

Congestion Management Commands

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clear qos counters interface

To clear QoS counters for a specified interface, use the **clear qos counters interface** command in EXEC mode.

clear qos counters interface {*type* | **all**} [**input** | **output**]

Syntax Description

type	Interface type. For more information, use the question mark (?) online help function.
all	Specifies all interfaces.
input	(Optional) Clears input QoS counters that are attached to the specified interface.
output	(Optional) Clears output QoS counters that are attached to the specified interface.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

The **clear qos counters interface** command clears all input and output QoS counters that are attached to a specified interface, unless the **input** or **output** keyword is specified. If the **input** or **output** keyword is specified, only counters attached to the interface in a specified direction are cleared.

The MIB counters are not reset with this command.

Note The **clear qos counters interface** command when executed on satellite may lead to unexpected behavior for QoS offload.

Task ID

Task ID	Operations
qos	read, write

Examples

This example shows how to clear QoS counters attached to GigabitEthernet interface 0/0/0/0:

```
RP/0/RP0/CPU0:router# clear qos counters interface GigabitEthernet 0/0/0/0
```

conform-action

To configure the action to take on packets that conform to the rate limit, use the **conform-action** command in policy map police configuration mode. To remove a conform action from the policy-map, use the **no** form of this command.

conform-action [**drop** | **transmit**]
no conform-action [**drop** | **transmit**]

Syntax Description

drop	(Optional) Drops the packet.
transmit	(Optional) Transmits the packets.

Command Default

By default, if no action is configured on a packet that conforms to the rate limit, the packet is transmitted.

Command Modes

Policy map police configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

For more information regarding the traffic policing feature, see the police rate command.

For single-rate three-color policing, if you do not configure a conform action, conforming packets are transmitted. You can configure **conform-action transmit** to state this behavior explicitly or configure **conform-action drop** to drop conforming packets.

The **conform-action** command controls the action for traffic that conforms to the configured committed information rate. It does not configure the committed information rate, **burst**, or **peak-burst** values. Configure those values with the **police rate** command.

Task ID

Task ID	Operations
qos	read, write

Examples

In this example for MPLS, traffic policing is configured to set the MPLS experimental bit for packets that conform to the rate limit:

```
RP/0/RP0/CPU0:router(config)# class-map class
RP/0/RP0/CPU0:router(config-cmap)# match mpls experimental topmost 0
RP/0/RP0/CPU0:router(config-cmap)# exit

RP/0/RP0/CPU0:router(config)# policy-map child
RP/0/RP0/CPU0:router(config-pmap)# class prec1
RP/0/RP0/CPU0:router(config-pmap-c)# police rate 100000000 peak-rate 3125000
RP/0/RP0/CPU0:router(config-pmap-c-police)# conform-action set mpls experimental imposition
 1
RP/0/RP0/CPU0:router(config-pmap-c-police)# exit
```

```
RP/0/RP0/CPU0:router(config-pmap-c)# exit
RP/0/RP0/CPU0:router(config-pmap)# exit

RP/0/RP0/CPU0:router(config)# interface HundredGigE 0/0/0/0
RP/0/RP0/CPU0:router(config-if) service-policy input policy1
```

In this example, the police rate (Committed Information Rate) is set to 5. Conforming traffic is marked with a discard-class value of 0; traffic that exceeds the police rate is marked with a discard-class value of 1.

```
RP/0/RP0/CPU0:router(config)# policy-map 1ad-mark-dei
RP/0/RP0/CPU0:router(config-pmap)# class c1
RP/0/RP0/CPU0:router(config-pmap-c)# police rate 5
RP/0/RP0/CPU0:router(config-pmap-c-police)# conform-action set discard-class 0
RP/0/RP0/CPU0:router(config-pmap-c-police)# exceed-action set discard-class 1
RP/0/RP0/CPU0:router(config-pmap-c-police)# end-policy-map
```

This example configures an explicit transmit action for conforming traffic in a flat single-rate three-color ingress policer:

```
Router(config)#policy-map policymap_1_0_0
Router(config-pmap)#class classmap_1_1_0_0
Router(config-pmap-c)#police rate 3 gbps burst 1912 kbytes peak-burst 2048 kbytes
Router(config-pmap-c-police)#conform-action transmit
Router(config-pmap-c-police)#exit
Router(config-pmap-c)#exit
Router(config-pmap)#end-policy-map
Router(config)#interface HundredGigE0/0/0/11
Router(config-if)#service-policy input policymap_1_0_0
```

decapsulate gue

To enable decapsulation of the Generic UDP Encapsulation (GUE) packets, use the **decapsulate gue** command in policy map class configuration mode. To remove a previously configured GUE decapsulation for a class, use the **no** form of this command.

decapsulate gue *version*
no decapsulate gue *version*

Syntax Description

version	Specifies the variant number that can indicate the version of the GUE protocol. Supports variant 1 only.

Command Default

No default action.

Command Modes

Policy map class configuration

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

Supports Generic UDP Decapsulation for variant 1 only. This command is supported only in Cisco NCS 5500 Series Routers.

Task ID

Task ID	Operations
qos	read, write

Examples

This example shows how to configure decapsulation of the GUE packets:

```
Router# configure
Router(config)# policy-map type pbr gue-decap
Router(config-pmap)# class type traffic gue-class
Router(config-pmap-c)# decapsulate gue
```

exceed-action

To configure the action to take on packets that exceed the rate limit, use the **exceed-action** command in policy map police configuration mode. To remove an exceed action from the policy-map, use the **no** form of this command.

exceed-action [**drop** | **set** *options* | **transmit**]
no exceed-action [**drop** | **set** *options* | **transmit**]

Syntax Description

drop	(Optional) Drops the packet.
set *options*	Configures the specified packet properties. Replace *options* with one of the following keywords or keyword arguments: • **cos** *value* —Sets the class of service value. Range is 0 to 7. • **dei** —Sets the drop eligible indicator (DEI). Can be 0 or 1. • **discard-class** *value* —Sets the discard class value. Range is 0 to 7. • **dscp** *value* —Sets the differentiated services code point (DSCP) value and sends the packet. See match dscp for a list of valid values. • **dscp** [**tunnel**] *value* —Sets the differentiated services code point (DSCP) value and sends the packet. See match dscp for a list of valid values. With the **tunnel** keyword, the DSCP is set in the outer header. • **mpls experimental** {**topmost** | **imposition**} *value* —Sets the experimental (EXP) value of the Multiprotocol Label Switching (MPLS) packet topmost label or imposed label. Range is 0 to 7. • **precedence** *precedence* —Sets the IP precedence and sends the packet. See match precedence for a list of valid values. • **precedence** [**tunnel**] *precedence* —Sets the IP precedence and sends the packet. See match precedence for a list of valid values. With the **tunnel** keyword, the precedence is set in the outer header. • **qos-group** *value* —Sets the QoS group value. Range is 0 to 63.
transmit	(Optional) Transmits the packets.

Command Default

By default, if no action is configured on a packet that exceeds the rate limit, the packet is dropped.

Command Modes

Policy map police configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

For more information regarding the traffic policing feature, see the police rate, on page 10 command.

The **set cos** action in policy maps is supported on 802.1ad packets for:

- Egress
- Layer 3 subinterfaces

For single-rate three-color policing, if you do not configure an exceed action, packets classified as exceed are dropped. Configure **exceed-action transmit** to transmit exceed traffic, or configure another supported action for the exceed result.

When **exceed-action drop** is configured, do not configure a separate **violate-action**; the router rejects that action combination. Configure an exceed action and a violate action separately only when the selected actions are supported for the policy hierarchy.

For hierarchical-child single-rate three-color policing, use color-aware operation. Do not configure **exceed-action set discard-class** marking for the hierarchical child.

