0x88
     source:10.1.3.4, destination:10.1.2.2, id:0x0000, ttl:59,
     TOS:32 prot:17, source port 1, destination port 515
       data:0x0001 0x0203 0x0405 0x0607 0x0809 0x0A0B 0x0C0D
             0x0E0F 0x1011 0x1213 0x1415 0x1617 0x1819 0x1A1B

   Packet 2, flow id:161, linktype:ip, length:118, flags:0x88
     source:10.1.3.5, destination:10.1.2.2, id:0x0000, ttl:59,
     TOS:64 prot:17, source port 1, destination port 515
       data:0x0001 0x0203 0x0405 0x0607 0x0809 0x0A0B 0x0C0D
             0x0E0F 0x1011 0x1213 0x1415 0x1617 0x1819 0x1A1B
```

The table below describes the significant fields shown in the display.

Table 60: show queue Field Descriptions for Flow-Based WRED

Field	Description
Packet	Packet number.
flow id	Flow-based WRED number.
linktype	Protocol name.

Field	Description
length	Packet length.
flags	Internal version-specific flags.
source	Source IP address.
destination	Destination IP address.
id	Packet ID.
ttl	Time to live count.
prot	Layer 4 protocol number.
data	Packet data.

WRED Example

The following is sample output from the **showqueue**command issued for serial interface 3 on which WRED is configured. The output has been truncated to show only 2 of the 24 packets.

```
Router# show queue Serial3
   Output queue for Serial3 is 24/0

   Packet 1, linktype:ip, length:118, flags:0x88
     source:10.1.3.25, destination:10.1.2.2, id:0x0000, ttl:59,
     TOS:192 prot:17, source port 1, destination port 515
       data:0x0001 0x0203 0x0405 0x0607 0x0809 0x0A0B 0x0C0D
             0x0E0F 0x1011 0x1213 0x1415 0x1617 0x1819 0x1A1B

   Packet 2, linktype:ip, length:118, flags:0x88
     source:10.1.3.26, destination:10.1.2.2, id:0x0000, ttl:59,
     TOS:224 prot:17, source port 1, destination port 515
       data:0x0001 0x0203 0x0405 0x0607 0x0809 0x0A0B 0x0C0D
             0x0E0F 0x1011 0x1213 0x1415 0x1617 0x1819 0x1A1B
```

Related Commands

Command	Description
atm vc-per-vp	Sets the maximum number of VCIs to support per VPI.
custom-queue-list	Assigns a custom queue list to an interface.
fair-queue (class-default)	Specifies the number of dynamic queues to be reserved for use by the class-default class as part of the default class policy.
fair-queue (WFQ)	Enables WFQ for an interface.
priority-group	Assigns the specified priority list to an interface.
random-detect (interface)	Enables WRED or DWRED.
random-detect flow	Enables flow-based WRED.

Command	Description
show frame-relay pvc	Displays information and statistics about WFQ for a VIP-based interface.
show queueing	Lists all or selected configured queueing strategies.

show queueing

Note Effective with Cisco IOS XE Release 2.6, Cisco IOS Release 15.0(1)S, and Cisco IOS Release 15.1(3)T, the **showqueueing**command is hidden. Although this command is still available in Cisco IOS software, the CLI interactive Help does not display it if you attempt to view it by entering a question mark at the command line. This command will be completely removed in a future release, which means that you will need to use the appropriate replacement command (or sequence of commands). For more information (including a list of replacement commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* or the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS Quality of Service Solutions Configuration Guide* .

Note Effective with Cisco IOS XE Release 3.2S, the **showqueueing**command is replaced by a modular QoS CLI (MQC) command (or sequence of MQC commands). For the appropriate replacement command (or sequence of commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* .

To list all or selected configured queueing strategies, use the **showqueueing** command in user EXEC or privileged EXEC mode.

show queueing [{**custom** | **fair** | **priority** | **random-detect** [**interface** *atm-subinterface* [**vc** [[*vpi*] *vci*]]]}]

Syntax Description

custom	(Optional) Status of the custom queueing list configuration.
fair	(Optional) Status of the fair queueing configuration.
priority	(Optional) Status of the priority queueing list configuration.
random-detect	(Optional) Status of the Weighted Random Early Detection (WRED) and distributed WRED (DWRED) configuration, including configuration of flow-based WRED.
interface *atm-subinterface*	(Optional) Displays the WRED parameters of every virtual circuit (VC) with WRED enabled on the specified ATM subinterface.
vc	(Optional) Displays the WRED parameters associated with a specific VC. If desired, both the virtual path identifier (VPI) and virtual circuit identifier (VCI) values, or just the VCI value, can be specified.
vpi /	(Optional) Specifies the VPI. If the *vpi* argument is omitted, 0 is used as the VPI value for locating the permanent virtual circuit (PVC). If the *vpi* argument is specified, the/separator is required.
vci	(Optional) Specifies the VCI.

Command Default

If no optional keyword is entered, this command shows the configuration of all interfaces.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
10.3	This command was introduced.
12.0(4)T	This command was integrated into Cisco IOS Release 12.0(4)T. The **red** keyword was changed to **random-detect**.
12.1(2)T	This command was modified. This command was modified to include information about the Frame Relay PVC Interface Priority Queueing (FR PIPQ) feature.
12.2(2)T	This command was integrated into Cisco IOS Release 12.2(2)T.
12.0(24)S	This command was integrated into Cisco IOS Release 12.0(24)S.
12.2(14)S	This command was integrated into Cisco IOS Release 12.2(14)S.
12.2(18)SXF2	This command was integrated into Cisco IOS Release 12.2(18)SXF2.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
Cisco IOS XE Release 2.6	This command was modified. This command was hidden.
15.0(1)S	This command was modified. This command was hidden.
15.1(3)T	This command was modified. This command was hidden.
Cisco IOS XE Release 3.2S	This command was replaced by an MQC command (or sequence of MQC commands).

Usage Guidelines

This command does not support HQF. Use the **showpolicy-map** and the **showpolicy-mapinterface** commands to gather HQF information and statistics.

Examples

This section provides sample output from **showqueueing**commands. Depending upon the interface or platform in use and the options enabled, the output that you see may vary slightly from the examples shown below.

FR PIPQ: Example

The following sample output shows that FR PIPQ (referred to as "DLCI priority queue") is configured on serial interface 0. The output also shows the size of the four data-link connection identifier (DLCI) priority queues.

```
Router# show queueing
Current fair queue configuration:
  Interface          Discard     Dynamic      Reserved
```

```
                     threshold   queue count  queue count
  Serial3/1          64          256          0
  Serial3/3          64          256          0
Current DLCI priority queue configuration:
  Interface          High    Medium  Normal  Low
                     limit   limit   limit   limit
  Serial0            20      40      60      80
Current priority queue configuration:
List   Queue  Args
1      low    protocol ipx
1      normal protocol vines
1      normal protocol appletalk
1      normal protocol ip
1      normal protocol decnet
1      normal protocol decnet_node
1      normal protocol decnet_rout
1      normal protocol decnet_rout
1      medium protocol xns
1      high   protocol clns
1      normal protocol bridge
1      normal protocol arp
Current custom queue configuration:
Current random-detect configuration:
```

Weighted Fair Queueing: Example

The following is sample output from the **showqueueing** command. There are two active conversations in serial interface 0. Weighted fair queueing (WFQ) ensures that both of these IP data streams--both using TCP--receive equal bandwidth on the interface while they have messages in the pipeline, even though more FTP data is in the queue than remote-procedure call (RCP) data.

```
Router# show queueing
Current fair queue configuration:
Interface          Discard     Dynamic      Reserved
                   threshold   queue count  queue count
  Serial0            64          256          0
  Serial1            64          256          0
  Serial2            64          256          0
  Serial3            64          256          0
Current priority queue configuration:
List   Queue  Args
1      high   protocol cdp
2      medium interface Ethernet1
Current custom queue configuration:
Current random-detect configuration:
  Serial5
    Queueing strategy:random early detection (WRED)
    Exp-weight-constant:9 (1/512)
    Mean queue depth:40
    Class   Random       Tail    Minimum    Maximum     Mark
              drop       drop  threshold  threshold  probability
      0       1401       9066        20         40      1/10
      1          0          0        22         40      1/10
      2          0          0        24         40      1/10
      3          0          0        26         40      1/10
      4          0          0        28         40      1/10
      5          0          0        31         40      1/10
      6          0          0        33         40      1/10
      7          0          0        35         40      1/10
      rsvp       0          0        37         40      1/10
```

Custom Queueing: Example

The following is sample output from the **showqueueingcustom** command:

```
Router# show queueing custom
Current custom queue configuration:
List   Queue  Args
3      10     default
3      3      interface Tunnel3
3      3      protocol ip
3      3      byte-count 444 limit 3
```

Flow-Based WRED: Example

The following is sample output from the**showqueueingrandom-detect** command. The output shows that the interface is configured for flow-based WRED to ensure fair packet drop among flows. The **random-detectflowaverage-depth-factor**command was used to configure a scaling factor of 8 for this interface. The scaling factor is used to scale the number of buffers available per flow and to determine the number of packets allowed in the output queue of each active flow before the queue is susceptible to packet drop. The maximum flow count for this interface was set to 16 by the **random-detectflowcount**command.

```
Router# show queueing random-detect
    Current random-detect configuration:
      Serial1
        Queueing strategy:random early detection (WRED)
        Exp-weight-constant:9 (1/512)
        Mean queue depth:29
        Max flow count:16       Average depth factor:8
        Flows (active/max active/max):39/40/16

        Class   Random       Tail    Minimum    Maximum     Mark
                  drop       drop  threshold  threshold  probability
          0         31          0         20         40     1/10
          1         33          0         22         40     1/10
          2         18          0         24         40     1/10
          3         14          0         26         40     1/10
          4         10          0         28         40     1/10
          5          0          0         31         40     1/10
          6          0          0         33         40     1/10
          7          0          0         35         40     1/10
        rsvp         0          0         37         40     1/10
```

DWRED: Example

The following is sample output from the **showqueueingrandom-detect** command for DWRED:

```
    Current random-detect configuration:
      Serial1
        Queueing strategy:random early detection (WRED)
        Exp-weight-constant:9 (1/512)
        Mean queue depth:29
        Max flow count:16       Average depth factor:8
        Flows (active/max active/max):39/40/16
```

```
        Class   Random       Tail    Minimum    Maximum     Mark
                  drop       drop  threshold  threshold  probability
          0         31          0         20         40     1/10
          1         33          0         22         40     1/10
          2         18          0         24         40     1/10
          3         14          0         26         40     1/10
          4         10          0         28         40     1/10
          5          0          0         31         40     1/10
          6          0          0         33         40     1/10
          7          0          0         35         40     1/10
        rsvp         0          0         37         40     1/10
Current random-detect configuration:
  FastEthernet2/0/0
    Queueing strategy:fifo
    Packet drop strategy:VIP-based random early detection (DWRED)
    Exp-weight-constant:9 (1/512)
    Mean queue depth:0
    Queue size:0       Maximum available buffers:6308
    Output packets:5  WRED drops:0  No buffer:0
    Class   Random       Tail    Minimum    Maximum     Mark       Output
              drop       drop  threshold  threshold  probability  Packets
      0          0          0        109        218      1/10            5
      1          0          0        122        218      1/10            0
      2          0          0        135        218      1/10            0
      3          0          0        148        218      1/10            0
      4          0          0        161        218      1/10            0
      5          0          0        174        218      1/10            0
      6          0          0        187        218      1/10            0
      7          0          0        200        218      1/10            0
```

The table below describes the significant fields shown in the display.

Table 61: show queueing Field Descriptions

Field	Description
Discard threshold	Number of messages allowed in each queue.
Dynamic queue count	Number of dynamic queues used for best-effort conversations.
Reserved queue count	Number of reservable queues used for reserved conversations.
High limit	High DLCI priority queue size in maximum number of packets.
Medium limit	Medium DLCI priority queue size, in maximum number of packets.
Normal limit	Normal DLCI priority queue size, in maximum number of packets.
Low limit	Low DLCI priority queue size, in maximum number of packets.
List	Custom queueing--Number of the queue list. Priority queueing--Number of the priority list.
Queue	Custom queueing--Number of the queue. Priority queueing--Priority queue level (**high**, **medium**, **normal**, or **low**keyword).
Args	Packet matching criteria for that queue.
Exp-weight-constant	Exponential weight factor.

Field	Description
Mean queue depth	Average queue depth. It is calculated based on the actual queue depth on the interface and the exponential weighting constant. It is a moving average. The minimum and maximum thresholds are compared against this value to determine drop decisions.
Class	IP Precedence value.
Random drop	Number of packets randomly dropped when the mean queue depth is between the minimum threshold value and the maximum threshold value for the specified IP Precedence value.
Tail drop	Number of packets dropped when the mean queue depth is greater than the maximum threshold value for the specified IP Precedence value.
Minimum threshold	Minimum WRED threshold, in number of packets.
Maximum threshold	Maximum WRED threshold, in number of packets.
Mark probability	Fraction of packets dropped when the average queue depth is at the maximum threshold.

Related Commands

Command	Description
custom-queue-list	Assigns a custom queue list to an interface.
exponential-weighting-constant	Configures the exponential weight factor for the average queue size calculation for a WRED parameter group.
fair-queue (WFQ)	Enables WFQ for an interface.
frame-relay interface-queue priority	Enables the FR PIPQ feature.
precedence (WRED group)	Configures a WRED group for a particular IP Precedence.
priority-group	Assigns the specified priority list to an interface.
priority-list interface	Establishes queueing priorities on packets entering from a given interface.
priority-list queue-limit	Specifies the maximum number of packets that can be waiting in each of the priority queues.
queue-list interface	Establishes queueing priorities on packets entering on an interface.
queue-list queue byte-count	Specifies how many bytes the system allows to be delivered from a given queue during a particular cycle.
random-detect (interface)	Enables WRED or DWRED.
random-detect flow average-depth-factor	Sets the multiplier to be used in determining the average depth factor for a flow when flow-based WRED is enabled.
random-detect flow count	Sets the flow count for flow-based WRED.

Command	Description
show interfaces	Displays the statistical information specific to a serial interface.
show queue	Displays the contents of packets inside a queue for a particular interface or VC.
show queueing interface	Displays the queueing statistics of an interface or VC.

show queueing interface

To display the queueing statistics of an interface, use the **showqueueinginterface**command in user EXEC or privileged EXEC mode.

show queueing interface *type number* [**vc** [[*vpi/*] *vci*]]

Catalyst 6500 Series Switches
show queueing interface {*type number* | **null 0** | **vlan** *vlan-id*} [**detailed**]

Cisco 7600 Series Routers
show queueing interface {*type number* | **null 0** | **vlan** *vlan-id*}

Syntax Description

type number	Interface type and interface number. For Cisco 7600 series routers, the valid interface types are **ethernet**, **fastethernet**, **gigabitethernet**, **tengigabitethernet**, **pos**, **atm**, and **ge-wan**. For Cisco 7600 series routers, the interface number is the module and port number. See the "Usage Guidelines" section for more information.
vc	(Optional) Shows the weighted fair queueing (WFQ) and Weighted Random Early Detection (WRED) parameters associated with a specific virtual circuit (VC). If desired, both the virtual path identifier (VPI) and virtual channel identifier (VCI) values, or just the VCI value, can be specified.
vpi /	(Optional) The VPI. If the *vpi* argument is omitted, 0 is used as the VPI value for locating the permanent virtual circuit (PVC). If the *vpi* argument is specified, the/separator is required.
vci	(Optional) The VCI.
null 0	Specifies the null interface number; the only valid value is 0.
vlan *vlan-id*	Specifies the VLAN identification number; valid values are from 1 to 4094.
detailed	(Optional) Displays the detailed statistics information per policy class.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Cisco 7600 Series Routers

User EXEC (>)

Command History

Release	Modification
11.1(22)CC	This command was introduced.
12.2(14)SX	This command was implemented on the Supervisor Engine 720.

Release	Modification
12.2(17d)SXB	This command was implemented on the Supervisor Engine 2 and integrated into Cisco IOS Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(33)SXI	The **detailed** keyword was added.

Usage Guidelines

Cisco 7600 Series Routers

The pos, atm, and ge-waninterfaces are supported on Cisco 7600 series routers that are configured with a Supervisor Engine 2 only.

The *typenumber*argument used with the **interface** keyword designates the module and port number. Valid values depend on the specified interface type and the chassis and module that are used. For example, if you specify a Gigabit Ethernet interface and have a 48-port 10/100BASE-T Ethernet module installed in a 13-slot chassis, valid values for the module number are from 1 to 13 and valid values for the port number are from 1 to 48.

The **showqueueinginterface** command does not display the absolute values that are programmed in the hardware. Use the **showqm-spport-data**command to verify the values that are programmed in the hardware.

Catalyst 6500 Series Switches

In Cisco IOS Release 12.2(33)SXI and later releases, the optional **detailed** keyword is available. The **showqueueinginterfacedetailed** command output includes the following information:

- Display of the last 30-second counters.
- Display of the peak 30-second counters over the last 5 minutes.
- Display of the 5-minute average and peak bps rates.
- The peak rates are monitored with 10-second resolution. Releases prior to Cisco IOS Release 12.2(33)SXI were monitored at 30-second resolution.

Examples

The following is sample output from the **showqueueinginterface**command. In this example, WRED is the queueing strategy in use. The output varies according to queueing strategy in use.

