Multi-Level Priority Queues

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The Multi-Level Priority Queues (MPQ) feature allows you to configure multiple priority queues for multiple traffic classes by specifying a different priority level for each of the traffic classes in a single service policy map. You can configure multiple service policy maps per router. Having multiple priority queues enables the router to place delay-sensitive traffic (for example, voice) on the outbound link before delay-insensitive traffic. As a result, high priority traffic receives the lowest latency possible on the router.

History for the Multi-Level Priority Queue Feature

Release	Modification
12.2(31)SB2	This feature was introduced and implemented on the Cisco 10000 series router for the PRE3.

Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at http://www.cisco.com/go/fn. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

Contents

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Prerequisites for Multi-Level Priority Queues

You must configure traffic classes using the **class-map** command.

Restrictions for Multi-Level Priority Queues

- You cannot configure both the **priority** command and the **priority level** command for two different classes in the same policy map.
- You cannot specify the same priority level for two different classes in the same policy map.
- You cannot configure the default queue as a priority queue at any level. For example, the router rejects the following configuration:

```
policy-map P1
 class class-default
    priority level 1
```

- You cannot configure the **bandwidth** command and multi-level priority queuing on the same class. For example, the router rejects the following configuration:

```
policy-map P1
 class C1
    priority level 1
    bandwidth 200
```

- You cannot configure the **shape** command and multi-level priority queuing on the same class. For example, the router rejects the following configuration:

```
policy-map P1
 class C1
    priority level 1
    shape average 56000
```

- To convert a one-level (flat) service policy with multiple priority queuing configured to a hierarchical multi-level priority queuing service policy, you must first detach the flat service policy from the interface using the **no service-policy** command, and then add a child policy map to it.

Information About Multi-Level Priority Queues

The Multi-Level Priority Queues (MPQ) feature allows you to configure multiple priority queues for multiple traffic classes by specifying a different priority level for each of the traffic classes in a single service policy map. You can configure multiple service policy maps per router.

Previously, Cisco IOS-based routers could have only one strict priority queue per policy map for all delay-sensitive traffic—the router associated all priority traffic with this one single priority queue. However, having only one priority queue can cause significant delay in delivering traffic, especially if the router sends high priority traffic (for example, voice) behind low priority traffic (for example, video).

Using class-based weighted fair queuing (CBWFQ) to reduce delay by heavily weighting one queue can affect the granularity of bandwidth allocations to the other queues. The MPQ feature addresses these issues and improves latency.

The **priority** command is used to specify that a class of traffic has latency requirements with respect to other classes. For multiple priority queues, you can use the **priority level** command to configure a level of priority service on a class in a policy map. Currently, the router supports two priority levels: level 1 (high) and level 2 (low). The router places traffic with a high priority level on the outbound link ahead of traffic with a low priority level. High priority packets, therefore, are not delayed behind low priority packets.

The router associates a single priority queue with all of the traffic enabled with the same priority level and services the high level priority queues until empty before servicing the next level priority queues and non-priority queues. While the router services a queue, the service rate is as fast as possible and is constrained only by the rate of the underlying link or parent node in a hierarchy. If a rate is configured and the router determines that a traffic stream has exceeded the configured rate, the router drops the exceeding packets during periods of congestion. If the link is currently not congested, the router places the exceeding packets onto the outbound link.

When configuring MPQ on different traffic classes in a policy map, you must specify different priority levels for the traffic classes. For example, configure one traffic class to have priority level 2 and another class to have level 1.

If high priority traffic is not policed appropriately, bandwidth starvation of low priority traffic can occur. Therefore, though not required, we recommend that you configure a policer for high priority traffic using the **police** command. If you configure the **police** command for priority queues, the traffic rate is policed to the police rate for each of the priority queues.

You cannot configure the **priority** command and the **priority level** command on different classes in the same policy map.