Task ID

Task ID	Operations
qos	read, write

Examples

In this example for MPLS, traffic policing is configured to drop traffic that exceeds the rate limit:

```
RP/0/RP0/CPU0:router(config)# class-map class1
RP/0/RP0/CPU0:router(config-cmap)# match mpls experimental topmost 0
RP/0/RP0/CPU0:router(config-cmap)# exit

RP/0/RP0/CPU0:router(config)# policy-map policy1
RP/0/RP0/CPU0:router(config-pmap)# class class1
RP/0/RP0/CPU0:router(config-pmap-c)# police rate 250 kbps burst 50
RP/0/RP0/CPU0:router(config-pmap-c-police)# exceed-action drop
RP/0/RP0/CPU0:router(config-pmap-c-police)# exit
RP/0/RP0/CPU0:router(config-pmap-c)# exit
RP/0/RP0/CPU0:router(config-pmap)# exit

RP/0/RP0/CPU0:router(config)# interface pos 0/5/0/0
RP/0/RP0/CPU0:router(config-if) service-policy input policy1
```

In this example, the police rate is set to 5 Mbps. Conforming traffic is marked with a DEI value of 0; traffic that exceeds the police rate is marked with a DEI value of 1.

```
RP/0/RP0/CPU0:router(config)# policy-map 1ad-mark-dei
RP/0/RP0/CPU0:router(config-pmap)# class c1
RP/0/RP0/CPU0:router(config-pmap-c)# police rate 5 mbps
RP/0/RP0/CPU0:router(config-pmap-c-police)# conform-action set dei 0
RP/0/RP0/CPU0:router(config-pmap-c-police)# exceed-action set dei 1
RP/0/RP0/CPU0:router(config-pmap-c-police)# end-policy-map
```

This example configures an explicit transmit action for exceed traffic in a flat single-rate three-color ingress policer. The example uses a 3 Gbps CIR, a 1912-kilobyte committed burst, and a 2048-kilobyte excess burst. Conform traffic is transmitted by default, and violate traffic is dropped by default.

```
Router(config)#policy-map policymap_1_0_0
Router(config-pmap)#class classmap_1_1_0_0
```

```
Router(config-pmap-c)#police rate 3 gbps burst 1912 kbytes peak-burst 2048 kbytes
Router(config-pmap-c-police)#exceed-action transmit
Router(config-pmap-c-police)#exit
Router(config-pmap-c)#exit
Router(config-pmap)#end-policy-map
Router(config)#interface HundredGigE0/0/0/11
Router(config-if)#service-policy input policymap_1_0_0
```

nve

To configure network virtualization encapsulation and enter nve configuration mode, use the **nve** command in XR Config mode.

nve

This command has no keywords or arguments.

Command Default

None

Command Modes

XR Config

Command History

Release	Modification
Release 7.10.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
interface	read, write

In this example, VXLAN ingress traffic policing is configured at a rate of 4000000 kbps.

```
RP/0/RP0/CPU0:router(config)# nve
RP/0/RP0/CPU0:router(config-nve)# overlay-encap vxlan
RP/0/RP0/CPU0:router(config-vxlan)# vrf vrf1
RP/0/RP0/CPU0:router(config-nve-vxlan-vrf)# policer-rate 4000000 kbps
RP/0/RP0/CPU0:router(config-nve-vxlan-vrf)# commit
```

police rate

To configure traffic policing and enter policy map police configuration mode, use the **police rate** command in policy map class configuration mode. To remove traffic policing from the configuration, use the **no** form of this command.

police rate { *value* [*units*] | **percent** *percentage* | *rate* [*units*] | } [**peak-rate** { *value* [*units*] | **percent** *percentage* }] [**burst** *burst-size* **bytes**] [**peak-burst** *peak-burst-size* **bytes**]
no police rate { *value* [*units*] | **percent** *percentage* | *rate* [*units*] | | } [**peak-rate** { *value* [*units*] | **percent** *percentage* }]

Syntax Description

value	Specifies the committed information rate (CIR) as an absolute value. Range is from 1 to 4294967295.
units	(Optional) Specifies the unit for the absolute CIR or PIR value. Units can be: • **bps** —bits per second (default) • **gbps** —gigabits per second • **kbps** —kilobits per second • **mbps** —megabits per second
percent *percentage*	Specifies the police rate as a percentage of the CIR. Range is from 1 to 100. See the Usage Guidelines for information on how to use this keyword.
peak-rate *value*	(Optional) Specifies the peak information rate (PIR) as an absolute value in the specified *units*.
burst *burst-size* **bytes**	(Optional) Specifies the committed bucket size for a single-rate policer. The configurable range is 10,240 through 8,371,200 bytes.
peak-burst *peak-burst-size* **bytes**	(Optional) Specifies the excess bucket size for a single-rate policer. The configurable range is 10,240 through 8,371,200 bytes.

Command Default

No restrictions on the flow of data are applied to any interface.

Command Modes

Policy map class configuration

Command History

Release	Modification
Release 26.4.1	The command was enhanced to support user-configurable **burst** and **peak-burst** values for single-rate policers configured with one committed information rate.

Release	Modification
Release 26.3.1	The command was enhanced to support absolute rate values on supported bundle interfaces. The command was also enhanced to support parent policer configuration for two-level hierarchical ingress policing.
Release 7.0.12	This command was introduced.

Usage Guidelines

Policer conditional set discard-class is supported.

Policing can be applied only in the ingress direction.

For bundle interfaces on unsupported releases or platforms, configure QoS policers with percentage-based values.

Starting with Cisco IOS XR Release 26.3.1, you can configure the **police rate** command with absolute units on supported bundle main interfaces and bundle subinterfaces on supported Cisco 8000 Series routers. This support applies to the documented bundle QoS scope. Bundle aggregate mode is not supported on bundle interfaces, regardless of whether the policer uses absolute values or percentage-based values.

For bundle policers configured with an absolute value, the configured policer rate is applied per logical hardware unit. On A100, K100, and P100-based Cisco 8000 routers, the logical hardware unit is a slice. On Q200-based Cisco 8000 routers, the logical hardware unit is an interface group.

If all bundle members are in the same slice or interface group, the configured policer rate is shared by the members in that logical hardware unit. If bundle members are spread across slices or interface groups, each participating logical hardware unit can enforce the configured rate independently. The effective aggregate policing behavior can therefore be higher than the single configured value.

For bundle policers configured with an absolute value, the configured policer rate must be less than or equal to the bandwidth of the bundle member interfaces.

You can configure a one-rate, three-color (1R3C) parent policer by using **police rate** *value units*. You can configure a two-rate, three-color (2R3C) parent policer by using **police rate** *value units* **peak-rate** *value units*.

For a single-rate policer configured with only a committed information rate, use **burst** to configure the committed bucket size and **peak-burst** to configure the excess bucket size. Both buckets use the single configured CIR. The **peak-burst** keyword does not configure a peak rate.

For single-rate policers, the configurable range for both **burst** and **peak-burst** is 10,240 through 8,371,200 bytes. Burst values are programmed in hardware-specific increments.

When **burst** and **peak-burst** are not configured, the applicable default values are used. The default values are platform-dependent.

For single-rate three-color policing, conform traffic is transmitted by default, and exceed and violate traffic are dropped by default. You can configure another supported action for a result. When **exceed-action drop** is configured, do not configure a separate **violate-action**; the router rejects that action combination.

Hierarchical-child single-rate three-color policing supports color-aware operation. Do not configure **set discard-class** marking for the hierarchical child.

Use two-level hierarchical ingress policing when you need to enforce an aggregate ingress rate while preserving child policers for individual traffic classes under that aggregate. Configure the parent committed information rate (CIR) greater than or equal to the sum of the child CIRs when you want child-conform-aware behavior.

Two-level hierarchical ingress policing is supported for ingress QoS policies on supported physical main interfaces and subinterfaces, and on supported bundle main interfaces and bundle subinterfaces.