```
Router# show queueing interface atm 2/0
  Interface ATM2/0 VC 201/201
  Queueing strategy:random early detection (WRED)
    Exp-weight-constant:9 (1/512)
    Mean queue depth:49
    Total output drops per VC:759
    Class   Random       Tail    Minimum    Maximum     Mark
              drop       drop  threshold  threshold  probability
      0        165         26         30         50     1/10
      1        167         12         32         50     1/10
      2        173         14         34         50     1/10
      3        177         25         36         50     1/10
      4          0          0         38         50     1/10
      5          0          0         40         50     1/10
      6          0          0         42         50     1/10
      7          0          0         44         50     1/10
     rsvp        0          0         46         50     1/10
```

The table below describes the significant fields shown in the display.

Table 62: show queueing interface Field Descriptions

Field	Description
Queueing strategy	Name of the queueing strategy in use (for example, WRED).
Exp-weight-constant	Exponential weight constant. Exponent used in the average queue size calculation for a WRED parameter group.
Mean queue depth	Average queue depth based on the actual queue depth on the interface and the exponential weighting constant. It is a fluctuating average. The minimum and maximum thresholds are compared against this value to determine drop decisions.
Class	IP precedence level.
Random drop	Number of packets randomly dropped when the mean queue depth is between the minimum threshold value and the maximum threshold value for the specified IP precedence level.
Tail drop	Number of packets dropped when the mean queue depth is greater than the maximum threshold value for the specified IP precedence level.
Minimum threshold	Minimum WRED threshold in packets.
Maximum threshold	Maximum WRED threshold in packets.
Mark probability	Fraction of packets dropped when the average queue depth is at the maximum threshold.

The following is sample output from the **showqueueinginterface**command in Cisco IOS Release 12.2(33)SXI and later releases:

```
Router# show queueing interface gigabitethernet 3/27 detailed

.
.
.
  Packets dropped on Transmit:
    BPDU packets:  0
    queue  Total pkts   30-s pkts / peak   5 min average/peak pps   [cos-map]
 ------------------------------------------------------------------------------
    1      443340       55523 / 66671      3334 / 44455             [0 1 ]
    1      7778888      555555 / 666666    233333 / 340000          [2 3 ]
    2      0            0 / 0              0 / 0                    [4 5 ]
    2      0            0 / 0              0 / 0                    [6 7 ]
.
.
.
```

The table below describes the significant fields added when you enter the **detailed** keyword.

Table 63: show queueing interface detailed Field Descriptions

Field	Description
Packets dropped on Transmit	Displays information regarding the packets dropped in transmission.

Field	Description
BPDU packets	Number of Bridge Protocol Data Unit (BPDU) packets.
queue	Queue number.
Total pkts	Display of the last 30-second counters.
30-s pkts / peak	Display of the peak 30-second counters over the last 5 minutes.
5 min average/peak pps	Display of the 5-minute average and peak rates in packets per second (pps).
cos-map	Class of service (CoS) mapping.

Related Commands

custom-queue-list	Assigns a custom queue list to an interface.
fair-queue (class-default)	Specifies the number of dynamic queues to be reserved for use by the class-default class as part of the default class policy.
fair-queue (WFQ)	Enables WFQ for an interface.
priority-group	Assigns the specified priority list to an interface.
random-detect flow	Enables flow-based WRED.
random-detect (interface)	Enables WRED or DWRED.
random-detect (per VC)	Enables per-VC WRED or per-VC DWRED.
show frame-relay pvc	Displays information and statistics about WFQ for a VIP-based interface.
show policy-map interface	Displays the configuration of all classes configured for all service policies on the specified interface or displays the classes for the service policy for a specific PVC on the interface.
show qm-sp port-data	Displays information about the QoS manager switch processor.
show queueing	Lists all or selected configured queueing strategies.

show random-detect-group

Note Effective with Cisco IOS Release 15.0(1)S and Cisco IOS Release 15.1(3)T, the **showrandom-detect-group** command is hidden. Although this command is still available in Cisco IOS software, the CLI interactive Help does not display it if you attempt to view it by entering a question mark at the command line. This command will be completely removed in a future release, which means that you will need to use the appropriate replacement command (or sequence of commands). For more information (including a list of replacement commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS Quality of Service Solutions Configuration Guide* or the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* .

To display the Weighted Random Early Detection (WRED) or distributed WRED (DWRED) parameter group, use the **showrandom-detect-group**command in privileged EXEC mode.

show random-detect-group [*group-name*]

Syntax Description

group-name	(Optional) Name for the WRED or DWRED parameter group.

Command Default

No WRED or DWRED parameter group is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.4(22)T	This command was introduced in a release earlier than Cisco IOS Release 12.4(22)T.
12.2(33)SRC	This command was integrated in a release earlier than Cisco IOS Release 12.2(33)SRC.
12.2(33)SXI	This command was integrated into a release earlier than Cisco IOS Release 12.2(33)SXI.
15.0(1)S	This command was modified. This command was hidden.
15.1(3)T	This command was modified. This command was hidden.

Usage Guidelines

WRED is a congestion avoidance mechanism that slows traffic by randomly dropping packets when there is congestion. DWRED is similar to WRED but uses the Versatile Interface Processor (VIP) instead of the Route Switch Processor (RSP). WRED and DWRED are most useful when the traffic uses protocols such as TCP that respond to dropped packets by decreasing the transmission rate.

Examples

The following example displays the current settings of the DWRED group called group-name:

```
Router# show random-detect-group group-name
exponential weight 9
class    min-threshold    max-threshold    mark-probablity
------------------------------------------------------------
0          -                  -                1/10
```

```
1           1                2000            1/30
2           1                3000            1/40
3           1                4000            1/50
4           1                3000            1/60
5           1                3000            1/60
6           1                4000            1/60
7           1                4000            1/60
rsvp        1                 1              1/10
```

The table below describes the significant fields shown in the display.

Table 64: show random-detect group Field Descriptions

Field	Description
exponential weight	Exponential weight factor for the average queue size calculation for a WRED parameter group.
class	Policy map class name.
min-threshold	Minimum threshold in number of packets. The value range of this argument is from 1 to 4096. When the average queue length reaches the minimum threshold, WRED randomly drops some packets with the specified IP Precedence.
max-threshold	Maximum threshold in number of packets. The value range of this argument is from the value of the *min-threshold* argument to 4096. When the average queue length exceeds the maximum threshold, WRED drops all packets with the specified IP Precedence.
mark-probability	Denominator for the fraction of packets dropped when the average queue depth is at the minimum threshold. For example, if the denominator is 512, 1 out of every 512 packets is dropped when the average queue is at the minimum threshold. The value range is from 1 to 65536. The default is 10; 1 out of every 10 packets is dropped at the minimum threshold.
rsvp	Indicates Resource Reservation Protocol (RSVP) traffic.

Related Commands

Command	Description
dscp	Changes the minimum and maximum packet thresholds for the DSCP value.
exponential-weighting-constant	Configures the exponential weight factor for the average queue size calculation for a WRED parameter group.
precedence (WRED group)	Configures a WRED group for a particular IP Precedence.
random-detect-group	Defines the WRED or DWRED parameter group.
show queueing	Lists all or selected configured queueing strategies.
show queueing interface	Displays the queueing statistics of an interface or VC.

show romvar

To view all ROMMON environment variables, use the **show romvar** command. To view environmental variable for a specific resource, use the **show romvar | i** *resource_name*.

show romvar

Command Default

There is no default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
XE Fuji 16.8.x	Support for this command for IPSLA QoS was introduced on ASR 900 Series Routers.

Examples

The following example shows how to view ROMMON environment variable for a specific resource, for example, IPSLA QoS:

```
Router#show romvar | i IPSLA_QOS
 IPSLA_QOS = 1
```

show running-config service-group

To display the running configuration of one or all service groups, use the **showrunning-configservice-group**command in privileged EXEC mode.

show running-config service-group [*service-group-identifier*]

Syntax Description

service-group-identifier	(Optional) Service-group number. Enter the service-group number.

Command Default

If a service-group number is not specified, information about all service groups is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Examples

This example shows how to display information about all the running service groups:

```
Router# show running-config service-group
Building configuration...
Current configuration:
service-group 1
service-group 2
service-group 3
 service-policy output test
service-group 4
service-group 5
 service-policy output test
end
```

This example shows how to display information about a specific running service group. In the example below, service group 700 has been specified.

```
Router# show running-config service-group 700
Building configuration...
Current configuration:
service-group 700
 service-policy output test
end
```

The table below describes the significant fields shown in the display.

Table 65: show running-config service-group Field Descriptions

Field	Description
service-group	Indicates the service-group number.
service-policy output	Indicates the output policy attached to the service group.

show sdm prefer current

To verify the templates configured on the system, use the platform **show sdm prefer current** command.

show sdm prefer current

Command Default

There is no default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
XE 3.18.1 SP	Support for this command was introduced on ASR 900 Series Routers.

Examples

The following example shows the verification of the configuration after enabling port channel active/active mode:

```
#show sdm prefer current
The current sdm template is "default"
The current portchannel template is "enable_portchannel_qos_multiple_active"
```

Related Commands

Command	Description
show sdm prefer current	Verifies the configuration after enabling port channel active/active mode.
show etherchannel summary	Verifies port-channel summary details.
show policy-map interface brief	Verifies the attached policy-map on the port-channel interface.

show service-group

To display service-group information for a specific service group or for all service groups, use the **showservice-group**command in privileged EXEC mode.

show service-group {*service-group-identifier* | **all**} [**detail**]

Syntax Description

service-group-identifier	Service-group number. Enter the number of the service group that you want to display.
all	Displays information for all service groups.
detail	(Optional) Displays detailed information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Usage Guidelines

Use the **showservice-group** command to display information such as statistics about memberships and interfaces, as well as information about policy maps and member identification numbers.

Examples

The following is sample output from the **showservice-group**command. This example displays statistics for service group 1:

```
Router# show service-group 1

Service Group 1:
  Number of members:                    2
  State:                                Up
  Interface:                            GigabitEthernet2/0/0
    Number of members:                  2
```

The following is sample output of the **showservice-group**command with the **detail** keyword specified. This example displays detailed statistics for service group 1:

```
Router# show service-group 1 detail
Service Group 1:
  Description: Test service group.
  Number of members:                    2
      Service Instance                  2
  State:                                Up
  Features configured:                  QoS
  Input service policy:                 in1
  Output service policy:                out1
  Number of Interfaces:                 1
  Interface:                            GigabitEthernet2/0/0
    Number of members:                  2
    Service Instance ID:
```

```
1
3
```

The table below describes the significant fields shown in the display.

Table 66: show service-group Field Descriptions

Field	Description
Service Group 1	Service group number.
Number of members	Number of members in the service group. Also includes service instance numbers.
State	Indicates the administrative state of the service group. **Note** For Cisco IOS Release 12.2(33)SRE, the administrative state is always "Up" and cannot be modified.
Interface	Interface to which the service group is attached, along with the number of members, as applicable.

The table below describes the significant fields shown in the display when the **detail** keyword is specified.

Table 67: show service-group detail Field Descriptions

Field	Description
Service Group	Service-group number.
Description	Service-group description.
Number of members	Number of members in the service group. Also includes service instance numbers.
State	Indicates the administrative state of the service group. **Note** For Cisco IOS Release 12.2(33)SRE, the administrative state is always "Up" and cannot be modified.
Features configured	Features configured in the service group. **Note** For Cisco IOS Release 12.2(33)SRE, the only feature supported on the Cisco 7600 series router is Quality of Service (QoS).
Input service policy	Name of the input service policy.
Output service policy	Name of the output service policy.
Number of Interfaces	Number of interfaces.
Interface	Name of the interface, number of members in the service group, and service instance number(s), as applicable.

show service-group interface

To display service-group membership information by interface, use the **showservice-groupinterface**command in privileged EXEC mode.

show service-group interface *type number* [**group** *service-group-identifier*] [**detail**]

Syntax Description

type	Interface type. For more information, use the question mark (?) online help function.
number	Interface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.
group	(Optional) Displays service-group information.
service-group-identifier	(Optional) Service-group number. Enter the number of the service group that you want to display.
detail	(Optional) Displays detailed statistics for all groups.

Command Default

If an interface is not specified, service-group information about all interfaces is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Examples

This example shows how to display service-group membership information for Gigabit Ethernet interface 3/1:

```
Router# show service-group interface gigabitethernet 3/1
Interface GigabitEthernet3/1:
  Number of groups:                     3
  Group
      1
      2
      3
This example shows how to display service-group detailed membership information for Gigabit
 Ethernet interface 3/1:
Router# show service-group interface gigabitethernet 3/1 detail
Interface GigabitEthernet3/1:
  Number of groups:                     3
Service Group 1:
  Number of members:                    3000
    Service Instance ID:
         1
         2
         3
         4
         5
```

```
          6
          7
          8
          9
         10
        . . .
This example shows how to display detailed membership information for Gigabit Ethernet
interface 3/1 service group 10:
Router# show service-group interface gigabitethernet 3/1 group 10 detail
Service Group 10:
 Number of members:                     3
  Service Instance ID:
   100
   101
   102
```

The table below describes the significant fields shown in the display.

Table 68: show service-group interface service group Field Descriptions

Field	Description
Interface	Interface type and number.
Number of groups	Number of groups.
Service Group	Service-group number.
Number of members	Number of members in the service group.
Service Instance ID	Service-instance identifier.

show service-group state

To display state information about one or all service groups, use the **showservice-groupstate**command in privileged EXEC mode.

show service-group state [**group** *service-group-identifier*]

Syntax Description

group	(Optional) Displays service-group state statistics.
service-group-identifier	(Optional) Service-group number. Enter the number of the service group that you want to display.

Command Default

If a service-group number is not specified, information about all service groups is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Examples

The following is sample output from the **showservice-groupstate** command. In this example, state infomation about all the service groups is displayed. The fields are self-explanatory.

Note For Cisco IOS Release 12.2(33)SRE, the state is always “Up” and cannot be modified.