How to Configure Multi-Level Priority Queues

To configure Multi-Level Priority Queues (MPQ), perform the following configuration tasks:

- Configuring Multi-Level Priority Queues in a Policy Map, page 3 (required)
- Verifying Multi-Level Priority Queues, page 5 (optional)

Configuring Multi-Level Priority Queues in a Policy Map

Use the following procedure to configure MPQ in a policy map.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map** *policy-name*
4. **class** *class-name*
5. **priority level** *level*

6. (Optional) **police** [**cir**] *bps* [**bc**] *burst-normal* [**pir** *pir*] [**be**] *burst-excess* [**conform-action** *action*] [**exceed-action** *action*] [**violate-action** *action*]
7. (Optional) **police** [**cir**] **percent** *percent* [**bc**] *normal-burst-in-msec* [**pir** *pir*] [**be**] *excess-burst-in-msec* [**conform-action** *action*] [**exceed-action** *action*] [**violate-action** *action*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**policy-map** *policy-name* **Example:** `Router(config)# policy-map Premium`	Creates or modifies a policy map. Enters policy-map configuration mode. • *policy-name* is the name of the policy map.
Step 4	**class** *class-name* **Example:** `Router(config-pmap)# class business`	Specifies a traffic class. Enters policy-map class configuration mode. • *class-name* is the name of a previously configured traffic class.
Step 5	**priority level** *level* **Example:** `Router(config-pmap-c)# priority level 2`	Assigns priority to a traffic class at the priority level specified. • **level** *level* is the level of priority assigned to the priority class. Valid values are 1 (high priority) and 2 (low priority). Default: 1 **Note** Do not specify the same priority level for two different classes in the same policy map.

	Command or Action	Purpose

Step 6	**police** [**cir**] *bps* [**bc**] *burst-normal* [**pir** *pir*] [**be**] *burst-excess* [**conform-action** *action*] [**exceed-action** *action*] [**violate-action** *action*]
	
	Example:
	`Router(config-pmap-c)# police 8000`
	
	or
	
	police [**cir**] **percent** *percent* [**bc**] *normal-burst-in-msec* [**pir** *pir*] [**be**] *excess-burst-in-msec* [**conform-action** *action*] [**exceed-action** *action*] [**violate-action** *action*]
	
	Example:
	`Router(config-pmap-c)# police percent 20 3 ms pir 25 10 ms`
		(Optional) Configures bits per second-based traffic policing, or configures traffic policing based on a percentage of bandwidth available on the interface.
		• (Optional) **cir** is the committed information rate and is based on the interface shape rate. Indicates an average rate at which the policer meters traffic.
		• **percent** *percent* indicates to use the percentage of available bandwidth specified in *percent* to calculate the CIR. Valid values are from 1 to 100.
		• *bps* specifies the average rate in bits per second (bps). Valid values are from 8,000 to 2,488,320,000 bps.
		• (Optional) **bc** *burst-normal* is the normal or committed burst (bc) size (in bytes) used by the first token bucket for policing. Valid values are from 1 to 512,000,000. Default: 9,216
		• (Optional) **pir** *pir* is the peak information rate (PIR), expressed as a percentage. The **pir** *pir* option indicates the rate at which the second token bucket is updated. Valid values are from 1 to 100.
		• (Optional) **be** *burst-excess* is the excess burst (be) size (in bytes) used by the second token bucket for policing. Valid values are from 0 to 1,024,000,000 bytes. Default: 0
		• (Optional) **conform-action** *action* specifies the action to take on packets that conform to the rate limit. Default: transmit
		• (Optional) **exceed-action** *action* specifies the action to take on packets that exceed the rate limit (but not the PIR if two-rate policing is configured). Default: drop
		• (Optional) **violate-action** *action* specifies the action to take on packets that continuously exceed the PIR rate limit. Default: same as the **exceed-action**
		Note You must specify *burst-normal* before you specify *burst-excess*, *burst-excess* before **conform-action**, **conform-action** before **exceed-action**, and **exceed-action** before **violate-action**.

Verifying Multi-Level Priority Queues

To verify the configuration of multi-level priority queues and to display statistical information for each priority level, enter the **show policy-map interface** command in privileged EXEC mode.

For more information, see the "Configuration Examples for Multi-Level Priority Queues" section on page 6.

Configuration Examples for Multi-Level Priority Queues

This section provides the following configuration examples:

Configuring Multi-Level Priority Queues: Example

The following example shows how to configure multiple priority queues. The policy map named Business has two traffic classes: Bronze and Gold. Bronze traffic has a level 2 (low) priority while Gold traffic has level 1 (high) priority. To prevent bandwidth starvation of Bronze traffic, the Gold traffic is policed at 30 percent of the interface bandwidth.

```
enable
config terminal
policy-map Business
 class Bronze
  priority level 2
  police 1000
  exit
 class Gold
  priority level 1
  police percent 30
```

Note Although a policer is not required, we recommend that you configure policing for priority traffic to prevent bandwidth starvation of low priority traffic. When policing is configured, the traffic rate is policed to the police rate for each of the priority queues.