For **police rate** commands, interpret the **percent** keyword in this way:

- For a one-level policy, the **percent** keyword specifies the committed information rate (CIR), or the peak information rate (PIR) when used with **peak-rate percent**, as a percentage of the link rate. For example, the command **police rate percent 35** configures the CIR as 35 percent of the link rate.
- For a two-level policy, the **percent** keyword uses different reference rates for parent and child policers. For a parent policer, the reference rate is the interface bandwidth, or the sum of member-interface bandwidths for bundle interfaces. For child policers, the reference rate is the parent committed information rate (CIR) when the parent policer is one-rate, and the parent peak information rate (PIR) when the parent policer is two-rate.



Note Configured values take into account the Layer 2 encapsulation applied to traffic. This applies to ingress policing. For Ethernet transmission, the encapsulation is considered to be 14 bytes, whereas for IEEE 802.1Q, the encapsulation is 18 bytes.

Task ID

Task ID	Operations
qos	read, write

In this example for MPLS, traffic policing is configured with average rate at 1600 kbps for packets received on HundredGigE interface 0/1/0/0:

```
RP/0/RP0/CPU0:router(config)# class-map class1
RP/0/RP0/CPU0:router(config-cmap)# match mpls experimental topmost 0
RP/0/RP0/CPU0:router(config-cmap)# exit

RP/0/RP0/CPU0:router(config)# policy-map policy1
RP/0/RP0/CPU0:router(config-pmap)# class class1
RP/0/RP0/CPU0:router(config-pmap-c)# police rate 1600 kbps
RP/0/RP0/CPU0:router(config-pmap-c)# exit
RP/0/RP0/CPU0:router(config-pmap)# exit

RP/0/RP0/CPU0:router(config)# HundredGigE interface 0/1/0/0
RP/0/RP0/CPU0:router(config-if) service-policy input policy1
```

This example shows how to configure a flat single-rate three-color ingress policer with user-configurable burst values. The example uses a 3 Gbps CIR, a 1912-kilobyte committed burst, a 2048-kilobyte excess burst, and **exceed-action transmit**:

```
Router(config)#class-map match-all classmap_1_1_0_0
Router(config-cmap)#match precedence ipv4 1
```

```
Router(config-cmap)#exit
Router(config)#policy-map policymap_1_0_0
Router(config-pmap)#class classmap_1_1_0_0
Router(config-pmap-c)#police rate 3 gbps burst 1912 kbytes peak-burst 2048 kbytes
Router(config-pmap-c-police)#exceed-action transmit
Router(config-pmap-c-police)#exit
Router(config-pmap-c)#exit
Router(config-pmap)#end-policy-map
Router(config)#interface HundredGigE0/0/0/11
Router(config-if)#service-policy input policymap_1_0_0
```

This example shows how to configure an absolute policer rate on a bundle interface in the input direction:

```
Router(config)#class-map match-all bundle_prec3
Router(config-cmap)#match precedence ipv4 3
Router(config-cmap)#exit
Router(config)#policy-map bundle_abs_police
Router(config-pmap)#class bundle_prec3
Router(config-pmap-c)#police rate 30 mbps peak-rate 50 mbps
Router(config-pmap-c)#exit
Router(config-pmap)#end-policy-map
Router(config)#interface Bundle-Ether10
Router(config-if)#service-policy input bundle_abs_police
```

This example shows how to configure a 2R3C parent policer for two-level hierarchical ingress policing. The child policy map is attached under the parent **class-default** class, and the parent policer enforces an aggregate 16 Gbps CIR and 20 Gbps PIR:

```
Router(config)# policy-map IN_4_CHILD_TEST
Router(config-pmap)# class IN_CMAP_DSCP_56
Router(config-pmap-c)# police rate 1 gbps
Router(config-pmap-c)# exit
Router(config-pmap)# class IN_CMAP_DSCP_48
Router(config-pmap-c)# police rate 2 gbps
Router(config-pmap-c)# exit
Router(config-pmap)# class IN_CMAP_DSCP_40
Router(config-pmap-c)# police rate 6 gbps peak-rate 20 gbps
Router(config-pmap-c-police)# exceed-action transmit
Router(config-pmap-c-police)# exit
Router(config-pmap-c)# exit
Router(config-pmap)# class class-default
Router(config-pmap-c)# police rate 7 gbps peak-rate 20 gbps
Router(config-pmap-c-police)# exceed-action transmit
Router(config-pmap-c-police)# exit
Router(config-pmap-c)# exit
Router(config-pmap)# end-policy-map
Router(config)# policy-map IN_PARENT_4_CHILD_TEST
Router(config-pmap)# class class-default
Router(config-pmap-c)# service-policy IN_4_CHILD_TEST
Router(config-pmap-c)# police rate 16 gbps peak-rate 20 gbps
Router(config-pmap-c-police)# exceed-action transmit
Router(config-pmap-c-police)# exit
Router(config-pmap-c)# exit
Router(config-pmap)# end-policy-map
Router(config)# interface HundredGigE0/0/0/3
Router(config-if)# service-policy input IN_PARENT_4_CHILD_TEST
```

policy-map

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

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

policy-map [**type pbr**] *policy-name*
no policy-map [**type pbr**] *policy-name*

Syntax Description

type	(Optional) Specifies type of the service policy.
qos	(Optional) Specifies a quality-of-service (QoS) policy map.
pbr	(Optional) Specifies a policy-based routing (PBR) policy map.
policy-name	Name of the policy map.

Command Default

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

Type is QoS when not specified.

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

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

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

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

The number of classes per policy-map supported in the egress direction is 8 and ingress direction is 32.

For egress classification, in order to see statistics on all 8 CoSQs, you are recommended to configure all 8 classes including class-default.

Task ID

Task ID	Operations
qos	read, write

Examples

These examples show how to create a policy map called policy1 and configures two class policies included in that policy map. The policy map is defined to contain policy specification for class1 and the default class (called class-default) to which packets that do not satisfy configured match criteria are directed. Class1 specifies policy for traffic that matches access control list 136.

```
RP/0/RP0/CPU0:router(config)# class-map class1
RP/0/RP0/CPU0:router(config-cmap)# match access-group ipv4 136

RP/0/RP0/CPU0:router(config)# policy-map policy1
RP/0/RP0/CPU0:router(config-pmap)# class class1
RP/0/RP0/CPU0:router(config-pmap-c)# set precedence 3
RP/0/RP0/CPU0:router(config-pmap-c)# exit
```

priority (QoS)

To assign priority to a traffic class based on the amount of available bandwidth within a traffic policy, use the **priority** command in policy map class configuration mode. To remove a previously specified priority for a class, use the **no** form of this command.

priority level *priority-level*
no priority

Syntax Description

level *priority-level*	Sets multiple levels of priority to a traffic class. Level 1 through 7. Default level is 1. Level 1 traffic has higher priority.

Command Default

No default action.

Command Modes

Policy map class configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

The **priority** command configures low-latency queueing (LLQ), providing strict priority queueing (PQ). Strict PQ allows delay-sensitive data such as voice to be dequeued and sent before packets in other queues are dequeued. The **priority** command is supported only in the egress direction. To limit the priority traffic use the **shape average** command.

Classification policy determines traffic class and traffic class maps to priority.

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

Task ID

Task ID	Operations
qos	read, write

Examples

This example shows how to configure priority queuing for the policy map named policy1 :

```
RP/0/RP0/CPU0:router(config)# policy-map policy1
RP/0/RP0/CPU0:router(config-pmap)# class class1
RP/0/RP0/CPU0:router(config-pmap-c)# priority level 1
```

show policy-map interface

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

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

Syntax Description

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

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 26.3.1	The command output was enhanced to display parent policer statistics and child policer statistics.
Release 7.0.12	This command was introduced.

Usage Guidelines

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

Starting with Cisco IOS XR Release 26.3.1 , use the **show policy-map interface** *interface-path-id* **input** command to verify parent and child policer statistics for two-level hierarchical ingress policing. The parent class statistics show aggregate parent policer behavior. Child policy class statistics show per-class child policer behavior.