```
Router# show service-group state
    Group      State
      1         Up
      2         Up
      3         Up
     10         Up
     20         Up
```

show service-group stats

To display service-group statistical information, use the **showservice-groupstats**command in privileged EXEC mode.

show service-group stats [{**errors** | **group** *service-group-identifier* | **interface** *type number* | **module** *slot*}]

Syntax Description

errors	(Optional) Displays service-group errors.
group	(Optional) Displays service-group statistics.
service-group-identifier	(Optional) Service-group number. Enter the number of the service group that you want to display.
interface	(Optional) Displays statistics for the specified interface.
type	(Optional) Interface type. For more information, use the question mark (?) online help function.
number	(Optional) Interface number. For more information about the numbering syntax for your networking device, use the question mark (?) online help function.
module	(Optional) Displays statistics for the configured module.
slot	(Optional) Module slot. The range of valid entries can vary by interface. For more information, use the question mark (?) online help function.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Examples

The following section contains sample output from this command with the various keywords and arguments. The fields in the output are self-explanatory.

This example shows how to display all service-group statistics:

```
Router# show service-group stats
Service Group global statistics:
  Number of groups:                     5
  Number of members:                    8005
Service Group 1 statistics:
  Number of Interfaces:                 1
  Number of members:                    3000
    Service Instance                    3000
  Members joined:                       13000
  Members left:                         10000
Service Group 2 statistics:
  Number of Interfaces:                 1
```

```
  Number of members:                      2000
    Service Instance                      2000
  Members joined:                         10000
  Members left:                           8000
Service Group 3 statistics:
  Number of Interfaces:                   1
  Number of members:                      3000
    Service Instance                      3000
  Members joined:                         9000
  Members left:                           6000
Service Group 10 statistics:
  Number of Interfaces:                   1
  Number of members:                      3
    Service Instance                      3
  Members joined:                         8003
  Members left:                           8000
Service Group 20 statistics:
  Number of Interfaces:                   1
  Number of members:                      2
    Service Instance                      2
  Members joined:                         8002
  Members left:                           8000
This example shows how to display all error statistics for all service groups:
Router# show service-group stats errors
Service Group 1 errors:
  Members rejected to join:
    Capability limitation:                0
    Rejected by other software modules:   0
    Failed to install service policy:     0
    Database error:                       0
    Feature encountered error:            0
    Invalid member type:                  0
    Invalid member id:                    0
Service Group 2 errors:
  Members rejected to join:
    Capability limitation:                0
    Rejected by other software modules:   0
    Failed to install service policy:     0
    Database error:                       0
    Feature encountered error:            0
    Invalid member type:                  0
    Invalid member id:                    0
Service Group 3 errors:
  Members rejected to join:
    Capability limitation:                0
    Rejected by other software modules:   0
    Failed to install service policy:     0
    Database error:                       0
    Feature encountered error:            0
    Invalid member type:                  0
    Invalid member id:                    0
This example shows how to display statistics for service group 20:
Router# show service-group stats group 20
Service Group 20 statistics:
  Number of Interfaces:                   1
  Number of members:                      2
    Service Instance:                     2
  Members joined:                         8002
  Members left:                           8000
This example shows how to display statistics for the service-groups on a specific interface:
Router# show service-group stats interface gigabitethernet2/0/0

Interface GigabitEthernet2/0/0:
  Number of groups:                       1
```

```
  Number of members:                      2
  Group  Members  Service Instances
      1        2                 2
This example shows how to display statistics for the service-groups on module 3:
Router# show service-group stats module 3
Module 3:
  Number of groups:                       3
  Number of members:                      8000
  Group               Interface  Members  Service Instances
      1       GigabitEthernet3/1     3000               3000
      2       GigabitEthernet3/1     2000               2000
      3       GigabitEthernet3/1     3000               3000
```

show service-group traffic-stats

To display service-group traffic statistics, use the **showservice-grouptraffic-stats**command in privileged EXEC mode.

show service-group traffic-stats [**group** *service-group-identifier*]

Syntax Description

group	(Optional) Displays service-group statistics.
service-group-identifier	(Optional) Service-group identifier. Enter the number of an existing service group.

Command Default

If a service-group number is not specified, information about all service groups is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRE	This command was introduced.

Usage Guidelines

The **showservice-grouptraffic-stats** command reports the combined total of the traffic statistics for all members of the service group.

How Traffic Statistics Are Collected

The traffic statistics for each member of a service group are accumulated and incremented periodically. Each time the statistics for the member are incremented, the group statistics are also incremented by the same amount. Note the following points:

- The service-group traffic statistics represent the grand total of the traffic statistics of all its members once they join the group. Traffic statistics collected prior to joining the group are not included. At any given time, therefore, it is possible that the total of the member traffic statistics may be larger than the group traffic statistics.
- The traffic statistics of a member can be cleared by using the **clearethernetserviceinstance**command. Clearing the traffic statistics of a member does not affect the group statistics in any way.
- Clearing the group traffic statistics does not clear the traffic statistics of the group member.

Examples

The following section contains sample output from the **showservice-grouptraffic-stats**command. The fields in the output are self-explanatory.

This example shows how to display traffic statistics for all service groups.

```
Router# show service-group traffic-stats
Traffic Statistics of service groups:
  Group     Pks In   Bytes In   Pkts Out  Bytes Out
      1          0          0          0          0
      2          0          0          0          0
      3          0          0          0          0
     10          0          0          0          0
```

```
     20          0          0          0          0
This example shows how to display traffic statistics for service group 10:
Router# show service-group traffic-stats group 10
Traffic Statistics of service groups:
  Group     Pks In   Bytes In   Pkts Out  Bytes Out
     10          0          0          0          0
```

Related Commands

Command	Description
clear ethernet service instance	Clears Ethernet service instance attributes such as MAC addresses and statistics or purges Ethernet service instance errors.

show subscriber policy ppm-shim-db

To display the total number of dynamically created template service policy maps and Net Effect policy maps on the router, use the **showsubscriberpolicyppm-shim-db**command in user EXEC or privileged EXEC mode.

show subscriber policy ppm-shim-db

Syntax Description

This command has no arguments or keywords.

Command Modes

User EXEC
Privileged EXEC

Command History

Release	Modification
Cisco IOS Release XE 3.2S	This command was introduced on the ASR 1000 Series Aggregation Services Routers.

Examples

The following is sample output from the **showsubscriberpolicyppm-shim-db** command:

```
Router# show subscriber policy ppm-shim-db
Total number of dynamically created policy = 10
The output fields are self-explanatory.
```

show table-map

To display the configuration of a specified table map or all table maps, use the **showtable-map**command in EXEC mode.

show table-map *table-map-name*

Syntax Description

table-map-name	Name of table map used to map one packet-marking value to another. The name can be a maximum of 64 alphanumeric characters.

Command Modes

EXEC

Command History

Release	Modification
12.2(13)T	This command was introduced.

Examples

The sample output of the **showtable-map**command shows the contents of a table map called "map 1". In "map1", a "to-from" relationship has been established and a default value has been defined. The fields for establishing the "to-from" mappings are further defined by the policy map in which the table map will be configured. (Configuring a policy map is the next logical step after creating a table map.)

For instance, a precedence or differentiated services code point (DSCP) value of 0 could be mapped to a class of service (CoS) value of 1, or vice versa, depending on the how the values are defined in the table map. Any values not explicitly defined in a "to-from" relationship will be set to a default value.

The following sample output of the **showtable-map** command displays the contents of a table map called "map1". In this table map, a packet-marking value of 0 is mapped to a packet-marking value of 1. All other packet-marking values are mapped to the default value 3.

```
Router# show table-map map1
 Table Map map1
 from 0 to 1
 default 3
```

The table below describes the fields shown in the display.

Table 69: show table-map Field Descriptions

Field	Description
Table Map	The name of the table map being displayed.
from, to	The values of the "to-from" relationship established by the **table-map** (value mapping) command and further defined by the policy map in which the table map will be configured.

Field	Description
default	The default action to be used for any values not explicitly defined in a “to-from” relationship by the **table-map** (value mapping) command. If a default action is not specified in the table-map (value mapping) command, the default action is “copy”.

Related Commands

Command	Description
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map class	Displays the configuration for the specified class of the specified policy map.
table-map (value mapping)	Creates and configures a mapping table for mapping and converting one packet-marking value to another.

show tech-support nbar platform

To display general information about Network-based Application Recognition (NBAR), use the show tech-support nbar platform command in privileged EXEC mode.

show tech-support nbar platform

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS XE Release XE 3.10S	This command was introduced.

Usage Guidelines

The **show tech-support nbar platform** command displays the output from the commands: **show ip nbar protocol activated**, **show ip nbar attribute-map**, **show ip nbar parameter extraction activated**, **show ip nbar parameter subclassification activated**, **show ip nbar protocol-attribute**, **show ip nbar protocol-discovery**, **show ip nbar protocol-pack active**, **show ip nbar resources**, **show ip nbar resources flow**, **show ip nbar statistics**, **show ip nbar version**, **show platform hardware qfp active feature nbar profiling**, **show platform software nbar statistics**, and **show policy-map interface**. The command also displays the output from the functions: st_sui_fia_show, st_sui_fia_ut_mean_func_show, st_sui_fe_show, st_sui_fv_stats_show, st_sui_mpe_chunk_utl_show, st_sui_mpe_dp_utl_show, st_sui_mtp_dp_dump_external_flags, st_sui_mtp_dp_show_cfg, st_sui_mtp_dp_show_prs_graph, st_sui_mtp_stats_general, st_sui_stile_is_ready, st_sui_stile_show_cls_err_cnt, and st_sui_stile_show_msc. These functions are used along with **show platform hardware qfp active feature nbar function** command, for example, **show platform hardware qfp active feature nbar function** *st_sui_fe_show*.

Examples

This following example is an excerpt from the output of the **show tech-support nbar platform** command that displays NBAR information:

```
Device# show tech-support nbar platform

------------------ show running-config ------------------


Building configuration...

Current configuration : 1600 bytes
!
! Last configuration change at 04:16:19 PST Thu Jul 25 2013
!
version 15.3
service timestamps debug uptime
service timestamps log uptime
!
hostname R1
!
boot-start-marker
boot-end-marker
!
!
!
no aaa new-model
```

```
!
!
!
clock timezone PST -8 0
!
!
!
!
!


!
!
!
ip cef
no ipv6 cef
!
!
!
!
!
!
!
multilink bundle-name authenticated
!
!
!
!
!
!
!
!
interface Loopback0
 ip address 1.1.1.1 255.255.255.255
!
interface Tunnel21
 no ip address
 ip nbar protocol-discovery
!
interface Ethernet0/0
 no ip address
 shutdown
!
interface Ethernet0/1
 no ip address
 shutdown
!
interface Ethernet0/2
 no ip address
 shutdown
!
interface Ethernet0/3
 no ip address
 shutdown
!
interface Ethernet1/0
 no ip address
 shutdown
!
interface Ethernet1/1
 no ip address
 ip nbar protocol-discovery
 shutdown
!
```

```
interface Ethernet1/2
 no ip address
 shutdown
!
interface Ethernet1/3
 no ip address
 shutdown
!
interface Serial2/0
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial2/1
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial2/2
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial2/3
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial3/0
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial3/1
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial3/2
 no ip address
 shutdown
 serial restart-delay 0
!
interface Serial3/3
 no ip address
 shutdown
 serial restart-delay 0
!
ip forward-protocol nd
!
!
no ip http server
!
!
!
!
control-plane
!
!
line con 0
 logging synchronous
line aux 0
line vty 0 4
 login
```

```
!
!
!
end


------------------ show ip nbar statistics ------------------


Compiler statistics
Malloc failure = 0
Control-plane statistics
Malloc failure = 0
Invalid iterators = 0
Data-plane statistics
Malloc failure = 0
FO create failure = 0
CFT Age set failure = 0
L3 Classification Error = 0

------------------ show ip nbar resources ------------------

NBAR memory usage for tracking Stateful sessions
   System link age      : 30 secs
   Initial memory       : 4160 KBytes
   Max initial memory   : 13868 KBytes
   Memory expansion     : 128 KBytes
   Max memory expansion : 128 KBytes
   Memory in use        : 4160 KBytes
   Max memory allowed   : 27736 KBytes
   Active links         : 0
   Total links          : 32504
   Flow Object in Use   : 0


------------------ show ip nbar protocol activated ------------------


Following Protocol(s) is(are) enabled
 Feature:PD
       Hwidb:Tunnel21 MI:1 SI:0 FR:0 PVC:0
       Hwidb:Ethernet1/1 MI:1 SI:0 FR:0 PVC:0
All iana protocols


------------------ show ip nbar version ------------------



NBAR software version:  16
NBAR minimum backward compatible version:  13

1   base                              Mv: 6
2   ftp                               Mv: 7
      Iv:                              smtp - 2
      Iv:                           gridftp - 1
      Iv:                          ftp-data - 1
3   ftp-data                          Mv: 1
      Iv:                              ftp - 7
      Iv:                             smtp - 2
```

```
      Iv:                          gridftp - 1
4   http                             Mv: 20
      Iv:                          youtube - 6
      Iv:                    msn-messenger - 3
      Iv:                  yahoo-messenger - 3
      Iv:                      flash-video - 2
      Iv:                     flashyahoo - 2
      Iv:                    flashmyspace - 2
      Iv:                  audio-over-http - 2
      Iv:                 binary-over-http - 2
      Iv:                  video-over-http - 2
      Iv:                              irc - 2
      Iv:                         babelgum - 1
      Iv:                           itunes - 1
      Iv:                            sling - 1
      Iv:                       google-earth - 1
      Iv:                        baidu-movie - 1
      Iv:                              pando - 1
      Iv:                          napster - 1
      Iv:                         songsari - 1
      Iv:                        webthunder - 1
      Iv:                           sopcast - 3
      Iv:                       tunnel-http - 1
      Iv:                          soribada - 2
      Iv:                               icq - 1
      Iv:                             skype - 5
      Iv:                           edonkey - 7
      Iv:                     directconnect - 5
      Iv:                          gnutella - 7
      Iv:                        ms-update - 1
      Iv:                              rtsp - 9
      Iv:                           netflix - 1
      Iv:                         megavideo - 1
      Iv:                        bittorrent - 5
      Iv:                               tor - 1
      Iv:                             gmail - 1
      Iv:                             gtalk - 1
      Iv:                         gtalk-voip - 1
      Iv:                        gtalk-video - 1
      Iv:                         activesync - 1
      Iv:                           rhapsody - 1
      Iv:                              fring - 1
      Iv:                              rtmpt - 1
      Iv:                         livestation - 1
      Iv:                         secondlife - 1
      Iv:                           vnc-http - 1
      Iv:                        share-point - 1
      Iv:                      ms-office-365 - 1
      Iv:                             ms-sms - 1
      Iv:                          ghostsurf - 1
      Iv:                           gotomypc - 1
      Iv:                      adobe-connect - 1
      Iv:                          realmedia - 1
      Iv:                      windows-azure - 1
      Iv:                    ms-live-accounts - 1
      Iv:                       aol-messenger - 2
      Iv:                 aol-messenger-video - 1
      Iv:                               mikogo - 1
      Iv:                             pandora - 1
      Iv:           oracle-ebsuite-unsecured - 1
      Iv:                             hotmail - 1
      Iv:                            facebook - 1
      Iv:                             twitter - 1
      Iv:                                hulu - 1
```

```
      Iv:                          blogger - 1
      Iv:                        yahoo-mail - 1
      Iv:                          linkedin - 1
      Iv:                           logmein - 1
      Iv:                           gbridge - 1
      Iv:                            citrix - 12
      Iv:                               ssl - 1
      Iv:                          showmypc - 1
      Iv:                     yahoo-accounts - 1
      Iv:                          exchange - 4
      Iv:                        salesforce - 1
      Iv:                          ppstream - 1
      Iv:                           ms-lync - 1
      Iv:                            qqlive - 1
      Iv:                              pptv - 1
      Iv:                             xunlei - 1
      Iv:              bittorrent-networking - 1
      Iv:                          shoutcast - 1
      Iv:                     xunlei-kankan - 1
5   static                            Mv: 6
6   socks                             Mv: 3
7   nntp                              Mv: 2
      Iv:                   yahoo-messenger - 3
8   tftp                              Mv: 2
9   ms-rpc                            Mv: 2
      Iv:                          exchange - 4
      Iv:                       ms-netlogon - 1
      Iv:                        ms-win-dns - 1
      Iv:                            ms-iis - 1
      Iv:                  active-directory - 1
10  exchange                          Mv: 4
      Iv:                            ms-rpc - 2
      Iv:                              http - 20
11  vdolive                           Mv: 1
12  sqlnet                            Mv: 2
13  oracle-sqlnet                     Mv: 2
14  netshow                           Mv: 3
15  sunrpc                            Mv: 3
      Iv:                              nfs - 1
      Iv:                         clearcase - 1
16  nfs                               Mv: 1
17  streamwork                        Mv: 2
18  citrix                            Mv: 12
      Iv:                              http - 20
19  fasttrack                         Mv: 3
20  gnutella                          Mv: 7
      Iv:                              http - 20
21  kazaa2                            Mv: 11
22  dhcp                              Mv: 1
23  rtsp                              Mv: 9
      Iv:                           youtube - 6
      Iv:                              http - 20
24  webex-meeting                     Mv: 1
      Iv:                               ssl - 1
      Iv:                              spdy - 1
      Iv:                              http - 20
25  rtp                               Mv: 8
      Iv:                          stun-nat - 1
      Iv:                        gtalk-voip - 1
      Iv:                       gtalk-video - 1
      Iv:                     ms-lync-media - 1
26  mgcp                              Mv: 2
27  skinny                            Mv: 3
      Iv:                        cisco-phone - 4
```