Unacceptable MPQ Configurations: Examples

You cannot specify both the **priority** command and the **priority level** command for two different classes in the same policy map. For example, the router does not accept the following configuration:

```
policy-map Map1
 class Bronze
  priority level 1
  exit
 class Gold
  priority rate 1000
```

You cannot specify the same priority level for two different classes in the same policy map. For example, the router does not accept the following configuration:

```
Router(config)# policy-map Map1
Router(config-pmap)# class Bronze
Router(config-pmap-c)# priority level 1
Router(config-pmap-c)# police percent 30
Router(config-pmap-c)# exit
Router(config-pmap)# class Gold
Router(config-pmap-c)# priority level 1
Router(config-pmap-c)# police 10000
```

Verifying Multi-Level Priority Queues: Example

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

```
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 2:
     0 packets, 0 bytes
```

Additional References

The following sections provide references related to Multi-Level Priority Queues.

Related Documents

Related Topic	Document Title
Bandwidth and priority queues	*Comparing the Bandwidth and Priority Commands of a QoS Service Policy*
Bandwidth starvation	*Cisco 10000 Series Router Quality of Service Configuration Guide* Prioritizing Services > Low-Latency Priority Queuing > Bandwidth Starvation
Congestion management	*QoS Congestion Management (Queuing), Introduction*
Priority queues	Configuring Priority Queueing

Standards

Standard	Title
No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature.	—

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature, and support for existing MIBs has not been modified by this feature.	To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
No new or modified RFCs are supported by this feature, and support for existing RFCs has not been modified by this feature.	—

Technical Assistance

Description	Link
The Cisco Technical Support & Documentation website contains thousands of pages of searchable technical content, including links to products, technologies, solutions, technical tips, and tools. Registered Cisco.com users can log in from this page to access even more content.	http://www.cisco.com/techsupport

Command Reference

This section documents new and modified commands only.

- priority level
- show policy-map interface

priority level

To configure multiple priority queues, use the **priority level** command in policy-map class configuration mode. To remove a previously specified priority level for a class, use the **no** form of this command.

priority level *level*

no priority level *level*

Syntax Description

level	Defines multiple levels of a strict priority service model. When you enable a traffic class with a specific level of priority service, the implication is a single priority queue associated with all traffic enabled with the specified level of priority service.
level	A range of priority levels. Valid values are from 1 (high priority) to 4 (low priority). Default: 1

Defaults

The priority level has a default level of 1.

Command Modes

Policy-map class configuration

Command History

Release	Modification
12.2(31)SB2	This command was introduced to provide multiple levels of strict priority queuing and implemented on the Cisco 10000 series router for the PRE3.

Usage Guidelines

The **bandwidth** and **priority level** commands cannot be used in the same class, within the same policy map. These commands can be used in the same policy map, however.

The **shape** and **priority level** commands cannot be used in the same class, within the same policy map. These commands can be used in the same policy map, however,

Within a policy map, you can give one or more classes priority status. The router associates a single priority queue with all of the traffic enabled with the same priority level and services the high level priority queues until empty before servicing the next level priority queues and non-priority queues.

You cannot specify the same priority level for two different classes in the same policy map.

You cannot specify the **priority** command and the **priority level** command for two different classes in the same policy map. For example, you cannot specify the **priority** *bandwidth-kbps* or **priority percent** *percentage* command and the **priority level** command for different classes.

When the **priority level** command is configured with a specific level of priority service, the **queue-limit** and **random-detect** commands can be used if only a single class at that level of priority is configured.

You cannot configure the default queue as a priority queue at any priority level.

Cisco 10000 Series Router Usage Guidelines

The Cisco 10000 series router supports two levels of priority service: level 1 (high) and level 2 (low). If you do not specify a priority level, the router uses the default level of 1. Level 1 specifies that low latency behavior must be given to the traffic class. The high-level queues are serviced until empty before the next level queues and non-priority queues.