For child classes in a two-level hierarchical ingress policing policy on Cisco 8000 Series routers, the **Policed and dropped(parent policer)** field is not supported and always displays **0/0**.

Child policer statistics can be inaccurate in specific scenarios because of parent policing behavior. The configured policer behavior and throughput are as expected, but review parent policer statistics and child policer statistics together when you verify policy behavior. For details, see *Guidelines and restrictions for two-level hierarchical ingress policing* in the *Modular QoS Configuration Guide for Cisco 8000 Series Routers*.

For routers that support two-level hierarchical policing, when a one-rate three-color (1R3C) or two-rate three-color (2R3C) policer is configured with **exceed-action** drop, the **show policy-map interface** output provides conform and exceed statistics only. The violate statistics display as zero, and all non-conforming packets are counted as exceed packets. In this case, the statistics appear similar to a one-rate two-color (1R2C) policer configured with **exceed-action** drop.

For a single-rate three-color policy configured with **exceed-action transmit**, review the **Policed(conform)**, **Policed(exceed)**, **Policed(violate)**, **Transmitted**, and **Total Dropped** counters together. The counter values depend on the traffic observed during the measurement interval.

Task ID

Task ID	Operations
qos	read

Examples

This sample output shows how to display policy statistics information for all classes on the **interface hundredGigE 0/6/0/18** that are in the input direction:

```
RP/0/RP0/CPU0:router# show policy-map interface hundredGigE 0/6/0/18 input

Mon Nov 30 17:10:29.065 UTC

HundredGigE0/6/0/18 input: 32-classmaps

Class exp-classifier-af1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :              53186/54090162             3769
    Transmitted         :              53186/54090162             3769
    Total Dropped       :                  0/0                    0
Class exp-classifier-af2
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :              54279/55201743             7483
    Transmitted         :              54279/55201743             7483
    Total Dropped       :                  0/0                    0
Class exp-classifier-af3
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :              56710/57674070             7898
    Transmitted         :              56710/57674070             7898
    Total Dropped       :                  0/0                    0
Class exp-classifier-af4
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :             110405/112281885            11584
    Transmitted         :             110405/112281885            11584
    Total Dropped       :                  0/0                    0
Class exp-classifier-be1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :              52753/53649801             3756
    Transmitted         :              52753/53649801             3756
    Total Dropped       :                  0/0                    0
Class inet4-classifier-af1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :           38796901/14695393569          1580677
    Transmitted         :           38796901/14695393569          1580677
```

```
    Total Dropped       :                0/0                    0
Class inet4-classifier-af2
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          38850080/14715510334          1589124
    Transmitted         :          38850080/14715510334          1589124
    Total Dropped       :                0/0                    0
Class inet4-classifier-af3
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          38757080/14679867944          1580632
    Transmitted         :          38757080/14679867944          1580632
    Total Dropped       :                0/0                    0
Class inet4-classifier-af4
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          77228177/29251757855          3137985
    Transmitted         :          77228177/29251757855          3137985
    Total Dropped       :                0/0                    0
Class inet4-classifier-be1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          38921394/14742645566          1588557
    Transmitted         :          38921394/14742645566          1588557
    Total Dropped       :                0/0                    0
Class inet4-classifier-nc1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          77088116/29199136824          3144053
    Transmitted         :          77088116/29199136824          3144053
    Total Dropped       :                0/0                    0
Class inet6-classifier-af1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          21953707/22326920019          1237979
    Transmitted         :          21953707/22326920019          1237979
    Total Dropped       :                0/0                    0
Class inet6-classifier-af2
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          21701336/22070258712          1208262
    Transmitted         :          21701336/22070258712          1208262
    Total Dropped       :                0/0                    0
Class inet6-classifier-af3
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          21715705/22084871985          1210060
    Transmitted         :          21715705/22084871985          1210060
    Total Dropped       :                0/0                    0
Class inet6-classifier-af4
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          43418446/44156559582          2413245
    Transmitted         :          43418446/44156559582          2413245
    Total Dropped       :                0/0                    0
Class inet6-classifier-be1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          21958845/22332119845          1236894
    Transmitted         :          21958845/22332119845          1236894
    Total Dropped       :                0/0                    0
Class inet6-classifier-nc1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          43428930/44167221810          2415137
    Transmitted         :          43428930/44167221810          2415137
    Total Dropped       :                0/0                    0
Class inet-classifier-ipv6-af1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                0/0                    0
    Transmitted         :                0/0                    0
    Total Dropped       :                0/0                    0
Class inet-classifier-ipv6-af2
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                0/0                    0
```

```
    Transmitted         :                  0/0                    0
    Total Dropped       :                  0/0                    0
Class inet-classifier-ipv6-af3
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                  0/0                    0
    Transmitted         :                  0/0                    0
    Total Dropped       :                  0/0                    0
Class inet-classifier-ipv6-af4
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                  0/0                    0
    Transmitted         :                  0/0                    0
    Total Dropped       :                  0/0                    0
Class inet-classifier-ipv6-af5
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                  0/0                    0
    Transmitted         :                  0/0                    0
    Total Dropped       :                  0/0                    0
Class inet-classifier-ipv6-af6
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                  0/0                    0
    Transmitted         :                  0/0                    0
    Total Dropped       :                  0/0                    0
Class inet-management-classifier-af4
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                  0/0                    0
    Transmitted         :                  0/0                    0
    Total Dropped       :                  0/0                    0
Class exp-classifier-nc1
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :             57115/58085955             7953
    Transmitted         :             57115/58085955             7953
    Total Dropped       :                  0/0                    0
  Policing statistics                (packets/bytes)     (rate - kbps)
    Policed(conform)    :             57115/58085955             7953
    Policed(exceed)     :                  0/0                    0
    Policed(violate)    :                  0/0                    0
    Policed and dropped :                  0/0
Class class-default
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                  0/0                    0
    Transmitted         :                  0/0                    0
    Total Dropped       :                  0/0                    0
```

Starting with Cisco IOS XR Release 26.3.1 , this sample output shows policy statistics for a two-level hierarchical ingress policing policy:

```
Router#<userinput>show policy-map interface HundredGigE0/0/0/3 input</userinput>

HundredGigE0/0/0/3 input: IN_PARENT_4_CHILD_TEST

Class class-default
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          6036378230/6036378230000        98038979
    Transmitted         :          1218109401/1218109401000        19768818
    Total Dropped       :          4818268829/4818268829000        78270161
  Policing statistics                (packets/bytes)     (rate - kbps)
    Policed(conform)    :           973485880/973485880000         15798604
    Policed(exceed)     :           244623521/244623521000         3970214
    Policed(violate)    :          4818268829/4818268829000        78270161
    Policed and dropped :          4818268829/4818268829000

  Policy IN_4_CHILD_TEST Class IN_CMAP_DSCP_56
    Classification statistics          (packets/bytes)     (rate - kbps)
      Matched             :          1509094690/1509094690000        24509737
```

```
    Transmitted         :            60817814/60817814000          987093
    Total Dropped       :          1448276876/1448276876000        23522644
  Policing statistics                (packets/bytes)     (rate - kbps)
    Policed(conform)    :            60817814/60817814000          987093
    Policed(exceed)     :          1448276876/1448276876000        23522644
    Policed(violate)    :                   0/0                    0
    Policed and dropped :          1448276876/1448276876000
    Policed and dropped(parent policer)  : 0/0

Policy IN_4_CHILD_TEST Class IN_CMAP_DSCP_48
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          1509094800/1509094800000        24509747
    Transmitted         :           121696005/121696005000         1975211
    Total Dropped       :          1387398795/1387398795000        22534536
  Policing statistics                (packets/bytes)     (rate - kbps)
    Policed(conform)    :           121696005/121696005000         1975211
    Policed(exceed)     :          1387398795/1387398795000        22534536
    Policed(violate)    :                   0/0                    0
    Policed and dropped :          1387398795/1387398795000
    Policed and dropped(parent policer)  : 0/0

Policy IN_4_CHILD_TEST Class IN_CMAP_DSCP_40
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          1509094905/1509094905000        24509746
    Transmitted         :          1509094905/1509094905000        24509746
    Total Dropped       :                   0/0                    0
  Policing statistics                (packets/bytes)     (rate - kbps)
    Policed(conform)    :           365170865/365170865000         5926650
    Policed(exceed)     :          1143924040/1143924040000        18583096
    Policed(violate)    :                   0/0                    0
    Policed and dropped :                   0/0
    Policed and dropped(parent policer)  : 0/0

Policy IN_4_CHILD_TEST Class class-default
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          1509095016/1509095016000        24509742
    Transmitted         :          1509095016/1509095016000        24509742
    Total Dropped       :                   0/0                    0
  Policing statistics                (packets/bytes)     (rate - kbps)
    Policed(conform)    :           425801627/425801627000         6909638
    Policed(exceed)     :          1083293389/1083293389000        17600104
    Policed(violate)    :                   0/0                    0
    Policed and dropped :                   0/0
    Policed and dropped(parent policer)  : 0/0
```