```
28  sip                               Mv: 5
      Iv:                       cisco-phone - 4
      Iv:             telepresence-control - 4
      Iv:              yahoo-voip-over-sip - 1
      Iv:                        secondlife - 1
      Iv:                          stun-nat - 1
      Iv:                          facetime - 1
29  rtcp                              Mv: 5
      Iv:             telepresence-control - 4
      Iv:                          stun-nat - 1
30  edonkey                           Mv: 7
      Iv:                           http - 20
31  winmx                             Mv: 5
32  bittorrent                        Mv: 5
      Iv:                         blizwow - 2
      Iv:                           socks - 3
      Iv:                            http - 20
      Iv:                             dht - 1
      Iv:            bittorrent-networking - 1
33  directconnect                     Mv: 5
      Iv:                            http - 20
34  hl7                               Mv: 3
35  fix                               Mv: 3
      Iv:                             ssl - 1
      Iv:                            spdy - 1
36  msn-messenger                     Mv: 3
      Iv:                            http - 20
      Iv:                          ms-wbt - 1
      Iv:                           socks - 3
      Iv:                 msn-messenger-ft - 1
      Iv:                             ssl - 1
37  ms-live-accounts                  Mv: 1
      Iv:                            http - 20
      Iv:                             ssl - 1
38  windows-azure                     Mv: 1
      Iv:                            http - 20
      Iv:                             ssl - 1
39  pandora                           Mv: 1
      Iv:                            http - 20
      Iv:                             ssl - 1
40  oracle-ebsuite-unsecured          Mv: 1
      Iv:                            http - 20
41  hotmail                           Mv: 1
      Iv:                            http - 20
      Iv:                             ssl - 1
42  dicom                             Mv: 4
43  yahoo-messenger                   Mv: 3
      Iv:                            http - 20
      Iv:                            nntp - 2
      Iv:                           socks - 3
      Iv:                             ssl - 1
      Iv:                            spdy - 1
44  bgp                               Mv: 1
45  l2tp                              Mv: 1
46  mapi                              Mv: 3
47  cifs                              Mv: 2
48  cisco-phone                       Mv: 4
      Iv:                             sip - 5
      Iv:                          skinny - 3
      Iv:             telepresence-control - 4
49  youtube                           Mv: 6
      Iv:                            http - 20
      Iv:                            rtsp - 9
      Iv:                             ssl - 1
```

```
50  realmedia                       Mv: 1
      Iv:                            http - 20
      Iv:                            rtsp - 9
      Iv:                             ssl - 1
51  imap                            Mv: 1
52  pop3                            Mv: 1
53  irc                             Mv: 2
      Iv:                            http - 20
54  skype                           Mv: 5
      Iv:                            http - 20
      Iv:                             dns - 1
55  blizwow                         Mv: 2
      Iv:                         bittorrent - 5
56  telepresence-media              Mv: 3
57  telepresence-control            Mv: 4
      Iv:                            rtcp - 5
      Iv:                       cisco-phone - 4
      Iv:                             sip - 5
58  zattoo                          Mv: 3
59  sopcast                         Mv: 3
      Iv:                            http - 20
60  flash-video                     Mv: 2
      Iv:                            http - 20
61  flashyahoo                      Mv: 2
      Iv:                            http - 20
62  flashmyspace                    Mv: 2
      Iv:                            http - 20
63  audio-over-http                 Mv: 2
      Iv:                            http - 20
64  binary-over-http                Mv: 2
      Iv:                            http - 20
65  video-over-http                 Mv: 2
      Iv:                            http - 20
66  my-jabber-ft                    Mv: 1
67  ayiya-ipv6-tunneled             Mv: 1
68  filetopia                       Mv: 1
69  guruguru                        Mv: 1
70  manolito                        Mv: 1
71  radius                          Mv: 1
72  teamspeak                       Mv: 1
73  soribada                        Mv: 2
      Iv:                            http - 20
74  dht                             Mv: 1
75  pptp                            Mv: 2
76  ntp                             Mv: 1
77  poco                            Mv: 2
78  ventrilo                        Mv: 1
79  tomatopang                      Mv: 1
80  maplestory                      Mv: 1
81  itunes                          Mv: 1
      Iv:                            http - 20
82  napster                         Mv: 1
      Iv:                            http - 20
83  sling                           Mv: 1
      Iv:                            http - 20
84  google-earth                    Mv: 1
      Iv:                            http - 20
85  baidu-movie                     Mv: 1
      Iv:                            http - 20
86  pando                           Mv: 1
      Iv:                            http - 20
87  webthunder                      Mv: 1
      Iv:                            http - 20
      Iv:                          xunlei - 1
```

```
88  babelgum                          Mv: 1
      Iv:                              http - 20
89  songsari                          Mv: 1
      Iv:                              http - 20
90  tunnel-http                       Mv: 1
      Iv:                              http - 20
91  teredo-ipv6-tunneled              Mv: 1
92  sixtofour-ipv6-tunneled           Mv: 1
      Iv:              isatap-ipv6-tunneled - 1
93  isatap-ipv6-tunneled              Mv: 1
      Iv:           sixtofour-ipv6-tunneled - 1
94  fring                             Mv: 1
      Iv:                              http - 20
95  fring-voip                        Mv: 1
      Iv:                         fring-video - 1
96  fring-video                       Mv: 1
      Iv:                          fring-voip - 1
97  waste                             Mv: 1
98  kuro                              Mv: 1
99  smtp                              Mv: 2
      Iv:                                ftp - 7
100  icq                               Mv: 1
      Iv:                              http - 20
101  soulseek                          Mv: 1
102  yahoo-voip-messenger              Mv: 2
      Iv:                               rtp - 8
103  yahoo-voip-over-sip               Mv: 1
      Iv:                               sip - 5
104  aol-protocol                      Mv: 1
      Iv:                       aol-messenger - 2
105  ipsec                             Mv: 1
106  isakmp                            Mv: 1
107  ppstream                          Mv: 1
      Iv:                              http - 20
108  rtmp                              Mv: 1
109  rtmpe                             Mv: 1
110  rtmpt                             Mv: 1
      Iv:                              http - 20
111  dns                               Mv: 1
      Iv:                          tcpoverdns - 1
      Iv:                               skype - 5
112  windows-update                    Mv: 1
113  encrypted-emule                   Mv: 1
114  networking-gnutella               Mv: 1
115  encrypted-bittorrent              Mv: 1
116  ms-wbt                            Mv: 1
      Iv:                       msn-messenger - 3
117  gmail                             Mv: 1
      Iv:                              http - 20
      Iv:                               ssl - 1
118  openvpn                           Mv: 1
      Iv:                               ssl - 1
      Iv:                              spdy - 1
119  ssl                               Mv: 1
      Iv:                                fix - 3
      Iv:                       webex-meeting - 1
      Iv:                             netflix - 1
      Iv:                               gmail - 1
      Iv:                         livemeeting - 1
      Iv:                         livestation - 1
      Iv:                                 dmp - 1
      Iv:                            rhapsody - 1
      Iv:                          secondlife - 1
      Iv:                    ms-live-accounts - 1
```

```
      Iv:                  google-accounts - 1
      Iv:                 active-directory - 1
      Iv:                          sip-tls - 1
      Iv:                    ms-office-365 - 1
      Iv:                             pcoip - 1
      Iv:                       vmware-view - 1
      Iv:                           openvpn - 1
      Iv:                         ms-update - 1
      Iv:                             mysql - 1
      Iv:                          gotomypc - 1
      Iv:                         ghostsurf - 1
      Iv:                      adobe-connect - 1
      Iv:                      aol-messenger - 2
      Iv:                        share-point - 1
      Iv:                          realmedia - 1
      Iv:           ms-dynamics-crm-online - 1
      Iv:                      windows-azure - 1
      Iv:                            twitter - 1
      Iv:                               hulu - 1
      Iv:                            logmein - 1
      Iv:                             mikogo - 1
      Iv:                            pandora - 1
      Iv:                            hotmail - 1
      Iv:                           facebook - 1
      Iv:                     google-services - 1
      Iv:                         google-plus - 1
      Iv:                         google-docs - 1
      Iv:                              picasa - 1
      Iv:                          yahoo-mail - 1
      Iv:                             youtube - 6
      Iv:                            linkedin - 1
      Iv:                               gtalk - 1
      Iv:                                http - 20
      Iv:                            facetime - 1
      Iv:                            showmypc - 1
      Iv:                     yahoo-accounts - 1
      Iv:                    msn-messenger-ft - 1
      Iv:                       msn-messenger - 3
      Iv:                  msn-messenger-video - 1
      Iv:                              ms-lync - 1
      Iv:                                 spdy - 1
120   aol-messenger                     Mv: 2
      Iv:                              socks - 3
      Iv:                                ssl - 1
      Iv:                               http - 20
      Iv:                               spdy - 1
121   ghostsurf                         Mv: 1
      Iv:                               http - 20
122   netflix                           Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
123   megavideo                         Mv: 1
      Iv:                               http - 20
124   stun-nat                          Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
      Iv:                         ms-lync-media - 1
125   viber                             Mv: 1
126   cisco-ip-camera                   Mv: 1
      Iv:                               rtsp - 9
127   livestation                       Mv: 1
      Iv:                               http - 20
      Iv:                               rtmp - 1
      Iv:                                ssl - 1
```

```
128  gridftp                          Mv: 1
      Iv:                              ftp - 7
129  winny                            Mv: 1
130  livemeeting                      Mv: 1
      Iv:                              ssl - 1
      Iv:                         stun-nat - 1
      Iv:                             spdy - 1
131  tor                              Mv: 1
      Iv:                             http - 20
      Iv:                              ssl - 1
132  xmpp-client                      Mv: 1
133  gtalk-chat                       Mv: 1
      Iv:                        xmpp-client - 1
134  gtalk                            Mv: 1
      Iv:                             http - 20
      Iv:                        stun-nat - 1
      Iv:                       gtalk-video - 1
      Iv:                        gtalk-voip - 1
      Iv:                          gtalk-ft - 1
      Iv:                               ssl - 1
135  gtalk-voip                       Mv: 1
      Iv:                             http - 20
      Iv:                        stun-nat - 1
      Iv:                           gtalk - 1
      Iv:                             rtp - 8
136  gtalk-ft                         Mv: 1
      Iv:                        stun-nat - 1
      Iv:                           gtalk - 1
137  gtalk-video                      Mv: 1
      Iv:                             http - 20
      Iv:                        stun-nat - 1
      Iv:                           gtalk - 1
138  steam                            Mv: 1
139  ping                             Mv: 1
140  exec                             Mv: 1
141  login                            Mv: 1
142  shell                            Mv: 1
143  netapp-snapmirror                Mv: 1
144  ms-iis                           Mv: 1
      Iv:                           ms-rpc - 2
145  ms-win-dns                       Mv: 1
      Iv:                           ms-rpc - 2
146  ms-netlogon                      Mv: 1
      Iv:                           ms-rpc - 2
147  ms-sms                           Mv: 1
      Iv:                             http - 20
      Iv:                         ms-update - 1
148  perforce                         Mv: 1
149  vnc                              Mv: 1
      Iv:              apple-remote-desktop - 1
150  vnc-http                         Mv: 1
      Iv:                             http - 20
151  secondlife                       Mv: 1
      Iv:                              ssl - 1
      Iv:                             http - 20
      Iv:                              sip - 5
      Iv:                             spdy - 1
152  msn-messenger-ft                 Mv: 1
      Iv:                      msn-messenger - 3
      Iv:                              ssl - 1
      Iv:                            socks - 3
      Iv:                             spdy - 1
153  icq-filetransfer                 Mv: 1
154  tcpoverdns                       Mv: 1
```

```
      Iv:                                dns - 1
155   msn-messenger-video               Mv: 1
      Iv:                           stun-nat - 1
      Iv:                                rtp - 8
      Iv:                    msn-messenger - 3
      Iv:                            socks - 3
      Iv:                                ssl - 1
156   share-point                       Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
157   sip-tls                           Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
158   activesync                        Mv: 1
      Iv:                               http - 20
159   rhapsody                          Mv: 1
      Iv:                               http - 20
      Iv:                               rtmp - 1
      Iv:                                ssl - 1
160   ip-messenger                      Mv: 1
161   capwap-control                    Mv: 1
      Iv:                         capwap-data - 1
162   capwap-data                       Mv: 1
      Iv:                     capwap-control - 1
163   dmp                               Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
164   netbios-ns                        Mv: 1
165   ldap                              Mv: 1
166   active-directory                  Mv: 1
      Iv:                              ms-rpc - 2
      Iv:                                cifs - 2
      Iv:                                ldap - 1
      Iv:                                ssl - 1
167   google-accounts                   Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
168   ms-office-365                     Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
169   teamviewer                        Mv: 1
170   pcanywhere                        Mv: 1
171   snmp                              Mv: 1
172   vmware-vmotion                    Mv: 1
173   pcoip                             Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
174   vmware-view                       Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
175   gotomypc                          Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
176   ms-dynamics-crm-online            Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
177   kerberos                          Mv: 1
178   clearcase                         Mv: 1
179   ms-update                         Mv: 1
      Iv:                                ssl - 1
      Iv:                               http - 20
      Iv:                              ms-sms - 1
      Iv:                                spdy - 1
180   mysql                             Mv: 1
```

```
      Iv:                                ssl - 1
181   google-services                   Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
182   google-plus                       Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
183   google-docs                       Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
184   picasa                            Mv: 1
      Iv:                                ssl - 1
      Iv:                               spdy - 1
185   blogger                           Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
      Iv:                              gmail - 1
      Iv:                  google-services - 1
      Iv:                               spdy - 1
186   sqlserver                         Mv: 1
      Iv:                               cifs - 2
187   adobe-connect                     Mv: 1
      Iv:                               rtmp - 1
      Iv:                                ssl - 1
      Iv:                               http - 20
      Iv:                               spdy - 1
188   aol-messenger-audio               Mv: 1
      Iv:                                rtp - 8
189   aol-messenger-video               Mv: 1
      Iv:              aol-messenger-audio - 1
      Iv:                                rtp - 8
      Iv:                               http - 20
      Iv:                          stun-nat - 1
      Iv:                               rtmp - 1
190   aol-messenger-ft                  Mv: 1
      Iv:              aol-messenger-audio - 1
191   facebook                          Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
192   xunlei                            Mv: 1
      Iv:                               http - 20
      Iv:                     xunlei-kankan - 1
      Iv:                        webthunder - 1
193   xunlei-kankan                     Mv: 1
      Iv:                               http - 20
      Iv:                             xunlei - 1
194   ms-sql-m                          Mv: 1
195   ssh                               Mv: 1
196   hopopt                            Mv: 1
197   mikogo                            Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
198   ipv6-frag                         Mv: 1
199   ipv6-nonxt                        Mv: 1
200   ipv6-opts                         Mv: 1
201   ipv6-route                        Mv: 1
202   salesforce                        Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
203   twitter                           Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
204   hulu                              Mv: 1
      Iv:                               http - 20
```

```
      Iv:                                ssl - 1
205   oscar-filetransfer                Mv: 1
      Iv:              aol-messenger-audio - 1
206   logmein                           Mv: 1
      Iv:                                ssl - 1
      Iv:                               http - 20
      Iv:                               spdy - 1
207   iscsi                             Mv: 1
208   yahoo-mail                        Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
      Iv:                               spdy - 1
209   linkedin                          Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
210   showmypc                          Mv: 1
      Iv:                                ssl - 1
      Iv:                               http - 20
      Iv:                               rtmp - 1
      Iv:                               spdy - 1
211   gbridge                           Mv: 1
      Iv:                               http - 20
212   ms-lync                           Mv: 1
      Iv:                           stun-nat - 1
      Iv:                               http - 20
      Iv:                                ssl - 1
213   ms-lync-media                     Mv: 1
      Iv:                           stun-nat - 1
      Iv:                                rtp - 8
      Iv:                                ssl - 1
214   spdy                              Mv: 1
      Iv:                                ssl - 1
215   facetime                          Mv: 1
      Iv:                           stun-nat - 1
      Iv:                                sip - 5
      Iv:                                ssl - 1
216   yahoo-accounts                    Mv: 1
      Iv:                               http - 20
      Iv:                                ssl - 1
217   pptv                              Mv: 1
      Iv:                               http - 20
218   net-assistant                     Mv: 1
219   apple-remote-desktop              Mv: 1
      Iv:                                vnc - 1
220   lotus-notes                       Mv: 1
221   webex-media                       Mv: 1
      Iv:                               http - 20
222   webex-app-sharing                 Mv: 1
      Iv:                               http - 20
223   notes                             Mv: 1
224   qqlive                            Mv: 1
      Iv:                               http - 20
225   bittorrent-networking             Mv: 1
      Iv:                         bittorrent - 5
      Iv:                               http - 20
      Iv:                                dht - 1
226   shoutcast                         Mv: 1
      Iv:                               http - 20
227   dameware-mrc                      Mv: 1
228   iana                              Mv: 1
229   custom-protocols                  Mv: 1
230   attribute                         Mv: 1
```

```
{<No.>}<PDLM name> Mv: <PDLM Version>, {Nv: <NBAR Software Version>; <File name>}
            {Iv: <PDLM Interdependency Name>   - <PDLM Interdependency Version>}


------------------ show ip nbar protocol-pack active ------------------



Active Protocol Pack:

Name:                           Advanced Protocol Pack
Version:                        4.10001
Publisher:                      Cisco Systems Inc.
NBAR Engine Version:            16
State:                          Active

------------------ show ip nbar resources flow ------------------


------------------ show ip nbar attribute-map ------------------


% NBAR Error: No attribute-map configured

------------------ show ip nbar parameter extraction        activated ------------------


 Protocol        Parameter            ID
 --------        ---------            --

------------------ show ip nbar parameter subclassification        activated
------------------


 Protocol        Parameter          Parameter value        ID
 --------        ---------          ---------------        --