Examples

The following example shows how to configure multi-level priority queues. In the example, the traffic class named Customer1 is given high priority (level 1) and the class named Customer2 is given level 2 priority. To prevent Customer2 traffic from becoming starved of bandwidth, Customer1 traffic is policed at 30 percent of the available bandwidth.

```
Router> enable
Router# config terminal
Router(config)# policy-map Business
Router(config-pmap)# class Customer1
Router(config-pmap-c)# priority level 1
Router(config-pmap-c)# police 30
Router(config-pmap-c)# exit
Router(config-pmap)# class Customer2
Router(config-pmap-c)# priority level 2
```

Related Commands

Command	Description
bandwidth	Specifies or modifies the bandwidth allocated for a class belonging to a policy map.
priority	Assigns priority to a class of traffic.
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. Displays statistical information for all priority levels configured.

show policy-map interface

To display the packet statistics of all classes and all priority levels configured for all service policies either on the specified interface or subinterface or on a specific permanent virtual circuit (PVC) on the interface, use the **show policy-map interface** command in privileged EXEC mode.

show policy-map interface [**type access-control**] *interface-name* [**vc** [*vpi*/] *vci*] [**dlci** *dlci*] [**input** | **output**]

ATM Shared Port Adapter

show policy-map interface atm *slot*/*subslot*/*port*[**.***subinterface*]

Syntax Description

type access-control	(Optional) Displays class maps configured to determine the exact pattern to look for in the protocol stack of interest.
interface-name	Name of the interface or subinterface whose policy configuration is to be displayed.
vc	(Optional) For ATM interfaces only, shows the policy configuration for a specified PVC. The name can be up to 16 characters long.
vpi/	(Optional) ATM network virtual path identifier (VPI) for this 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.
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 **atm vc-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 that 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.

slot	(ATM Shared Port Adapter only) Chassis slot number. Refer to the appropriate hardware manual for slot information. For SIPs, refer to the platform-specific SPA hardware installation guide or the corresponding "Identifying Slots and Subslots for SIPs, SSCs, and SPAs" topic in the platform-specific SPA software configuration guide.
/subslot	(ATM Shared Port Adapter only) Secondary slot number on a SPA interface processor (SIP) where a SPA is installed. Refer to the platform-specific SPA hardware installation guide and the corresponding "Specifying the Interface Address on a SPA" topics in the platform-specific SPA software configuration guide for subslot information.
/port	(ATM Shared Port Adapter only) Port or interface number. Refer to the appropriate hardware manual for port information. For SPAs, refer to the corresponding "Specifying the Interface Address on a SPA" 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.

Defaults

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.

ATM Shared Port Adapter

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

Command Modes

Privileged EXEC

ATM Shared Port Adapter

When used with the ATM shared port adapter, EXEC or 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.
12.1(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. It now can display burst parameters and associated actions.

Release	Modification
12.2(8)T	The 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
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(15)T	This command was modified to display Frame Relay voice-adaptive traffic-shaping information.
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.
12.3(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” in this document.
12.4(4)T	The **type access-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 its output was modified to display either legacy (nondistributed processing) QoS or hierarchical queueing framework (HQF) parameters on Frame Relay interfaces or PVCs.
12.2(31)SB2	This command was enhanced to display statistical information for each level of priority service configured and information about bandwidth-remaining ratios, and was implemented on the Cisco 10000 series router for the PRE3.

Usage Guidelines

The **show policy-map interface** command displays the packet statistics for classes and priority levels on the specified interface or the specified PVC only if a service policy has been attached to the interface or the PVC. The command output includes bandwidth-remaining ratios configured on traffic classes.

You can use the *interface-name* argument to display output for a PVC only for enhanced ATM port adapters (for example, the PA-A3) that support per-VC queueing.

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 the hierarchical queuing framework (HQF), check the queue depth field of the "(queue depth/total drops/no-buffer drops)" line in the **show policy-map interface** command output.

Examples

Example of Multiple Priority Queues on Serial Interface

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 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
```

Example of Bandwidth-Remaining Ratios

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
```

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.
priority	Specifies that low-latency behavior must be given to a traffic class and configures multiple priority queues.
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 committed information rate (CIR) and the peak information rate (PIR).
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
show interfaces	Displays statistics for all interfaces configured on a router or access server.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps. If configured, the command output includes information about ATM overhead accounting and bandwidth-remaining ratios, used to determine a queue's fair share of excess bandwidth during congestion.
show policy-map class	Displays the configuration for the specified class of the specified policy map.