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

```
RP/0/RP0/CPU0:router# show policy-map interface hundredGigE 0/6/0/0 output

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

Class tc2
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          3080542734/394309469952         4808049
    Transmitted         :          3080542734/394309469952         4808049
    Total Dropped       :                   0/0                    0
  Queueing statistics
    Queue ID                              : 1026
    Taildropped(packets/bytes)            : 0/0
Class tc1
  Classification statistics          (packets/bytes)     (rate - kbps)
```

```
    Matched             :          1562482674/199997782272         2883014
    Transmitted         :          1434402692/183603544576         2646687
    Total Dropped       :           128079982/16394237696          236327
  Queueing statistics
    Queue ID                             : 1025
    Taildropped(packets/bytes)           : 128079982/16394237696

Class class-default
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :                  0/0                   0
    Transmitted         :                  0/0                   0
    Total Dropped       :                  0/0                   0
  Queueing statistics
    Queue ID                             : 1024
    Taildropped(packets/bytes)           : 0/0
Policy Bag Stats time: 1557231345776  [Local Time: 05/07/19 12:15:45.776]
```

Examples

This sample output shows the flat single-rate three-color policy configured with a 3 Gbps committed rate, a 1912-kilobyte committed burst, a 2048-kilobyte excess burst, and **exceed-action transmit**:

```
Router#show policy-map type qos interface HundredGigE0/0/0/11 input
pmap-name policymap_1_0_
```

```
HundredGigE0/0/0/11 input: policymap_1_0_0

Class classmap_1_1_0_0
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          403928236/146619268908         6633335
    Transmitted         :          185690484/64218573816          2905128
    Total Dropped       :          218237752/82400695092          3728207
  Policing statistics                (packets/bytes)     (rate - kbps)
    Policed(conform)    :          185685147/64216525040          2905128
    Policed(exceed)     :              5337/2048776                     0
    Policed(violate)    :          218237752/82400695092          3728207
    Policed and dropped :          218237752/82400695092
```

This sample output shows the parent and child statistics for a hierarchical-child single-rate three-color policy. The parent uses a 28 Gbps committed rate, and the child uses a 1750 Mbps committed rate with configured burst values of 1912 and 2048 kbytes.

```
Router#show policy-map type qos interface HundredGigE0/0/0/11 input pmap-name policymap_1_0_0

HundredGigE0/0/0/11 input: policymap_1_0_0

Class class-default
  Classification statistics          (packets/bytes)     (rate - kbps)
    Matched             :          449370686/163115360992          6662247
    Transmitted         :          121204075/41687936500           1701917
    Total Dropped       :          328166611/121427424492          4960330
  Policing statistics                (packets/bytes)     (rate - kbps)
    Policed(conform)    :          121176543/41677525628           1701917
    Policed(exceed)     :             27532/10410872                     0
    Policed(violate)    :          328166611/121427424492          4960330
    Policed and dropped :          328166611/121427424492

  Policy policymap_1.0_0_0 Class classmap_1.0_1_0_0
    Classification statistics          (packets/bytes)     (rate - kbps)
      Matched             :          449370686/163115360992          6662247
      Transmitted         :          121204075/41687936500           1701917
      Total Dropped       :          328166611/121427424492          4960330
    Policing statistics                (packets/bytes)     (rate - kbps)
      Policed(conform)    :          121176543/41677525628           1701917
```

```
Policed(exceed)     :               27532/10410872                  0
Policed(violate)    :           328166611/121427424492          4960330
Policed and dropped :           328166611/121427424492
Policed and dropped(parent policer) : 0/0
```

show policy-map targets

To display information about the interfaces on which policy maps are applied, use the **show policy-map targets** command in XR EXEC mode.

show policy-map targets [**location** *node-id* | **pmap-name** *name* | **type qos** [**location** *node-id* | **pmap-name** *name*]]

Syntax Description

location *node-id*	(Optional) Displays information about the interfaces on which policy maps are applied for the specified location. The *node-id* argument is entered in the *rack/slot/module* notation.
pmap-name *name*	(Optional) Displays information about the interfaces on which the specified policy map is applied.
type qos	(Optional) Displays information about the interfaces on which QoS policy maps are applied. This is the default type.

Command Default

The default QoS policy type is QoS.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

For a short period of time while a QoS policy is being modified, there might not be any policy in effect on the interfaces in which the modified policy is used. For this reason, modify QoS policies that affect the fewest number of interfaces at a time. Use the **show policy-map targets** command to identify the number of interfaces that will be affected during policy map modification.

Task ID

Task ID	Operations
qos	read

Examples

In this example, the TenGigabit Ethernet interface 4/0/10/0 has one policy map attached as a main policy. Outgoing traffic on this interface will be affected if the policy is modified:

```
RP/0/RP0/CPU0:router# show policy-map targets

Wed Dec  2 22:35:13.993 UTC
1) Policymap: test-qlimit    Type: qos
     Targets (applied as main policy):
       TenGigE0/4/0/10/0 output
       TenGigE0/6/0/30/1 output
     Total targets: 2

     Targets (applied as child policy):
     Total targets: 0
```

```
2) Policymap: test-priority    Type: qos
     Targets (applied as main policy):
       HundredGigE0/6/0/35 output
       HundredGigE0/6/0/34 output
       HundredGigE0/6/0/33 output
       HundredGigE0/6/0/32 output
       HundredGigE0/6/0/31 output
       HundredGigE0/6/0/29 output
       HundredGigE0/6/0/28 output
       HundredGigE0/6/0/27 output
       HundredGigE0/6/0/25 output
       HundredGigE0/6/0/24 output
       HundredGigE0/6/0/23 output
       HundredGigE0/6/0/22 output
       HundredGigE0/6/0/21 output
       HundredGigE0/6/0/20 output
       HundredGigE0/6/0/19 output
       HundredGigE0/6/0/1 output
       HundredGigE0/6/0/3 output
       HundredGigE0/6/0/4 output
       HundredGigE0/6/0/5 output
       HundredGigE0/6/0/6 output
       HundredGigE0/6/0/7 output
       HundredGigE0/6/0/8 output
       HundredGigE0/6/0/9 output
       HundredGigE0/6/0/10 output
       HundredGigE0/6/0/11 output
       HundredGigE0/6/0/13 output
       HundredGigE0/6/0/14 output
       HundredGigE0/6/0/15 output
       HundredGigE0/6/0/16 output
       HundredGigE0/6/0/17 output
     Total targets: 30

     Targets (applied as child policy):
     Total targets: 0
```

show qos inconsistency

To display inconsistency information for the QoS policy on an interface, use the **show qos inconsistency** command in XR EXEC mode.

show qos inconsistency { **detail** *warning-type* { **file** *filename* | **location** *node-id* } | **summary** { **file** *filename* | **location** *node-id* } }

Syntax Description

detail	Displays interface and policy name details of the inconsistency.
warning-type	Selects the warning types to display: • 0—All warning types • 1—ANCP - No shaper at top policy map • 2—ANCP - Multiple classes at top policy map • 3—ANCP - Downstream rate less than shaper rate • 4—ANCP - Downstream rate more than port speed • 5—ANCP - Policy resolution failure • 6—ANCP - Traffic manager program failure • 7—Port speed - Policy resolution failure • 8—Port speed - Traffic manager program failure • 9—Bundle member addition failure • 10—Interface state not matching system configuration
file *filename*	Specify a file name, such as disk0:tmp.log or bootflash:.
location *node-id*	Displays detailed QoS information for the designated node. The *node-id* argument is entered in the rack/slot/module notation.
summary	Displays summary counts of QoS inconsistency warnings.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 3.7.2	This command was introduced.
Release 4.3.0	The command was supported in dynamic template configuration mode in BNG.