------------------ show ip nbar protocol-discovery ------------------


 Ethernet1/1

 Last clearing of "show ip nbar protocol-discovery" counters 00:28:02

                            Input                  Output
                            -----                  ------
   Protocol                 Packet Count           Packet Count
                            Byte Count             Byte Count
                            5min Bit Rate (bps)    5min Bit Rate (bps)
                            5min Max Bit Rate (bps)  5min Max Bit Rate (bps)
   ------------------------ ---------------------- ----------------------
   Total                    0                      0
                            0                      0
                            0                      0
                            0                      0
```

```
 Tunnel21

 Last clearing of "show ip nbar protocol-discovery" counters 00:23:09


                            Input                     Output
                            -----                     ------
   Protocol                 Packet Count              Packet Count
                            Byte Count                Byte Count
                            5min Bit Rate (bps)       5min Bit Rate (bps)
                            5min Max Bit Rate (bps)   5min Max Bit Rate (bps)
   ------------------------ ------------------------- -------------------------
   Total                    0                         0
                            0                         0
                            0                         0
                            0                         0

------------------ show policy-map interface ------------------
```

show tech-support rsvp

To generate a report of all Resource Reservation Protocol (RSVP)-related information, use the **showtech-supportrsvp**command in privileged EXEC mode.

show tech-support rsvp

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command is not required for normal use of the operating system. This command is useful when you contact technical support personnel with questions regarding RSVP. The **showtech-supportrsvp**command generates a series of reports that can be useful to technical support personnel attempting to solve problems.

Any issues or caveats that apply to the **showtech-support** command also apply to this command. For example, the enable password, if configured, is not displayed in the output of the **showrunning-config** command.

Examples

The **showtech-supportrsvp** command is equivalent to issuing the following commands:

- **show ip rsvp installed**
- **show ip rsvp interface**
- **show ip rsvp neighbor**
- **show ip rsvp policy cops**
- **show ip rsvp reservation**
- **show ip rsvp sender**
- **show running-config**
- **show version**

For the specific examples, refer to the displays and descriptions for the individual commands for more information.

show traffic-shape

Note Effective with Cisco IOS XE Release 2.6, Cisco IOS Release 15.0(1)S, and Cisco IOS Release 15.1(3)T, the **showtraffic-shape**command is hidden. Although this command is still available in Cisco IOS software, the CLI interactive Help does not display it if you attempt to view it by entering a question mark at the command line. This command will be completely removed in a future release, which means that you will need to use the appropriate replacement command (or sequence of commands). For more information (including a list of replacement commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* or the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS Quality of Service Solutions Configuration Guide* .

Note Effective with Cisco IOS XE Release 3.2S, the **showtraffic-shape**command is replaced by a modular QoS CLI (MQC) command (or sequence of MQC commands). For the appropriate replacement command (or sequence of commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* .

To display the current traffic-shaping configuration, use the **showtraffic-shape** command in EXEC mode.

show traffic-shape [*interface-type interface-number*]

Syntax Description

interface-type	(Optional) The type of the interface. If no interface is specified, traffic-shaping details for all configured interfaces are shown.
interface-number	(Optional) The number of the interface.

Command Modes

EXEC

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.6	This command was modified. This command was hidden.
15.0(1)S	This command was modified. This command was hidden.
15.1(3)T	This command was modified. This command was hidden.

Release	Modification
Cisco IOS XE Release 3.2S	This command was replaced by an MQC command (or sequence of MQC commands).

Usage Guidelines

You must have first enabled traffic shaping using the **traffic-shaperate**, **traffic-shapegroup**, or **frame-relaytraffic-shaping** command to display traffic-shaping information.

Examples

The following is sample output from the **showtraffic-shape** command:

```
Router# show traffic-shape
Interface   Fa0/0
       Access Target    Byte   Sustain   Excess    Interval  Increment Adapt
VC     List   Rate      Limit  bits/int  bits/int  (ms)      (bytes)   Active
-             1000000   6250   25000     25000     25        3125      -
```

The table below describes the significant fields shown in the display.

Table 70: show traffic-shape Field Descriptions

Field	Description
Interface	Interface type and number.
VC	Virtual circuit. **Note** If you configure traffic shaping at a VC level instead of an interface level, a number appears in this field.
Access List	Number of the access list, if one is configured.
Target Rate	Rate that traffic is shaped to, in bits per second.
Byte Limit	Maximum number of bytes sent per internal interval.
Sustain bits/int	Configured sustained bits per interval.
Excess bits/int	Configured excess bits in the first interval.
Interval (ms)	Interval (in milliseconds) being used internally, which may be smaller than the committed burst divided by the committed information rate, if the router determines that traffic flow will be more stable with a smaller configured interval.
Increment (bytes)	Number of bytes that will be sustained per internal interval.
Adapt Active	Contains “BECN” if Frame Relay has backward explicit congestion notification (BECN) adaptation configured.

Related Commands

Command	Description
frame-relay cir	Specifies the incoming or outgoing committed information rate (CIR) for a Frame Relay virtual circuit.

Command	Description
frame-relay traffic-rate	Configures all the traffic-shaping characteristics of a virtual circuit (VC) in a single command.
frame-relay traffic-shaping	Enables both traffic shaping and per-VC queueing for all PVCs and SVCs on a Frame Relay interface.
show traffic-shape queue	Displays information about the elements queued by traffic shaping at the interface level or the DLCI level.
show traffic-shape statisitcs	Displays the current traffic-shaping statistics.
traffic-shape adaptive	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
traffic-shape fecn-adap	Replies to messages with the FECN bit (which are set with TEST RESPONSE messages with the BECN bit set).
traffic-shape group	Enables traffic shaping based on a specific access list for outbound traffic on an interface.
traffic-shape rate	Enables traffic shaping for outbound traffic on an interface.

show traffic-shape queue

Note Effective with Cisco IOS XE Release 2.6, Cisco IOS Release 15.0(1)S, and Cisco IOS Release 15.1(3)T, the **showtraffic-shapequeue**command is hidden. Although this command is still available in Cisco IOS software, the CLI interactive Help does not display it if you attempt to view it by entering a question mark at the command line. This command will be completely removed in a future release, which means that you will need to use the appropriate replacement command (or sequence of commands). For more information (including a list of replacement commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* or the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS Quality of Service Solutions Configuration Guide* .

Note Effective with Cisco IOS XE Release 3.2S, the **showtraffic-shapequeue**command is replaced by a modular QoS CLI (MQC) command (or sequence of MQC commands). For the appropriate replacement command (or sequence of commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* .

To display information about the elements queued by traffic shaping at the interface level or the data-link connection identifier (DLCI) level, use the **showtraffic-shapequeue**command in privileged EXEC mode.

show traffic-shape queue [*interface-number* [**dlci** *dlci-number*]]

Syntax Description

interface-number	(Optional) The number of the interface.
dlci	(Optional) The specific DLCI for which you wish to display information about queued elements.
dlci-number	(Optional) The number of the DLCI.

Command Modes

Privileged EXEC

Command History

Release	Modification
11.2	This command was introduced.
12.0(3)XG	This command was integrated into Cisco IOS Release 12.0(3)XG. The *dlci* argument was added.
12.0(4)T	This command was integrated into Cisco IOS Release 12.0(4)T. The *dlci* argument was added.
12.0(5)T	This command was modified to include information on the special voice queue that is created using the **queue** keyword of the **frame-relayvoicebandwidth** command.

Release	Modification
12.2(28)SB	This command was modified to support hierarchical queueing framework (HQF) on Frame Relay (FR) interfaces or permanent virtual circuits (PVCs).
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.6	This command was modified. This command was hidden.
15.0(1)S	This command was modified. This command was hidden.
15.1(3)T	This command was modified. This command was hidden.
Cisco IOS XE Release 3.2S	This command was replaced by an MQC command (or sequence of MQC commands).

Usage Guidelines

When no parameters are specified with this command, the output displays information for all interfaces and DLCIs containing queued elements. When a specific interface and DLCI are specified, information is displayed about the queued elements for that DLCI only.

When you use this command with HQF, no output displays.

Examples

The following is sample output for the **showtraffic-shapequeue**command when weighted fair queueing is configured on the map class associated with DLCI 16:

```
Router# show traffic-shape queue Serial1/1 dlci 16
Traffic queued in shaping queue on Serial1.1 dlci 16
  Queueing strategy: weighted fair
  Queueing Stats: 1/600/64/0 (size/max total/threshold/drops)
     Conversations  0/16 (active/max total)
     Reserved Conversations 0/2 (active/allocated)
  (depth/weight/discards) 1/4096/0
  Conversation 5, linktype: ip, length: 608

source: 172.21.59.21, destination: 255.255.255.255, id: 0x0006, ttl: 255,
  TOS: 0 prot: 17, source port 68, destination port 67
```

The following is sample output for the **showtraffic-shapequeue**command when priority queueing is configured on the map class associated with DLCI 16:

```
Router# show traffic-shape queue Serial1/1 dlci 16
Traffic queued in shaping queue on Serial1.1 dlci 16
  Queueing strategy: priority-group 4
  Queueing Stats: low/1/80/0 (queue/size/max total/drops)
Packet 1, linktype: cdp, length: 334, flags: 0x10000008
```

The following is sample output for the **showtraffic-shapequeue**command when first-come, first-serve queueing is configured on the map class associated with DLCI 16:

```
Router# show traffic-shape queue Serial1/1 dlci 16
Traffic queued in shaping queue on Serial1.1 dlci 16
  Queueing strategy: fcfs
```

```
  Queueing Stats: 1/60/0 (size/max total/drops)
Packet 1, linktype: cdp, length: 334, flags: 0x10000008
```

The following is sample output for the **showtraffic-shapequeue** command displaying statistics for the special queue for voice traffic that is created automatically when the **frame-relayvoicebandwidth**command is entered:

```
Router# show traffic-shape queue Serial1/1 dlci 45

 Voice queue attached to traffic shaping queue on Serial1 dlci 45
 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
    Voice Queueing Stats: 0/100/0 (size/max/dropped)
    ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
 Traffic queued in shaping queue on Serial1 dlci 45
   Queueing strategy: weighted fair
   Queueing Stats: 0/600/64/0 (size/max total/threshold/drops)
      Conversations  0/16 (active/max total)
      Reserved Conversations 0/2 (active/allocated)
```

The table below describes the significant fields shown in the display.

Table 71: show traffic-shape queue Field Descriptions

Field	Description
Queueing strategy	When Frame Relay Traffic Shaping (FRTS) is configured, the queueing type can be weighted fair, custom-queue, priority-group, or fcfs (first-come, first-serve), depending on what is configured on the Frame Relay map class for this DLCI. The default is fcfs for FRTS. When generic traffic shaping is configured, the only queueing type available is weighted fair queueing (WFQ).
Queueing Stats	Statistics for the configured queueing strategy, as follows: • size--Current size of the queue. • max total--Maximum number of packets of all types that can be queued in all queues. • threshold--For WFQ, the number of packets in the queue after which new packets for high-bandwidth conversations will be dropped. • drops--Number of packets discarded during this interval.
Conversations active	Number of currently active conversations.
Conversations max total	Maximum allowed number of concurrent conversations.
Reserved Conversations active	Number of currently active conversations reserved for voice.
Reserved Conversations allocated	Maximum configured number of conversations reserved.
depth	Number of packets currently queued.
weight	Number used to classify and prioritize the packet.
discards	Number of packets discarded from queues.

Field	Description
Packet	Number of queued packet.
linktype	Protocol type of the queued packet. (cdp = Cisco Discovery Protocol)
length	Number of bytes in the queued packet.
flags	Number of flag characters in the queued packet.
source	Source IP address.
destination	Destination IP address.
id	Packet ID.
ttl	Time to live count.
TOS	IP type of service.
prot	Layer 4 protocol number. Refer to RFC 943 for a list of protocol numbers. (17 = User Datagram Protocol (UDP))
source port	Port number of source port.
destination port	Port number of destination port.

Related Commands

Command	Description
show frame-relay fragment	Displays Frame Relay fragmentation details.
show frame-relay pvc	Displays statistics about PVCs for Frame Relay interfaces.
show frame-relay vofr	Displays details about FRF.11 subchannels being used on VoFR DLCIs.
show traffic-shape	Displays the current traffic-shaping configuration.
show traffic-shape statistics	Displays the current traffic-shaping statistics.

show traffic-shape statistics

Note Effective with Cisco IOS XE Release 2.6, Cisco IOS Release 15.0(1)S, and Cisco IOS Release 15.1(3)T, the **showtraffic-shapestatistics**command is hidden. Although this command is still available in Cisco IOS software, the CLI interactive Help does not display it if you attempt to view it by entering a question mark at the command line. This command will be completely removed in a future release, which means that you will need to use the appropriate replacement command (or sequence of commands). For more information (including a list of replacement commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* or the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS Quality of Service Solutions Configuration Guide* .

Note Effective with Cisco IOS XE Release 3.2S, the **showtraffic-shapestatistics**command is replaced by a modular QoS CLI (MQC) command (or sequence of MQC commands). For the appropriate replacement command (or sequence of commands), see the "Legacy QoS Command Deprecation" feature document in the *Cisco IOS XE Quality of Service Solutions Configuration Guide* .

To display the current traffic-shaping statistics, use the **showtraffic-shapestatistics**command in EXEC mode.

show traffic-shape statistics [*interface-type interface-number*]

Syntax Description

interface-type	(Optional) The type of the interface. If no interface is specified, traffic-shaping statistics for all configured interfaces are shown.
interface-number	(Optional) The number of the interface.

Command Modes

EXEC

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.6	This command was modified. This command was hidden.
15.0(1)S	This command was modified. This command was hidden.
15.1(3)T	This command was modified. This command was hidden.

Release	Modification
Cisco IOS XE Release 3.2S	This command was replaced by an MQC command (or sequence of MQC commands).

Usage Guidelines

You must have first enabled traffic shaping using the **traffic-shaperate**, **traffic-shapegroup**, or **frame-relaytraffic-shaping** command to display traffic-shaping information.

Examples

The following is sample output from the **showtraffic-shapestatistics** command:

```
Router# show traffic-shape statistics
          Access Queue     Packets   Bytes     Packets   Bytes     Shaping
I/F       List   Depth                        Delayed   Delayed   Active
Et0       101    0         2         180       0         0         no
Et1              0         0         0         0         0         no
```

The table below describes the significant fields shown in the display.

Table 72: show traffic-shape statistics Field Descriptions

Field	Description
I/F	Interface.
Access List	Number of the access list.
Queue Depth	Number of messages in the queue.
Packets	Number of packets sent through the interface.
Bytes	Number of bytes sent through the interface.
Packets Delayed	Number of packets sent through the interface that were delayed in the traffic-shaping queue.
Bytes Delayed	Number of bytes sent through the interface that were delayed in the traffic-shaping queue.
Shaping Active	Contains “yes” when timers indicate that traffic shaping is occurring and “no” if traffic shaping is not occurring.

Related Commands

Command	Description
frame-relay traffic-shaping	Enables both traffic shaping and per-VC queueing for all PVCs and SVCs on a Frame Relay interface.
show interfaces	Displays statistics for all interfaces configured on the router or access server.
show ip rsvp neighbor	Displays RSVP-related interface information.
traffic-shape adaptive	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.

Command	Description
traffic-shape group	Enables traffic shaping based on a specific access list for outbound traffic on an interface.
traffic-shape rate	Enables traffic shaping for outbound traffic on an interface.

show vrf

To display the defined Virtual Private Network (VPN) routing and forwarding (VRF) instances, use the **showvrf**command in user EXEC or privileged EXEC mode.

show vrf [{**ipv4** | **ipv6**}] [{**interface** | **brief** | **detail** | **id** | **select** | **lock**}] [*vrf-name*]

Syntax Description

ipv4	(Optional) Displays IPv4 address family-type VRF instances.
ipv6	(Optional) Displays IPv6 address family-type VRF instances.
interface	(Optional) Displays the interface associated with the specified VRF instances.
brief	(Optional) Displays brief information about the specified VRF instances.
detail	(Optional) Displays detailed information about the specified VRF instances.
id	(Optional) Displays VPN-ID information for the specified VRF instances.
select	(Optional) Displays selection information for the specified VRF instances.
lock	(Optional) Displays VPN lock information for the specified VRF instances.
vrf-name	(Optional) Name assigned to a VRF.

Command Default

If you do not specify any arguments or keywords, the command displays concise information about all configured VRFs.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SRB	This command was introduced.
12.2(33)SXH	This command was integrated into Cisco IOS Release 12.2(33)SXH.
12.2(33)SB	This command was integrated into Cisco IOS Release 12.2(33)SB.
12.4(20)T	This command was integrated into Cisco IOS Release 12.4(20)T.
Cisco IOS XE Release 2.1	This command was integrated into Cisco IOS XE Release 2.1.
12.2(33)SRE	This command was modified. When backup paths have been created either through the Prefix Independent Convergence or Best External feature, the output of the **showvrfdetail** command displays the following line: Prefix protection with additional path enabled
15.0(1)S	This command was integrated into Cisco IOS Release 15.0(1)S.

Usage Guidelines

Use the **showvrf** command to display information about specified VRF instances or all VRF instances. Specify no arguments or keywords to display information on all VRF instances.

Examples

The following sample output from the**showvrf**command displays brief information about all configured VRF instances:

```
Router# show vrf
  Name                              Default RD          Protocols   Interfaces
  N1                                100:0               ipv4,ipv6
  V1                                1:1                 ipv4        Lo1
  V2                                2:2                 ipv4,ipv6   Et0/1.1
                                                                    Et0/1.2
                                                                    Et0/1.3
  V3                                3:3                 ipv4        Lo3
                                                                    Et0/1.4
```

The table below describes the significant fields shown in the display.

Table 73: show vrf Field Descriptions

Field	Description
Name	Name of the VRF instance.
Default RD	The default route distinguisher (RD) for the specified VRF instances.
Protocols	The address family protocol type for the specified VRF instance.
Interfaces	The network interface associated with the VRF instance.

The following sample output from the **showvrf** command with the **detail** keyword displays information for a VRF named cisco:.