Task ID

Task ID	Operations
qos	read

Examples

This example provides detail about QoS policy inconsistency, for all warning types:

```
RP/0/RP0/CPU0:router# show qos inconsistency detail 0 location 0/7/CPU0

Interface Lists with QoS Inconsistency Warning:
=======================================================

                     Node 0/7/CPU0
-------------------------------------------------------

Interfaces with QoS Inconsistency:  ANCP - No Shaper at top policymap
=========================================================================
Interface                  Direction  Policy Name             SPI Name
-------------------------------------------------------------------------
GigabitEthernet0/7/0/1.5     output    parent-none

Interfaces with QoS Inconsistency:  ANCP - Downstream Rate less than Shaper Rate
=========================================================================
Interface                  Direction  Policy Name             SPI Name
-------------------------------------------------------------------------
GigabitEthernet0/7/0/1       output    parent                   SPI1
GigabitEthernet0/7/0/1.2     output    parent
GigabitEthernet0/7/0/1       output    normal-policy-name      normal-spi-name
```

This example displays summary counts of inconsistency warnings:

```
RP/0/RP0/CPU0:router#
RP/0/RP0/CPU0:router# show qos inconsistency summary location 0/7/CPU0

Summary Counts of QoS Inconsistency Warnings:
=======================================================


                     Node 0/7/CPU0

   Inconsistency Warning Type                Count
-------------------------------------------------------
ANCP - No Shaper at top policymap:              1
ANCP - Downstream Rate less than Shaper Rate:    4
```

show qos interface

To display QoS information for a specific interface, use the **show qos interface** command in the XR EXEC mode.

show qos interface *interface-name* {**input** | **output**}[**location** *node-id*]

Syntax Description

interface-name	Interface name. For more information about the syntax for the router, use the question mark (?) online help function. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router.
input	Displays the specified policy map to the input interface.
output	Displays the specified policy map to the output interface.
location *node-id*	(Optional) Displays detailed QoS information for the designated node. The *node-id* argument is entered in the rack/slot/module notation.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 26.4.1	The command output was enhanced to display the programmed committed and excess burst values for single-rate three-color ingress policers configured with user-defined burst values.
Release 26.3.1	The command output was enhanced to display configured bandwidth remaining percent values in the **Inverse Weight / Weight** field for supported egress class-based queuing policies. The command output was also enhanced to display Level 1 parent policer and Level 2 child policer configuration for two-level hierarchical ingress policing.

Release	Modification
Release 25.2.1	The accuracy of the displayed values for Queue Max. BW and guaranteed service rates for the main interface was enhanced to reflect the actual hardware-programmed values from the NPU, rather than the configured values.
Release 7.0.12	This command was introduced.

Usage Guidelines

The **show qos interface** command displays configuration for all classes in the service policy that is attached to an interface.

Use this command to check the actual values programmed in the hardware from the action keywords in the **police rate** command.

Starting with Cisco IOS XR Release 26.3.1 , use the **show qos interface** *interface-name* **input** command to verify the programmed parent and child policer configuration for two-level hierarchical ingress policing. The parent policer appears as **Level1 Class = class-default**. The child policers appear as indented **Level2 Class** entries under the parent class.

For a 1R3C parent policer, the parent Level1 class output displays the committed rate and does not display a peak rate.

For a 1R3C policer with user-configured bucket values, the output displays the committed bucket as **Policer conform burst** and the excess bucket as **Policer exceed burst**. For a 2R3C parent policer, the parent Level1 class output displays both the committed rate and the peak rate.

Starting with Cisco IOS XR Release 26.3.1, use the **show qos interface** *interface-name* **output** command to verify configured bandwidth remaining percent values for supported egress class-based queuing policies. The configured percentage appears in parentheses in the **Inverse Weight / Weight** field. You do not need to calculate the internal inverse-weight value to verify the configured percentage.

For classes configured with **bandwidth remaining percent**, the command output displays a low-priority queue and the configured percentage in parentheses. Priority classes appear as priority queues, such as **HP1 queue**, and do not display a bandwidth remaining percent value. Classes without bandwidth remaining configuration can display **BWR not configured**.

Task ID

Task ID	Operations
qos	read

Examples

This sample output shows the QoS information on a **interface hundredGigE 0/6/0/18** that are in the input direction:

```
RP/0/RP0/CPU0:router# show qos interface hundredGigE 0/6/0/18 input

Wed Dec  2 22:34:20.241 UTC
NOTE:- Configured values are displayed within parentheses
Interface HundredGigE0/6/0/18 ifh 0x3000210  -- input policy
```

```
NPU Id:                        3
Total number of classes:       28
Interface Bandwidth:           100000000 kbps
Accounting Type:               Layer1 (Include Layer 1 encapsulation and above)
------------------------------------------------------------------------------
Level1 Class                             =   exp-classifier-af1
New topmost exp                          =   7


Policer not configured for this class

Level1 Class                             =   exp-classifier-af2
New topmost exp                          =   6

Policer not configured for this class

Level1 Class                             =   exp-classifier-af3
New topmost exp                          =   5

Policer not configured for this class

Level1 Class                             =   exp-classifier-af4
New topmost exp                          =   3

Policer not configured for this class

Level1 Class                             =   exp-classifier-be1
New topmost exp                          =   4

Policer not configured for this class

Level1 Class                             =   inet4-classifier-af1
New qos group                            =   1


Policer not configured for this class

Level1 Class                             =   inet4-classifier-af2
New qos group                            =   2

Policer not configured for this class

Level1 Class                             =   inet4-classifier-af3
New qos group                            =   3

Policer not configured for this class

Level1 Class                             =   inet4-classifier-af4
New qos group                            =   4

Policer not configured for this class

Level1 Class                             =   inet4-classifier-be1
New qos group                            =   5

Policer not configured for this class

Level1 Class                             =   inet4-classifier-nc1
New qos group                            =   6


Policer not configured for this class

Level1 Class                             =   inet6-classifier-af1
```

```
New qos group                           =   1


Policer not configured for this class

Level1 Class                            =   inet6-classifier-af2
New qos group                           =   2

Policer not configured for this class

Level1 Class                            =   inet6-classifier-af3
New qos group                           =   3


Policer not configured for this class

Level1 Class                            =   inet6-classifier-af4
New qos group                           =   4

Policer not configured for this class

Level1 Class                            =   inet6-classifier-be1
New qos group                           =   5

Policer not configured for this class

Level1 Class                            =   inet6-classifier-nc1
New qos group                           =   6

Policer not configured for this class

Level1 Class                            =   inet-classifier-ipv6-af1
New qos group                           =   1

Policer not configured for this class

Level1 Class                            =   inet-classifier-ipv6-af2
New qos group                           =   2


Policer not configured for this class

Level1 Class                            =   inet-classifier-ipv6-af3
New qos group                           =   3

Policer not configured for this class

Level1 Class                            =   inet-classifier-ipv6-af4
New qos group                           =   4


Policer not configured for this class

Level1 Class                            =   inet-classifier-ipv6-af5
New qos group                           =   5

Policer not configured for this class

Level1 Class                            =   inet-classifier-ipv6-af6
New qos group                           =   6

Policer not configured for this class

Level1 Class                            =   inet-management-classifier-af4
```

```
New qos group                           =   7

Policer not configured for this class

Level1 Class                            =   exp-classifier-nc1
New qos group                           =   6
New topmost exp                         =   2

Policer not configured for this class

Level1 Class                            =   inet-management-classifier-nc1
New prec                                =   6
New qos group                           =   5

Policer not configured for this class

Level1 Class                            =   inet6-management-classifier-nc1
New qos group                           =   4


Policer not configured for this class

Level1 Class                            =   class-default

Policer not configured for this class
```