```
Router# show vrf detail
VRF cisco1; default RD 100:1; default VPNID <not set>
  Interfaces:
    Ethernet0/0                 Loopback10
Address family ipv4 (Table ID = 0x1):
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:100:1
  Import VPN route-target communities
    RT:100:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
Address family ipv6 (Table ID = 0xE000001):
  Connected addresses are not in global routing table
  Export VPN route-target communities
    RT:100:1
  Import VPN route-target communities
    RT:100:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
```

The table below describes the significant fields shown in the display.

Table 74: show vrf detail Field Descriptions

Field	Description
default RD 100:1	The RD given to this VRF.
Interfaces:	Interfaces to which the VRF is attached.
Export VPN route-target communities RT:100:1	Route-target VPN extended communities to be exported.
Import VPN route-target communities RT:100:1	Route-target VPN extended communities to be imported.

The following example displays output from the **showvrfdetail** command when backup paths have been created either through the Prefix Independent Convergence or Best External feature. The output of the **showvrfdetail** command displays the following line:

Prefix protection with additional path enabled

```
Router# show vrf detail
VRF vpn1 (VRF Id = 1); default RD 1:1; default VPNID <not set>
  Interfaces:
    Et1/1
Address family ipv4 (Table ID = 1 (0x1)):
  Export VPN route-target communities
    RT:1:1
  Import VPN route-target communities
    RT:1:1
  No import route-map
  No export route-map
  VRF label distribution protocol: not configured
  VRF label allocation mode: per-prefix

Prefix protection with additional path enabled
Address family ipv6 not active.
```

The following sample output from the **showvrflock** command displays VPN lock information:

```
Router# show vrf lock
VRF Name: Mgmt-intf; VRF id = 4085 (0xFF5)
VRF lock count: 3
         Lock user: RTMGR, lock user ID: 2, lock count per user: 1
         Caller PC tracebacks:
         Trace backs: :10000000+44DAEB4 :10000000+21E83AC :10000000+45A9F04 :108
         Lock user: CEF, lock user ID: 4, lock count per user: 1
         Caller PC tracebacks:
         Trace backs: :10000000+44DAEB4 :10000000+21E83AC :10000000+45A9F04 :10C
         Lock user: VRFMGR, lock user ID: 1, lock count per user: 1
         Caller PC tracebacks:
         Trace backs: :10000000+44DAEB4 :10000000+21E83AC :10000000+21EAD18 :10C
VRF Name: vpn1; VRF id = 1 (0x1)
VRF lock count: 3
         Lock user: RTMGR, lock user ID: 2, lock count per user: 1
         Caller PC tracebacks:
         Trace backs: :10000000+44DAEB4 :10000000+21E83AC :10000000+45A9F04 :10C
         Lock user: CEF, lock user ID: 4, lock count per user: 1
         Caller PC tracebacks:
         Trace backs: :10000000+44DAEB4 :10000000+21E83AC :10000000+45A9F04 :100
```

```
Lock user: VRFMGR, lock user ID: 1, lock count per user: 1
Caller PC tracebacks:
Trace backs: :10000000+44DAEB4 :10000000+21E83AC :10000000+21EAD18 :10C
```

Related Commands

Command	Description
vrf definition	Configures a VRF routing table instance and enters VRF configuration mode.
vrf forwarding	Associates a VRF instance with an interface or subinterface.

show wrr-queue

To display the queue information that is serviced on a weighted round-robin (WRR) scheduling basis, use the **showwrr-queue**command in user EXEC or privileged EXEC mode.

show wrr-queue {**bandwidth** | **cos-map**}

Syntax Description

bandwidth	Displays the bandwidth information.
cos-map	Displays the class of service (CoS) map information.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
12.4(24)T	This command was introduced in a release earlier than Cisco IOS Release 12.4(24)T.

Usage Guidelines

Use this command to display the queue information that is scheduled for servicing on WRR basis. WRR is a type of scheduling that prevents low-priority queues from being completely neglected during periods of high-priority traffic. The WRR scheduler transmits some packets from each queue in turn. The number of packets that the scheduler transmits corresponds to the relative importance of the queue.

Examples

The following is sample output from the **showwrr-queue**command. The fields are self-explanatory.

```
Router# show wrr-queue bandwidth
wrr-queue bandwidth for Etherswitch HWIC is:
WRR Queue  :   1   2   3   4
Bandwidth  :   1   2   4   8


Router# show wrr-queue cos-map
wrr-queue cos_map for Etherswitch HWIC is:
CoS Value      :  0  1  2  3  4  5  6  7
Priority Queue :  1  1  2  2  3  3  4  4
```

subscriber accounting accuracy

To guarantee Input/Ouput Packet/Byte statistics in the accounting Stop record are accurate within 1 second, use the **subscriberaccountingaccuracy** command in privileged EXEC mode. To disable this statistics setting, use the **no** form of this command.

subscriber accounting accuracy *value*
no subscriber accounting accuracy

Syntax Description

value	Value for the Subscriber Accounting Accuracy feature in milliseconds. The range is 1,000 to 10,000.

Command Default

The default value is 1000 milliseconds.

Command Modes

User EXEC (>)
Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS Release XE 3.2S	This command was introduced on the ASR 1000 Series Routers.

Examples

This section shows an example of the **subscriberaccountingaccuracy**command set to its default value:

```
Router# subscriber accounting accuracy 1000
```

svc-bundle

To create or modify a member of a switched virtual circuit (SVC) bundle, use the **svc-bundle** command in SVC-bundle configuration mode. To remove an SVC bundle member from the bundle, use the **no** form of this command.

svc-bundle *svc-handle*
no svc-bundle *svc-handle*

Syntax Description

svc-handle	Unique name for the SVC in the router.

Command Default

No SVCs are members of an SVC bundle.

Command Modes

SVC-bundle configuration

Command History

Release	Modification
12.2(4)T	This command was introduced.

Usage Guidelines

Using this command will cause the system to enter SVC-bundle member configuration mode, in which you can configure characteristics of the member such as precedence, variable bit rate (VBR) traffic shaping, unspecified bit rate (UBR) traffic shaping, UBR+ traffic shaping, an idle timeout, and bumping conditions.

Examples

The following example creates a member of an SVC bundle named “five”:

```
svc-bundle five
```

table-map (value mapping)

To create and configure a mapping table for mapping and converting one packet-marking value to another, use the **table-map** (value mapping) command in global configuration mode. To disable the use of this table map, use the **no** form of this command.

table-map *table-map-name* **map from** *from-value* **to** *to-value* [**default** *default-value-or-action*]
no table-map *table-map-name* **map from** *from-value* **to** *to-value* [**default** *default-value-or-action*]

Syntax Description

table-map-name	Name of table map to be created. The name can be a maximum of 64 alphanumeric characters.
map from	Indicates that a "map from" value will be used.
from-value	The "map from" value of the packet-marking category. The value range varies according to the packet-marking category from which you want to map and convert. For more information, see the "Usage Guidelines" section below.
to	Indicates that a "map to" value will be used.
to-value	The "map to" value of the packet-marking category. The value range varies according to the packet-marking category to which you want to map and convert. For more information, see the "Usage Guidelines" section below.
default	(Optional) Indicates that a default value or action will be used.
default-value-or-action	(Optional) The default value or action to be used if a "to-from" relationship has not been explicitly configured. Default actions are "ignore" and "copy". If neither action is specified, "copy" is used.

Command Default

The **default** keyword and *default-value-or-action* argument sets the default value (or action) to be used if a value if not explicitly designated.

If you configure a table map but you do not specify a *default-value-or-action* argument for the **default**keyword, the default action is "copy".

Command Modes

Global configuration

Command History

Release	Modification
12.2(13)T	This command was introduced.

Usage Guidelines

This command allows you to create a mapping table. The mapping table, a type of conversion chart, is used for establishing a "to-from" relationship between packet-marking types or categories. For example, a mapping table can be used to establish a "to-from" relationship between the following packet-marking categories:

- Class of service (CoS)
- Precedence

- Differentiated services code point (DSCP)
- Quality of service (QoS) group
- Multiprotocol Label Switching (MPLS) experimental (EXP) imposition
- MPLS EXP topmost

When configuring the table map, you must specify the packet-marking values to be used in the conversion. The values you can enter vary by packet-marking category.

The table below lists the valid value ranges you can enter for each packet-marking category.

Table 75: Valid Value Ranges

Packet-Marking Category	Value Ranges
CoS	Specific IEEE 802.1Q number in the range from 0 to 7.
Precedence	Number in the range from 0 to 7.
DSCP	Number in the range from 0 to 63.
QoS Group	Number in the range from 0 to 99.
MPLS EXP imposition	Number in the range from 0 to 7.
MPLS EXP topmost	Number in the range from 0 to 7.

Examples

In the following example, the **table-map**(value mapping)command has been configured to create a table map called “map1”. In “map1”, two “to-from” relationships have been established and a default value has been defined. The fields for establishing the “to-from” mappings are further defined by the policy map in which the table map will be configured. (Configuring a policy map is the next logical step after creating a table map.)

For instance, a precedence or DSCP value of 0 could be mapped to a CoS value of 0, or vice versa, depending on the how the table map is configured. Any values not explicitly defined in a “to-from” relationship will be set to a default value.

```
Router(config)# table-map map1
Router(config-tablemap)# map from 0 to 0
Router(config-tablemap)# map from 2 to 1
Router(config-tablemap)# default 3
Router(config-tablemap)# end
```

Related Commands

Command	Description
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map class	Displays the configuration for the specified class of the specified policy map.

Command	Description
show policy-map interface	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.
show table-map	Displays the configuration of a specified table map or all table maps.

tcp

To enable Transmission Control Protocol (TCP) header compression within an IP Header Compression (IPHC) profile, use the **tcp** command in IPHC-profile configuration mode. To disable TCP header compression, use the **no** form of this command.

tcp
no tcp

Syntax Description

This command has no arguments or keywords.

Command Default

TCP header compression is enabled.

Command Modes

IPHC-profile configuration

Command History

Release	Modification
12.4(9)T	This command was introduced.

Usage Guidelines

Intended for Use with IPHC Profiles

The **tcp**command is intended for use as part of an IPHC profile. An IPHC profile is used to enable and configure header compression on your network. For more information about using IPHC profiles to configure header compression, see the "Header Compression" module and the "Configuring Header Compression Using IPHC Profiles" module of the *Cisco IOS Quality of Service Solutions Configuration Guide* , Release 12.4T.

Examples

The following is an example of an IPHC profile called profile1. In this example, TCP header compression has been enabled.

```
Router> enable
Router# configure terminal
Router(config)# iphc-profile profile1 van-jacobson
Router(config-iphcp)# tcp
Router(config-iphcp)# end
```

Related Commands

Command	Description
iphc-profile	Creates an IPHC profile.

tcp contexts

To set the number of contexts available for Transmission Control Protocol (TCP) header compression, use the **tcpcontexts** command in IPHC-profile configuration mode. To remove the number of previously configured contexts, use the **no** form of this command.

tcp contexts {**absolute** *number-of-contexts* | **kbps-per-context** *kbps*}
no tcp contexts

Syntax Description

absolute	Indicates that the maximum number of compressed TCP contexts will be based on a fixed (absolute) number.
number-of-contexts	Number of TCP contexts. Range is from 1 to 256.
kbps-per-context	Indicates that the maximum number of compressed TCP contexts will be based on available bandwidth.
kbps	Number of kbps to allow for each context. Range is from 1 to 100.

Command Default

The **tcpcontexts** command calculates the number of contexts on the basis of bandwidth and allocates 4 kbps per context.

Command Modes

IPHC-profile configuration

Command History

Release	Modification
12.4(9)T	This command was introduced.

Usage Guidelines

Use the **tcpcontexts** command to set the number of contexts available for TCP header compression. A context is the state that the compressor uses to compress a header and that the decompressor uses to decompress a header. The context is the uncompressed version of the last header sent and includes information used to compress and decompress the packet.

Intended for Use with IPHC Profiles

The **tcpcontexts**command is intended for use as part of an IPHC profile. An IPHC profile is used to enable and configure header compression on your network. For more information about using IPHC profiles to configure header compression, see the "Header Compression" module and the "Configuring Header Compression Using IPHC Profiles" module of the *Cisco IOS Quality of Service Solutions Configuration Guide* , Release 12.4T.

Setting the Number of Contexts as an Absolute Number

The **tcpcontexts**command allows you to set the number of contexts as an absolute number. To set the number of contexts as an absolute number, enter a number between 1 and 256.

Calculating the Number of Contexts on the Basis of Bandwidth

The **tcpcontexts**command can calculate the number of contexts on the basis of the bandwidth available on the network link to which the IPHC profile is applied.

To have the number of contexts calculated on the basis of the available bandwidth, enter the **kbps-per-context**keyword followed by a value for the *kbps* argument The command divides the available bandwidth by the kbps specified. For example, if the bandwidth of the network link is 2000 kbps, and you enter 10 for the *kbps* argument, the command calculates 200 contexts.

Examples

The following is an example of an IPHC profile called profile2. In this example, the number of TCP contexts has been set to 75.

```
Router> enable
Router# configure terminal
Router(config)# iphc-profile profile2 van-jacobson
Router(config-iphcp)# tcp contexts absolute 75
Router(config-iphcp)# end
```

Related Commands

Command	Description
iphc-profile	Creates an IPHC profile.

traffic-shape adaptive

To configure a Frame Relay subinterface to estimate the available bandwidth when backward explicit congestion notification (BECN) signals are received, use the **traffic-shapeadaptive** interface configuration command in interface configuration mode. To disregard the BECN signals and not estimate the available bandwidth, use the **no**form of this command.

traffic-shape adaptive *bit-rate*
no traffic-shape adaptive

Syntax Description

bit-rate	Lowest bit rate that traffic is shaped to, in bits per second. The default *bitrate* value is 0.

Command Default

Bandwidth is not estimated when BECN signals are received.

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command specifies the boundaries in which traffic will be shaped when BECN signals are received. You must enable traffic shaping on the interface with the **traffic-shaperate**or**traffic-shapegroup**command before you can use the **traffic-shapeadaptive** command.

The bit rate specified for the **traffic-shaperate** command is the upper limit, and the bit rate specified for the **traffic-shapeadaptive** command is the lower limit to which traffic is shaped when BECN signals are received on the interface. The rate actually shaped to will be between these two bit rates.

You should configure this command and the **traffic-shapefecn-adapt** command on both ends of the connection to ensure adaptive traffic shaping over the connection, even when traffic is flowing primarily in one direction. The **traffic-shapefecn-adapt** command configures the router to reflect forward explicit congestion notification (FECN) signals as BECN signals.

Examples

The following example configures traffic shaping on serial interface 0.1 with an upper limit of 128 kbps and a lower limit of 64 kbps. This configuration allows the link to run from 64 to 128 kbps, depending on the congestion level.

```
interface serial 0
 encapsulation-frame-relay
interface serial 0.1
 traffic-shape rate 128000
 traffic-shape adaptive 64000
 traffic-shape fecn-adapt
```

Related Commands

Command	Description
show traffic-shape	Displays the current traffic-shaping configuration.
show traffic-shape statistics	Displays the current traffic-shaping statistics.
traffic-shape fecn-adapt	Replies to messages with the FECN bit (which are set with TEST RESPONSE messages with the BECN bit set).
traffic-shape group	Enables traffic shaping based on a specific access list for outbound traffic on an interface.
traffic-shape rate	Enables traffic shaping for outbound traffic on an interface.

traffic-shape fecn-adapt

To reply to messages with the forward explicit congestion notification (FECN) bit (which are sent with TEST RESPONSE messages with the BECN bit set), use the **traffic-shapefecn-adapt** command in interface configuration mode. To stop backward explicit congestion notification (BECN) signal generation, use the **no**form of this command.

traffic-shape fecn-adapt
no traffic-shape fecn-adapt

Syntax Description

This command has no arguments or keywords.

Command Default

Traffic shaping is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Enable traffic shaping on the interface with the **traffic-shaperate**or **traffic-shapegroup** command. FECN is available only when traffic shaping is configured.

Use this command to reflect FECN bits as BECN bits. Reflecting FECN bits as BECN bits notifies the sending DTE that it is transmitting at a rate too fast for the DTE to handle. Use the **traffic-shapeadaptive** command to configure the router to adapt its transmission rate when it receives BECN signals.

You should configure this command and the **traffic-shapeadaptive** command on both ends of the connection to ensure adaptive traffic shaping over the connection, even when traffic is flowing primarily in one direction.

Examples

The following example configures traffic shaping on serial interface 0.1 with an upper limit of 128 kbps and a lower limit of 64 kbps. This configuration allows the link to run from 64 to 128 kbps, depending on the congestion level. The router reflects FECN signals as BECN signals.

```
interface serial 0
 encapsulation-frame-relay
interface serial 0.1
 traffic-shape rate 128000
 traffic-shape adaptive 64000
 traffic-shape fecn-adapt
```

Related Commands

Command	Description
show traffic-shape	Displays the current traffic-shaping configuration.

Command	Description
show traffic-shape statistics	Displays the current traffic-shaping statistics.
traffic-shape adaptive	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
traffic-shape group	Enables traffic shaping based on a specific access list for outbound traffic on an interface.
traffic-shape rate	Enables traffic shaping for outbound traffic on an interface.

traffic-shape group

To enable traffic shaping based on a specific access list for outbound traffic on an interface, use the **traffic-shapegroup** command in interface configuration mode. To disable traffic shaping on the interface for the access list, use the **no**form of this command.

traffic-shape group *access-list bit-rate* [*burst-size* [*excess-burst-size*]]
no traffic-shape group *access-list*

Syntax Description

access-list	Number of the access list that controls the packets that traffic shaping is applied to on the interface. Access list numbers can be numbers from 1 to 2699.
bit-rate	Bit rate that traffic is shaped to, in bits per second. This is the access bit rate that you contract with your service provider, or the service levels you intend to maintain. Bit rates can be numbers in the range of 8000 to 100000000 bps.
burst-size	(Optional) Sustained number of bits that can be sent per interval. On Frame Relay interfaces, this is the Committed Burst size contracted with your service provider. Valid entries are numbers in the range of 0 to 100000000.
excess-burst-size	(Optional) Maximum number of bits that can exceed the burst size in the first interval in a congestion event. On Frame Relay interfaces, this is the Excess Burst size contracted with your service provider. Valid entries are numbers in the range of 0 to 100000000. The default is equal to the *burst-size*argument.

Command Default

Disabled

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

Generic traffic shaping is not supported on ISDN and dialup interfaces. It is also not supported on nongeneric routing encapsulation tunnel interfaces. Traffic shaping is not supported with flow switching.

Traffic shaping uses queues to limit surges that can congest a network. Data is buffered and then sent into the network in regulated amounts to ensure that traffic will fit within the promised traffic envelope for the particular connection.

The**traffic-shapegroup** command allows you to specify one or more previously defined access list to shape traffic on the interface. You must specify one **traffic-shapegroup** command for each access list on the interface.

The **traffic-shapegroup** command supports both standard and extended access lists.

Use traffic shaping if you have a network with differing access rates or if you are offering a subrate service. You can configure the values according to your contract with your service provider or the service levels you intend to maintain.

An interval is calculated as follows:

- If the *burst-size* is not equal to zero, the interval is the *burst-size* divided by the *bit-rate* .
- If the *burst-size* is zero, the interval is the *excess-burst-size* divided by the *bit-rate* .

Traffic shaping is supported on all media and encapsulation types on the router. To perform traffic shaping on Frame Relay virtual circuits, you can also use the **frame-relaytraffic-shaping** command. For more information on Frame Relay Traffic Shaping, refer to the "Configuring Frame Relay" chapter in the *Cisco IOS Wide-Area Networking Configuration Guide* .

If traffic shaping is performed on a Frame Relay network with the **traffic-shaperate**command, you can also use the **traffic-shapeadaptive** command to specify the minimum bit rate to which the traffic is shaped.

Examples

The following example enables traffic that matches access list 101 to be shaped to a certain rate and traffic matching access list 102 to be shaped to another rate on the interface:

```
interface serial 1
 traffic-shape group 101 128000 16000 8000
 traffic-shape group 102 130000 10000 1000
```

Related Commands

Command	Description
access-list (IP Standard)	Defines a standard IP access list.
show traffic-shape	Displays the current traffic-shaping configuration.
show traffic-shape statistics	Displays the current traffic-shaping statistics.
traffic-shape adaptive	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
traffic-shape fecn-adapt	Replies to messages with the FECN bit (which are set with TEST RESPONSE messages with the BECN bit set).
traffic-shape rate	Enables traffic shaping for outbound traffic on an interface.

traffic-shape rate

To enable traffic shaping for outbound traffic on an interface, use the **traffic-shaperate** command in interface configuration mode. To disable traffic shaping on the interface, use the **no**form of this command.

traffic-shape rate *bit-rate* [*burst-size* [*excess-burst-size*]] [*buffer-limit*]
no traffic-shape rate

Syntax Description

bit-rate	Bit rate that traffic is shaped to, in bits per second. This is the access bit rate that you contract with your service provider, or the service levels you intend to maintain. Bit rates can be in the range of 8000 to 100000000 bps.
burst-size	(Optional) Sustained number of bits that can be sent per interval. On Frame Relay interfaces, this is the Committed Burst size contracted with your service provider. Valid entries are numbers in the range of 0 to 100000000.
excess-burst-size	(Optional) Maximum number of bits that can exceed the burst size in the first interval in a congestion event. On Frame Relay interfaces, this is the Excess Burst size contracted with your service provider. Valid entries are numbers in the range of 0 to 100000000. The default is equal to the *burst-size*argument.
buffer-limit	(Optional) Maximum buffer limit in bps. Valid entries are numbers in the range of 0 to 4096.

Command Default

Traffic shaping for outbound traffic is not enabled.

Command Modes

Interface configuration

Command History

Release	Modification
11.2	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
12.4(18e)	This command was modified to prevent simultaneous configuration of legacy traffic-shaping and MQC shaping on the same interface.

Usage Guidelines

Generic traffic shaping is not supported on ISDN and dialup interfaces. Is is also not supported on nongeneric routing encapsulation tunnel interfaces. Traffic shaping is not supported with flow switching.

Traffic shaping uses queues to limit surges that can congest a network. Data is buffered and then sent into the network in regulated amounts to ensure that traffic will fit within the promised traffic envelope for the particular connection.

Use traffic shaping if you have a network with differing access rates or if you are offering a subrate service. You can configure the values according to your contract with your service provider or the service levels you intend to maintain.

An interval is calculated as follows:

- If the *burst-size* is not equal to zero, the interval is the *burst-size* divided by the *bit-rate*.
- If the *burst-size* is zero, the interval is the *excess-burst-size* divided by the *bit-rate* .

Traffic shaping is supported on all media and encapsulation types on the router. To perform traffic shaping on Frame Relay virtual circuits, you can also use the **frame-relaytraffic-shaping** command. For more information on Frame Relay Traffic Shaping, refer to the "Configuring Frame Relay" chapter in the *Cisco IOS Wide-Area Networking Configuration Guide* .

If traffic shaping is performed on a Frame Relay network with the **traffic-shaperate**command, you can also use the **traffic-shapeadaptive** command to specify the minimum bit rate to which the traffic is shaped.

Note Beginning in Cisco IOS Release 12.4(18e), you cannot configure the traffic-shape rate and MQC shaping on the same interface at the same time. You must remove the traffic-shape rate configured on the interface before you attach the service policy. For example, if you try to enter the **service-policy** {**input** | **output**} *policy-map-name* command when the **traffic-shaperate** command is already in effect, this message is displayed: Remove traffic-shape rate configured on the interface before attaching the service-policy. If the MQC shaper is attached first, and you enter the legacy **traffic-shaperate**command on the same interface, the command is rejected and an error message is displayed.

Examples

The following example enables traffic shaping on serial interface 0 using the bandwidth required by the service provider:

```
interface serial 0
 traffic-shape rate 128000 16000 8000
```

Related Commands

Command	Description
show traffic-shape	Displays the current traffic-shaping configuration.
show traffic-shape statistics	Displays the current traffic-shaping statistics.
traffic-shape adaptive	Configures a Frame Relay subinterface to estimate the available bandwidth when BECN signals are received.
traffic-shape fecn-adapt	Replies to messages with the FECN bit (which are set with TEST RESPONSE messages with the BECN bit set).
traffic-shape group	Enables traffic shaping based on a specific access list for outbound traffic on an interface.

trust

To define a trust state for traffic that is classified through the **class** policy-map configuration command, use the **trust** command in policy-map class configuration mode. To return to the default setting, use the **no** form of this command.

trust [{**cos** | **dscp** | **precedence**}]
no trust [{**cos** | **dscp** | **precedence**}]

Syntax Description

cos	(Optional) Classifies an ingress packet by using the packet class of service (CoS) value. For an untagged packet, the port default CoS value is used.
dscp	(Optional) Classifies an ingress packet by using the packet differentiated services code point (DSCP) values (most significant 6 bits of the 8-bit service-type field). For a non-IP packet, the packet CoS value is used if the packet is tagged. If the packet is untagged, the default port CoS value is used to map CoS to DSCP.
precedence	(Optional) Classifies the precedence of the ingress packet.

Command Default

The action is not trusted.

Command Modes

Policy-map class configuration (config-pmap-c)

Command History

Release	Modification
12.2(14)SX	This command was introduced on the Catalyst 6500 series.
12.2(33)SRA	This command was implemented on the Catalyst 7600 series.

Usage Guidelines

Use this command to distinguish the quality of service (QoS) trust behavior for certain traffic from other traffic. For example, inbound traffic with certain DSCP values can be trusted. You can configure a class map to match and trust the DSCP values in the inbound traffic.

Trust values set with this command supersede trust values set with the **qostrust** interface configuration command.

If you specify the **trustcos** command, QoS uses the received or default port CoS value and the CoS-to-DSCP map to generate a DSCP value for the packet.

If you specify the **trustdscp** command, QoS uses the DSCP value from the ingress packet. For non-IP packets that are tagged, QoS uses the received CoS value; for non-IP packets that are untagged, QoS uses the default port CoS value. In either case, the DSCP value for the packet is derived from the CoS-to-DSCP map.

Examples

The following example shows how to define a port trust state to trust inbound DSCP values for traffic classified with “class1” :

```
Router# configure terminal
Router(config)# policy-map policy1
Router(config-pmap)# class class1
```

```
Router(config-pmap-c)# trust dscp
Router(config-pmap-c)# police 1000000 20000 exceed-action policed-dscp-transmit
Router(config-pmap-c)# end
Router#
```

You can verify your settings by entering the **showpolicy-map** privileged EXEC command.

Related Commands

Command	Description
class	Specifies the name of the class whose traffic policy you want to create or change.
police	Configures the Traffic Policing feature.
policy-map	Creates a policy map that can be attached to multiple ports to specify a service policy and enters policy-map configuration mode.
set	Marks IP traffic by setting a CoS, DSCP, or IP-precedence in the packet.
show policy-map	Displays information about the policy map.

tx-ring-limit

To limit the number of packets that can be used on a transmission ring on the digital subscriber line (DSL) WAN interface card (WIC) or interface, use the **tx-ring-limit** command in ATM VC configuration mode. To not limit the number of packets that can be used on a transmission ring on a DSL WIC or interface, use the **no** form of this command.

tx-ring-limit *ring-limit*
no tx-ring-limit *ring-limit*

Syntax Description

ring-limit	Specifies the maximum number of allowable packets that can be placed on the transmission ring. Valid entries can be numbers from 1 to 32767. The default value is 60. On Cisco 1700 series routers, possible values are 2 through 60. On Cisco 2600 and 3600 series routers, possible values are 3 through 60.

Command Default

The default value of the *ring-limit* argument is 60.

Command Modes

ATM VC configuration

Command History

Release	Modification
12.0(7)XE1	This command was introduced.
12.0(9)S	This command was incorporated into Cisco IOS Release 12.0(9)S.
12.1(5)T	This command was integrated into Cisco IOS Release 12.1(5)T.
12.2(2)XK	Support was added for asymmetric digital subscriber line (ADSL), and a transmission (tx) ring setting of 3 was added for latency-critical traffic for ADSL on Cisco 2600 and Cisco 3600 routers.
12.2(4)XL	Support was added for G.SHDSL.
12.2(8)YN	Enhanced quality of service (QoS) features were added for Cisco 1720, Cisco 1750, Cisco 1751, Cisco 1760, Cisco 2610XM-2651XM, Cisco 3640, Cisco 3640A, and Cisco 3660.
12.3(2)T	Support was added for the following platforms: Cisco 1721, Cisco 2610-2651, Cisco 2610XM-2651XM, Cisco 2691, Cisco 3620, and Cisco 3660.
12.3(3a)	Support was added for Packet over SONET (POS) interfaces on Cisco 7200 Series routers.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Examples

The following example configures the transmission ring limit to three packets on an ATM permanent virtual circuit (PVC) subinterface:

```
Router(config)# interface atm1/0.1 point-to-point
Router(config-subif)#

pvc 2/200
Router(config-if-atm-vc)#

tx-ring-limit 3
```

Related Commands

Command	Description
show atm vc	Displays all ATM PVCs and traffic information.

vbr-nrt

To configure the variable bit rate-nonreal time (VBR-NRT) quality of service (QoS) and specify output peak cell rate (PCR), output sustainable cell rate (SCR), and output maximum burst cell size for an ATM permanent virtual circuit (PVC), PVC range, switched virtual circuit (SVC), VC class, or VC bundle member, use the **vbr-nrt**command in the appropriate command mode. To remove the VBR-NRT parameters, use the **no** form of this command.

vbr-nrt *output-pcr output-scr output-maxburstsize* [*input-pcr*] [*input-scr*] [*input-maxburstsize*]
no vbr-nrt *output-pcr output-scr output-maxburstsize* [*input-pcr*] [*input-scr*] [*input-maxburstsize*]

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vbr-nrt *output-pcr output-scr output-maxburstsize*
no vbr-nrt *output-pcr output-scr output-maxburstsize*

Syntax Description

output-pcr	The output PCR, in kilobytes per second (kbps).
output-scr	The output SCR, in kbps.
output-maxburstsize	The output maximum burst cell size, expressed in number of cells.
input-pcr	(Optional for SVCs only) The input PCR, in kbps.
input-scr	(Optional for SVCs only) The input SCR, in kbps.
input-maxburstsize	(Optional for SVCs only) The input maximum burst cell size, expressed in number of cells.

Command Default

Unspecified bit rate (UBR) QoS at the maximum line rate of the physical interface is the default.

Command Modes

ATM PVC-in-range configuration (for an individual PVC within a PVC range)
ATM PVC range configuration (for an ATM PVC range)
ATM PVP configuration
Bundle-vc configuration (for ATM VC bundle members)
Interface-ATM-VC configuration (for an ATM PVC or SVC)
VC-class configuration (for a VC class)

Command History

Release	Modification
11.3T	This command was introduced.
12.0(3)T	This command was enhanced to support configuration of VBR-NRT QoS and specification of output PCR, output SCR, and output maximum burst cell size for ATM bundles and VC bundle members.
12.0(25)SX	This command was integrated into Cisco IOS Release 12.0(25)SX and implemented on the Cisco 10000 series router.

Release	Modification
12.1(5)T	This command was made available in PVC range and PVC-in-range configuration modes.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(31)SB2	This command was integrated into Cisco IOS Release 12.2(31)SB2.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.
Cisco IOS XE Release 2.3	This command was made available in ATM PVP configuration mode.

Usage Guidelines

Configure QoS parameters using the **ubr**, **ubr+**, or **vbr-nrt** command. The last command you enter will apply to the PVC or SVC you are configuring.

If the **vbr-nrt**command is not explicitly configured on an ATM PVC or SVC, the VC inherits the following default configuration (listed in order of precedence):

- Configuration of any QoS command (**ubr**, **ubr+**, or **vbr-nrt**) in a VC class assigned to the PVC or SVC itself.
- Configuration of any QoS command (**ubr**, **ubr+**, or **vbr-nrt**) in a VC class assigned to the PVC's or SVC's ATM subinterface.
- Configuration of any QoS command (**ubr**, **ubr+**, or **vbr-nrt**) in a VC class assigned to the PVC's or SVC's ATM main interface.
- Global default: UBR QoS at the maximum line rate of the PVC or SVC.

To use this command in VC-class configuration mode, enter the **vc-classatm** global configuration command before you enter the **vbr-nrt**command. This command has no effect if the VC class that contains the command is attached to a standalone VC, that is, if the VC is not a bundle member.

To use this command in bundle-vc configuration mode, enter the **pvc-bundle**configuration command and add the VC as a bundle member.

VCs in a VC bundle are subject to the following configuration inheritance rules (listed in order of precedence):

- VC configuration in bundle-vc mode
- Bundle configuration in bundle mode (with the effect of assigned VC-class configuration)
- Subinterface configuration in subinterface mode

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Input PCR, input SCR, and input maximum burst size (MBS) are not supported.

For Cisco IOS Release 12.2(31)SB2 and later releases, if you set the output PCR and SCR to the same value, the Cisco IOS software allows a maximum burst cell size of 1. For example:

Prior to Cisco IOS Release 12.2(31)SB2