This is the sample output shows the QoS information on an `interface hundredGigE 0/0/0/30` that are in the output direction:

```
RP/0/RP0/CPU0:ios#
RP/0/RP0/CPU0:ios#show qos interface hundredGigE 0/0/0/30 output
NOTE:- Configured values are displayed within parentheses
Interface HundredGigE0/0/0/30 ifh 0xf000210  -- output policy
NPU Id:                        0
Total number of classes:       2
Interface Bandwidth:           100000000 kbps
Policy Name:                   egress_pol_dql
VOQ Base:                      464
Accounting Type:               Layer1 (Include Layer 1 encapsulation and above)
VOQ Mode:                      8
Shared Counter Mode:           1
------------------------------------------------------------------------------
Level1 Class (HP1)                      =   tc7
Egressq Queue ID                        =   471 (HP1 queue)
Queue Max. BW.                          =   no max (default)
Discard Class 1 Threshold               =   25165824 bytes / 2 ms (50 mbytes)
Discard Class 0 Threshold               =   75497472 bytes / 5 ms (100 mbytes)
WRED not configured for this class

Level1 Class                            =   class-default
Egressq Queue ID                        =   464 (Default LP queue)
Queue Max. BW.                          =   no max (default)
Inverse Weight / Weight                 =   1 / (1)
TailDrop Threshold                      =   749568 bytes / 6 ms (default)
WRED not configured for this class
```

Starting IOS XR Release 25.2.1, you can view accurate guaranteed service rates and Queue Max. BW for the main interface, which reflects the actual hardware-programmed values from the NPU, rather than the configured values.

```
router# show qos interface HundredGigE 0/0/0/30 output
Thu Sep  5 10:02:14.217 UTC
NOTE:- Configured values are displayed within parentheses
Interface HundredGigE0/0/0/30 ifh 0xf000210  -- output policy
```

```
NPU Id:                        0
Total number of classes:       8
Interface Bandwidth:           100000000 kbps
Policy Name:                   egress_pol_dql
VOQ Base:                      464
Accounting Type:               Layer1 (Include Layer 1 encapsulation and above)
VOQ Mode:                      8
Shared Counter Mode:           1
------------------------------------------------
Level1 Class                             =   class-default
Queue Max. BW.                           =   62019301 kbps (62 %)
Inverse Weight / Weight                  =   0 / (BWR not configured)

   Level2 Class (HP1)                        =   tc7
   Egressq Queue ID                          =   839 (HP1 queue)
   Queue Max. BW.                            =   10806250 kbps (11 gbits/sec)
   Guaranteed service rate                   =   10806250 kbps
   TailDrop Threshold                        =   8245248 bytes / 6 ms (default)
   WRED not configured for this class

   Level2 Class (HP2)                        =   tc6
   Egressq Queue ID                          =   838 (HP2 queue)
   Queue Max. BW.                            =   21612500 kbps (22 gbits/sec)
   Guaranteed service rate                   =   21612500 kbps
   TailDrop Threshold                        =   16496640 bytes / 6 ms (default)
   WRED not configured for this class

   Level2 Class                              =   tc5
   Egressq Queue ID                          =   837 (LP queue)
   Queue Max. BW.                            =   54599999 kbps (55 gbits/sec)
   Inverse Weight / Weight                   =   1 / (63)
   Guaranteed service rate                   =   14227913 kbps
   TailDrop Threshold                        =   9578496 bytes / 6 ms (default)
   WRED not configured for this class

   Level2 Class                              =   tc4
   Egressq Queue ID                          =   836 (LP queue)
   Queue Max. BW.                            =   no max (default)
   Inverse Weight / Weight                   =   2 / (40)
   Guaranteed service rate                   =   7113956 kbps
   TailDrop Threshold                        =   6082560 bytes / 6 ms (default)
   WRED not configured for this class

   Level2 Class                              =   tc3
   Egressq Queue ID                          =   835 (LP queue)
   Queue Max. BW.                            =   no max (default)
   Inverse Weight / Weight                   =   3 / (25)
   Guaranteed service rate                   =   4742637 kbps
   TailDrop Threshold                        =   3796992 bytes / 6 ms (default)
   WRED not configured for this class

   Level2 Class                              =   tc2
   Egressq Queue ID                          =   834 (LP queue)
   Queue Max. BW.                            =   no max (default)
   Inverse Weight / Weight                   =   5 / (12)
   Guaranteed service rate                   =   2845582 kbps
   TailDrop Threshold                        =   1824768 bytes / 6 ms (default)
   WRED not configured for this class

   Level2 Class                              =   tc1
   Egressq Queue ID                          =   833 (LP queue)
   Queue Max. BW.                            =   no max (default)
   Inverse Weight / Weight                   =   32 / (2)
   Guaranteed service rate                   =   444622 kbps
```

```
TailDrop Threshold                        =   614400 bytes / 12 ms (default)
WRED not configured for this class

Level2 Class                              =   class-default
Egressq Queue ID                          =   832 (Default LP queue)
Queue Max. BW.                            =   no max (default)
Inverse Weight / Weight                   =   63 / (1)
Guaranteed service rate                   =   225839 kbps
TailDrop Threshold                        =   614400 bytes / 24 ms (default)
WRED not configured for this class
```

Starting with Cisco IOS XR Release 26.3.1, this example shows the output for an egress policy that uses bandwidth remaining percent:

```
router# show qos interface HundredGigE0/0/0/4/0 output
NOTE:- Configured values are displayed within parentheses
Interface HundredGigE0/0/0/4/0 ifh 0x78000408  -- output policy
NPU Id:                        0
Total number of classes:       8
Interface Bandwidth:           100000000 kbps
Policy Name:                   policymap_1_1_0
VOQ Base:                      928
Accounting Type:               Layer1 (Include Layer 1 encapsulation and above)
VOQ Mode:                      8
Shared Counter Mode:           1
------------------------------------------------------------------------------
Level1 Class                              =   classmap_1_1_1_0
Egressq Queue ID                          =   929 (LP queue)
Queue Max. BW.                            =   no max (default)
Inverse Weight / Weight                   =   5 / (10%)
TailDrop Threshold                        =   608256 bytes / 5 ms (default)
WRED not configured for this class

Level1 Class                              =   classmap_1_6_1_0
Egressq Queue ID                          =   934 (LP queue)
Queue Max. BW.                            =   no max (default)
Inverse Weight / Weight                   =   9 / (5%)
TailDrop Threshold                        =   608256 bytes / 5 ms (default)
WRED not configured for this class

Level1 Class (HP1)                        =   classmap_1_7_1_0
Egressq Queue ID                          =   935 (HP1 queue)
Queue Max. BW.                            =   no max (default)
TailDrop Threshold                        =   59996160 bytes / 5 ms (default)
WRED not configured for this class

Level1 Class                              =   class-default
Egressq Queue ID                          =   928 (Default LP queue)
Queue Max. BW.                            =   no max (default)
Inverse Weight / Weight                   =   1 / (BWR not configured)
TailDrop Threshold                        =   608256 bytes / 5 ms (default)
WRED not configured for this class
```