```
interface ATM2/0/0.81801 point-to-point
```

```
 bandwidth 11760
 pvc 81/801
  vbr-nrt 11760 11760 32
  encapsulation aal5snap
  protocol pppoe
```

Cisco IOS Release 12.2(31)SB2 and Later Releases

```
interface ATM2/0/0.81801 point-to-point
 bandwidth 11760
 pvc 81/801
  vbr-nrt 11760 11760 1
  encapsulation aal5snap
  protocol pppoe
```

Examples

The following example specifies the output PCR for an ATM PVC to be 100,000 kbps, the output SCR to be 50,000 kbps, and the output MBS to be 64:

```
pvc 1/32
 vbr-nrt 100000 50000 64
```

The following example specifies the VBR-NRT output and input parameters for an ATM SVC:

```
svc atm-svc1 nsap 47.0091.81.000000.0040.0B0A.2501.ABC1.3333.3333.05
 vbr-nrt 10000 5000 32 20000 10000 64
```

Related Commands

Command	Description
abr	Selects ABR QoS and configures output peak cell rate and output minimum guaranteed cell rate for an ATM PVC or virtual circuit class.
broadcast	Configures broadcast packet duplication and transmission for an ATM VC class, PVC, SVC, or VC bundle.
bump	Configures the bumping rules for a virtual circuit class that can be assigned to a virtual circuit bundle.
bundle	Creates a bundle or modifies an existing bundle to enter bundle configuration mode.
class-int	Assigns a VC class to an ATM main interface or subinterface.
class-vc	Assigns a VC class to an ATM PVC, SVC, or VC bundle member.
encapsulation	Sets the encapsulation method used by the interface.
inarp	Configures the Inverse ARP time period for an ATM PVC, VC class, or VC bundle.
oam-bundle	Enables end-to-end F5 OAM loopback cell generation and OAM management for a virtual circuit class that can be applied to a virtual circuit bundle.
oam retry	Configures parameters related to OAM management for an ATM PVC, SVC, VC class, or VC bundle.
precedence	Configures precedence levels for a virtual circuit class that can be assigned to a virtual circuit bundle and thus applied to all virtual circuit members of that bundle.

Command	Description
protect	Configures a virtual circuit class with protected group or protected virtual circuit status for application to a virtual circuit bundle member.
protocol (ATM)	Configures a static map for an ATM PVC, SVC, VC class, or VC bundle, and enables Inverse ARP or Inverse ARP broadcasts on an ATM PVC by either configuring Inverse ARP directly on the PVC, on the VC bundle, or in a VC class (applies to IP and IPX protocols only).
pvc-bundle	Adds a PVC to a bundle as a member of the bundle and enters bundle-vc configuration mode in order to configure that PVC bundle member.
ubr	Configures UBR QoS and specifies the output peak cell rate for an ATM PVC, SVC, VC class, or VC bundle member.
ubr+	Configures UBR QoS and specifies the output peak cell rate and output minimum guaranteed cell rate for an ATM PVC, SVC, VC class, or VC bundle member.
vc-class atm	Creates a VC class for an ATM PVC, SVC, or ATM interface, and enters vc-class configuration mode.

vc-hold-queue

To configure the per-virtual circuit (VC) hold queue on an ATM adapter, use the **vc-hold-queue** command in interface configuration mode. To return to the default value of the per-VC hold queue, use the **no** form of this command.

vc-hold-queue *number-of-packets*
no vc-hold-queue *number-of-packets*

Syntax Description

number-of-packets	Specifies number of packets that can be configured for the per-VC hold queue. Number of packets can be a minimum of 5 to a maximum of 1024.

Command Default

The default value of the hold queue is set by the queueing mechanism in use.

Command Modes

Interface configuration

Command History

Release	Modification
12.1(5)T	This command was introduced.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2SX	This command is supported in the Cisco IOS Release 12.2SX train. Support in a specific 12.2SX release of this train depends on your feature set, platform, and platform hardware.

Usage Guidelines

This command can only be used on Cisco 7200 series routers and on Cisco 2600 and 3600 adapters that support per-VC queueing.

This command is configurable at the VC level only.

Examples

The following example sets the per-VC hold queue to 55:

```
interface atm2/0.1
 pvc 1/101
  vc-hold-queue 55
```

Related Commands

Command	Description
hold-queue	Specifies the hold-queue limit of an interface.
show interfaces	Displays statistics for all interfaces configured on the router or access server.
show queueing interface	Displays the queueing statistics of an interface or VC.

wrr-queue bandwidth

To allocate the bandwidth between the standard transmit queues, use the **wrr-queuebandwidth** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

wrr-queue bandwidth *weight-1 . . . weight-n*
no wrr-queue bandwidth

Syntax Description

weight-1 ... weight-n	WRR weights; valid values are fr om 1 to 255.

Command Default

The defaults are as follows:

- QoS enabled--4:255
- QoS disabled--255:1

Command Modes

Interface configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17a)SX	This command was changed to support seven queue weights.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB .
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(50)SY	Support for this command was introduced.

Usage Guidelines

Note In Cisco IOS Release 12.2(50)SY and later releases, you can enable this command only if either the **platform qos queueing-only** command or the **auto qos default** command is configured.

You can configure up to seven queue weights on Cisco 7600 series routers that are configured with a Supervisor Engine 720.

You can configure up to three queue weights on Cisco 7600 series routers that are configured with a Supervisor Engine 2.

WRR allows bandwidth sharing at the egress port. This command defines the bandwidths for egress WRR through scheduling weights. Four queues participate in the WRR unless you enable the egress-expedite queue. The expedite queue is a strict-priority queue that is used until it is empty before using one of the WRR queues.

There is no order of dependencies for the **wrr-queuebandwidth** command. If you enable the egress priority, the weight ratio is calculated with the first two and the last parameters; otherwise, all four parameters are used.

The WRR weights are used to partition the bandwidth between the queues if all queues are nonempty. For example, entering weights of 1:3 means that one queue gets 25 percent of the bandwidth and the other queue gets 75 percent as long as both queues have data.

Examples

This example shows how to allocate a three-to-one bandwidth ratio:

```
Router(config-if)# wrr-queue bandwidth 3 1
```

Related Commands

Command	Description
show queueing interface	Displays queueing information.
wrr-queue queue-limit	Sets the transmit-queue size ratio on an interface.

wrr-queue cos-map

To map CoS values to drop thresholds for a queue, use the **wrr-queuecos-map** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

wrr-queue cos-map *queue-id threshold-id cos-1 ... cos-n*
no wrr-queue cos-map

Syntax Description

queue-id	Queue number; the valid values are from 1 to 2.
threshold-id	Threshold ID; valid values are from 1 to 2.
cos-1 ... cos-n	CoS value; valid values are from 0 to 7.

Command Default

The defaults are as follows:

- Receive queue 1/drop threshold 1 and transmit queue 1/drop threshold 1: CoS 0 and 1.
- Receive queue 1/drop threshold 2 and transmit queue 1/drop threshold 2: CoS 2 and 3.
- Receive queue 2/drop threshold 3 and transmit queue 2/drop threshold 1: CoS 4 and 6.
- Receive queue 2/drop threshold 4 and transmit queue 2/drop threshold 2: CoS 7.
- On 1p1q4t, 1p2q2t, and 1p3q1t interfaces, CoS 5 is mapped to the strict-priority queues.

Command Modes

Interface configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(50)SY	Support for this command was introduced.

Usage Guidelines

Note In Cisco IOS Release 12.2(50)SY and later releases, you can enable this command only if either the **platform qos queueing-only** command or the **auto qos default** command is configured.

Enter up to eight CoS values to map to the threshold.

The threshold for 1p3q1t is always 1.

Examples

This example shows how to map the CoS values 0 and 1 to standard transmit queue 1/threshold 1:

```
Router(config-if)# wrr-queue cos-map 1 1 0 1
```

awrr-queue dscp-map

To map the hardware Differentiated Services Code Point (DSCP) values to the drop threshold values for a queue, use the **wrr-queuedscp-map** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

wrr-queue dscp-map *queue-id threshold-id dscp-1 . . . dscp-n*
no wrr-queue dscp-map *queue-id*

Syntax Description

queue-id	Queue number; valid values are from 1 to 8.
threshold-id	Threshold ID; valid values are from 1 to 4.
dscp-1 ... dscp-n	DSCP value; valid values are from 0 to 7.

Command Default

The interface is in Class of Service (CoS) mode.

Command Modes

Interface configuration

Command History

Release	Modification
12.2(18)SXF5	This command was introduced.
12.2(50)SY	Support for this command was introduced.

Usage Guidelines

Note In Cisco IOS Release 12.2(50)SY and later releases, you can enable this command only if either the **platform qos queueing-only** command or the **auto qos default** command is configured.

Note To enter the**wrr-queuedscp-map**command, the interface must be in DSCP-queuing mode. Use the **mlsqosqueue-modemode-dscp** command to set the mode to DSCP.

This command is supported on 10-Gigabit Ethernet ports only.

When mapping DSCP values, follow these guidelines:

- You can enter up to eight DSCP values that map to a queue and threshold.
- You can enter multiple commands to map additional DSCP values to the queue and threshold.
- You must enter a separate command for each queue and threshold.

Examples

This example shows how to map the hardware DSCP values to the drop threshold values for a queue:

```
wrr-queue dscp-map 8 1 0 1 2 3
```

Related Commands

show queueing interface	Displays queueing information.

wrr-queue queue-limit

To set the transmit-queue size ratio on an interface, use the **wrr-queuequeue-limit** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

wrr-queue queue-limit *queue1-weight* [*queue2-weight*] *queue3-weight*
no wrr-queue queue-limit

Syntax Description

queue1-weight	Ratio of the low-priority queue weight; valid values are from 1 and 100 percent.
queue2-weight	(Optional) Ratio of the medium-priority queue weight; valid values are from 1 and 100 percent.
queue3-weight	Ratio of the high-priority queue weight; see the "Usage Guidelines" section for valid values.

Command Default

The defaults are as follows:

- 90 percent for low priority
- 10 percent for high priority

Command Modes

Interface configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(50)SY	Support for this command was introduced.

Usage Guidelines

Note In Cisco IOS Release 12.2(50)SY and later releases, you can enable this command only if either the **platform qos queueing-only** command or the **auto qos default** command is configured.

Valid high-priority weight values are fr om 1 to 100 percent, ex cept on 1p2q1t egress LAN ports, where valid values for the high-priority queue ar e from 5 to 100 percent.

On 1p2q2t interfaces, QoS sets the strict-priority queue size equal to the high-priority queue size.

Estimate the mix of low priority-to-high priority traffic on your network (for example, 80 percent low-priority traffic and 20 percent high-priority traffic). Use the estimated percentages as queue weights.

Due to the granularity of programming the hardware, the values that are set in the hardware are close approximations of the provided values. For example, if you specify 0 percent, the actual value that is programmed is not necessarily 0.

Examples

This example shows how to configure the transmit-queue size ratio:

```
Router(config-if)# wrr-queue queue-limit 75 25
```

Related Commands

Command	Description
show queueing interface	Displays queueing information.
wrr-queue bandwidth	Allocates the bandwidth between the standard transmit queues.

wrr-queue random-detect

To enable WRED or specify the minimum and maximum WRED threshold for the specified queues on 1p2q2t and 1p3q1t interfaces, use the **wrr-queuerandom-detect** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

wrr-queue random-detect *queue-id*
wrr-queue random-detect {**max-threshold** | **min-threshold**} *queue-id threshold-percent-1 ... threshold-percent-n*
no wrr-queue random-detect *queue-id*
no wrr-queue random-detect {**max-threshold** | **min-threshold**} *queue-id*

Syntax Description

queue-id	Queue number; valid values are 1, 2, or 3.
max-threshold	Specifies the maximum WRED-drop threshold.
min-threshold	Specifies the minimum WRED-drop threshold.
threshold-percent-1 threshold-percent-n	Threshold weights; valid values are from 1 to 100 percent.

Command Default

The default is that WRED is disabled. When WRED is enabled, the defaults are as follows:

- The maximum threshold is (low) 40 percent and (high) 100 percent.
- The minimum thresholds are both set to zero.

Command Modes

Interface configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(50)SY	Support for this command was introduced.

Usage Guidelines

Note In Cisco IOS Release 12.2(50)SY and later releases, you can enable this command only if either the **platform qos queueing-only** command or the **auto qos default** command is configured.

1p2q1t and 1p3q1t interfaces have WRED-drop thresholds in their standard transmit queues. You can configure 1p3q1t transmit queues to use a WRED-drop threshold or a tail-drop threshold.

To enable WRED-drop thresholds on 1p2p1t interfaces, enter the **wrr-queuerandom-detect***queue-id* command. Use the **no** form of this command to disable WRED.

To enable WRED-drop thresholds on 1p3q1t interfaces, enter the **wrr-queuerandom-detect***queue-id* command. To return to the tail-drop threshold, enter the **nowrr-queuerandom-detect***queue-id* command.

The *queue-id* argument is 1 for the standard low-priority queue, 2 for the standard high-priority queue, and 3 for strict priority.

The threshold in the strict-priority queue is not configurable.

Each queue on a 1p2q2t interface has two thresholds; 1p3q1t interfaces have one threshold.

Each threshold has a low and a high WRED value.

WRED values are a percentage of the queue capacity.

For additional information on configuring WRED thresholds, refer to the QoS chapter in the *Cisco 7600 Series Router Cisco IOS Software Configuration Guide* .

Examples

This example shows how to configure the low-priority transmit-queue high-WRED drop thresholds:

```
Router(config-if)# wrr-queue random-detect max-threshold 1 60 100
```

Related Commands

Command	Description
show queueing interface	Displays queueing information.
wrr-queue queue-limit	Sets the transmit-queue size ratio on an interface.

wrr-queue threshold

To configure the drop-threshold percentages for the standard receive and transmit queues on 1q4t and 2q2t interfaces, use the **wrr-queuethreshold** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

wrr-queue threshold *queue-id threshold-percent-1 . . . threshold-percent-n*
no wrr-queue threshold *queue-id*

Syntax Description

queue-id	Queue number; valid values are 1 and 2.
threshold-percent-1 threshold-percent-n	Number of weights for queues 1 and 2; valid valu es are from 1 to 100 percent.

Command Default

When you enable QoS, the default values are as follows:

- **100** percent for threshold 1
- **60** percent for threshold 2

Command Modes

Interface configuration

Command History

Release	Modification
12.2(14)SX	Support for this command was introduced on the Supervisor Engine 720.
12.2(17d)SXB	Support for this command on the Supervisor Engine 2 was extended to Release 12.2(17d)SXB.
12.2(33)SRA	This command was integrated into Cisco IOS Release 12.2(33)SRA.
12.2(50)SY	Support for this command was introduced.

Usage Guidelines

Note In Cisco IOS Release 12.2(50)SY and later releases, you can enable this command only if either the **platform qos queueing-only** command or the **auto qos default** command is configured.

Use the transmit queue and threshold numbers.

The *queue-id* argument is 1 for the standard low-priority queue and 2 for the standard high-priority queue.

Always set threshold 2 to 100 percent.

Receive-queue drop thresholds are supported only on Gigabit Ethernet interfaces that are configured to trust CoS.

Examples

This example shows how to configure receive queue 1/threshold 1 and transmit queue 1/threshold 1:

```
Router(config-if)# wrr-queue threshold 1 60 100
```

Related Commands

Command	Description
show queueing interface	Displays queueing information.
wrr-queue queue-limit	Sets the transmit-queue size ratio on an interface.