Starting with Cisco IOS XR Release 26.3.1, this example shows the output for an input policy that uses two-level hierarchical ingress policing:

```
Router# show qos interface HundredGigE0/0/0/3 input
NOTE:- Configured values are displayed within parentheses
Interface HundredGigE0/0/0/3 ifh 0x780001b0  -- input policy
NPU Id:                        0
Total number of classes:       5
Interface Bandwidth:           100000000 kbps
Policy Name:                   IN_PARENT_4_CHILD_TEST
Accounting Type:               Layer1 (Include Layer 1 encapsulation and above)
------------------------------------------------------------------------------
```

```
Level1 Class                              =   class-default
Policer committed rate                    =   16000000 kbps (16 gbits/sec)
Policer peak rate                         =   20000000 kbps (20 gbits/sec)
Policer conform burst                     =   4096000 bytes (default)
Policer exceed burst                      =   4096000 bytes (default)
Policer conform action                    =   Just TX
Policer exceed action                     =   Just TX
Policer violate action                    =   DROP PKT

   Level2 Class                              =   IN_CMAP_DSCP_56
   New traffic class                         =   7
   Policer committed rate                    =   1000000 kbps (1 gbits/sec)
   Policer conform burst                     =   1024000 bytes (default)
   Policer conform action                    =   Just TX
   Policer exceed action                     =   DROP PKT

   Level2 Class                              =   IN_CMAP_DSCP_48
   New traffic class                         =   6
   Policer committed rate                    =   2000000 kbps (2 gbits/sec)
   Policer conform burst                     =   1024000 bytes (default)
   Policer conform action                    =   Just TX
   Policer exceed action                     =   DROP PKT

   Level2 Class                              =   IN_CMAP_DSCP_40
   New traffic class                         =   5
   Policer committed rate                    =   6000000 kbps (6 gbits/sec)
   Policer peak rate                         =   20000000 kbps (20 gbits/sec)
   Policer conform burst                     =   1024000 bytes (default)
   Policer exceed burst                      =   2048000 bytes (default)
   Policer conform action                    =   Just TX
   Policer exceed action                     =   Just TX
   Policer violate action                    =   DROP PKT

   Level2 Class                              =   class-default
   Policer committed rate                    =   7000000 kbps (7 gbits/sec)
   Policer peak rate                         =   20000000 kbps (20 gbits/sec)
   Policer conform burst                     =   1024000 bytes (default)
   Policer exceed burst                      =   2048000 bytes (default)
   Policer conform action                    =   Just TX
   Policer exceed action                     =   Just TX
   Policer violate action                    =   DROP PKT
```

Examples

This sample output shows the programmed and configured values for a flat single-rate three-color ingress policer. The example uses a 3 Gbps CIR, a configured committed burst of 1912 kbytes, and a configured excess burst of 2048 kbytes. Configured values are displayed in parentheses.

```
Router#show qos interface HundredGigE0/0/0/11 input
NOTE:- Configured values are displayed within parentheses
Interface HundredGigE0/0/0/11 -- input policy
Policy Name:                  policymap_1_0_0
Level1 Class                  =   classmap_1_1_0_0
Policer committed rate        =   3000000 kbps (3 gbits/sec)
Policer conform burst         =   1911808 bytes (1912 kilobytes)
Policer exceed burst          =   2048000 bytes (2048 kilobytes)
Policer conform action        =   Just TX
Policer exceed action         =   Just TX
Policer violate action        =   DROP PKT
```

This sample output shows the programmed parent and child values for a hierarchical-child single-rate three-color ingress policer. The parent uses a 28 Gbps CIR, and the child uses a 1750 Mbps CIR with configured burst values of 1912 and 2048 kbytes. Configured values are displayed in parentheses.

```
Router#show qos interface HundredGigE0/0/0/11 input
NOTE:- Configured values are displayed within parentheses
Interface HundredGigE0/0/0/11 -- input policy
Policy Name:                  policymap_1_0_0
Level1 Class                  =   class-default
Policer committed rate        =   28000000 kbps (28 gbits/sec)
Policer conform burst         =   8371200 bytes (8371200 bytes)
Policer exceed burst          =   8371200 bytes (8371200 bytes)
Policer conform action         =   Just TX
Policer exceed action         =   Just TX
Policer violate action        =   DROP PKT

   Level2 Class               =   classmap_1.0_1_0_0
   Policer committed rate     =   1750000 kbps (1750 mbits/sec)
   Policer conform burst      =   1911808 bytes (1912 kilobytes)
   Policer exceed burst       =   2048000 bytes (2048 kilobytes)
   Policer conform action     =   Just TX
   Policer exceed action      =   Just TX
   Policer violate action     =   DROP PKT
```

violate-action

To configure the action to take on packets that violate the rate limit, use the **violate-action** command in policy map police configuration mode. To remove a conform action from the policy-map, use the **no** form of this command.

violate-action {**drop** | **set** *options* | **transmit**}
no violate-action {**drop** | **set** *options* | **transmit**}

Syntax Description

drop	Drops the packet.
set *options*	Configures the specified packet properties. Replace *options* with one of the following keywords or keyword arguments: • **discard-class** *value* —Sets the discard class value. Range is 0 to 1.
transmit	Transmits the packets.

Command Default

For single-rate three-color policing, packets classified as violate are dropped by default.

Command Modes

Policy map police configuration

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

For more information regarding the traffic policing feature refer to the police rate, on page 10 command.

The **violate-action** command can set the discard class values for IP packets and MPLS packets.

For single-rate three-color policing, configure **violate-action transmit** to transmit packets classified as violate, or configure another supported action for the violate result.

When **exceed-action drop** is configured, do not configure a separate **violate-action**. The router rejects that action combination.

For hierarchical-child single-rate three-color policing, use color-aware operation. Do not configure **violate-action set discard-class** marking for the hierarchical child.

Task ID

Task ID	Operations
qos	read, write

Examples

In this example for MPLS, traffic policing is configured to drop packets that violate the rate limit:

```
RP/0/RP0/CPU0:router(config)# class-map class1
RP/0/RP0/CPU0:router(config-cmap)# match mpls experimental topmost 0
RP/0/RP0/CPU0:router(config-cmap)# exit
```

```
RP/0/RP0/CPU0:router(config)# policy-map policy1
RP/0/RP0/CPU0:router(config-pmap)# class class1
RP/0/RP0/CPU0:router(config-pmap-c)# police rate 250 kbps burst 50
RP/0/RP0/CPU0:router(config-pmap-c-police)# violate-action drop
RP/0/RP0/CPU0:router(config-pmap-c-police)# exit
RP/0/RP0/CPU0:router(config-pmap-c)# exit
RP/0/RP0/CPU0:router(config-pmap)# exit
RP/0/RP0/CPU0:router(config)# interface HundredGigE 0/1/0/0
RP/0/RP0/CPU0:router(config-if) service-policy input policy1
```

This example explicitly configures the default drop action for violate traffic in a flat single-rate three-color ingress policer. The exceed action is configured as transmit so that a separate violate action can be configured:

```
Router(config)#policy-map policymap_1_0_0
Router(config-pmap)#class classmap_1_1_0_0
Router(config-pmap-c)#police rate 3 gbps burst 1912 kbytes peak-burst 2048 kbytes
Router(config-pmap-c-police)#exceed-action transmit
Router(config-pmap-c-police)#violate-action drop
Router(config-pmap-c-police)#exit
Router(config-pmap-c)#exit
Router(config-pmap)#end-policy-map
Router(config)#interface HundredGigE0/0/0/11
Router(config-if)#service-policy input policymap_1_0_0
```

random-detect ecn

To enable ECN-based (Explicit Congestion Notification) random-detect, use the **random-detect ecn** command in policy-map configuration mode. To remove random-detect, use the **no** form of the command.

random-detect ecn
no random-detect ecn

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or value.

Command Modes

Policy-map configuration mode.

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

None

Task ID

Task ID	Operation
qos	read, write

Example

This example shows how to use the **random-detect ecn**command:

```
RP/0/RP0/CPU0:router(config-pmap-c)#random-detect ecn
```