



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	
<i>type</i>	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	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 7.0.12</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 7.0.12	This command was introduced.
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 9 command.				
Task ID	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>qos</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	qos	read, write
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 precl
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 lad-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
```

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	<i>version</i> 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	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 7.3.1</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 7.3.1	This command was introduced.
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	<table border="1"> <thead> <tr> <th>Task ID</th> <th>Operations</th> </tr> </thead> <tbody> <tr> <td>qos</td> <td>read, write</td> </tr> </tbody> </table>	Task ID	Operations	qos	read, write
Task ID	Operations				
qos	read, write				
Examples	<p>This example shows how to configure decapsulation of the GUE packets:</p> <pre>Router# configure Router(config)# policy-map type pbr gue-decap Router(config-pmap)# class type traffic gue-class Router(config-pmap-c)# decapsulate gue</pre>				

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 <i>options</i> with one of the following keywords or keyword arguments: <ul style="list-style-type: none"> • 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	<table border="1"> <thead> <tr> <th>Release</th> <th>Modification</th> </tr> </thead> <tbody> <tr> <td>Release 7.0.12</td> <td>This command was introduced.</td> </tr> </tbody> </table>	Release	Modification	Release 7.0.12	This command was introduced.
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 9 command.				

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

- Egress
- Layer 3 subinterfaces

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
```

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
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Command Modes	XR Config
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Command History	Release	Modification
	Release 7.10.1	This command was introduced.

Usage Guidelines	No specific guidelines impact the use of this command.
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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}]
no police rate {value [units] | percent percentage | rate [units] | }[peak-rate {value [units] | percent percentage}]
```

Syntax Description	
<i>value</i>	Committed information rate (CIR). Range is from 1 to 4294967295.
<i>units</i>	(Optional) Unit of measurement for the CIR. Values can be: <ul style="list-style-type: none"> • bps —bits per second (default) • gbps —gigabits per second • kbps —kilobits per second • mbps —megabits per second
percent <i>percentage</i>	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 <i>value</i>	(Optional) Specifies the Peak Information Rate (PIR) in the specified <i>units</i> .

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

- For a one-level policy, the **percent** keyword specifies the CIR as a percentage of the link rate. For example, the command **police rate percent 35** configures the CIR as 35% of the link 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 the average rate at 250 kbps for all packets leaving 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 250 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
```

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.
	<i>policy-name</i>	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 <i>priority-level</i> Sets multiple levels of priority to a traffic class. Level 1 through 7. Default level is 1. Level 1 traffic has higher priority.
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Command Default	No default action.
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Command Modes	Policy map class configuration
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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 queueing 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		
	<i>interface type</i>	Interface type. For more information, use the question mark (?) online help function.
	all	Specifies all interfaces.
	<i>interface-path-id</i>	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 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.

The **show policy-map interface** command does not display the statistics and counters for the egress marking policy.

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-bel
  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-bel
  Classification statistics      (packets/bytes)      (rate - kbps)
  Matched                      :    38921394/14742645566    1588557
  Transmitted                   :    38921394/14742645566    1588557
  Total Dropped                 :              0/0              0
Class inet4-classifier-ncl
  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)

```

show policy-map interface

```

    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-bel
  Classification statistics      (packets/bytes)      (rate - kbps)
  Matched          :          21958845/22332119845          1236894
  Transmitted      :          21958845/22332119845          1236894
  Total Dropped    :              0/0                      0
Class inet6-classifier-ncl
  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-ncl

```



```

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           0
Class class-default
  Classification statistics      (packets/bytes)    (rate - kbps)
  Matched                        :                0/0           0
  Transmitted                    :                0/0           0
  Total Dropped                  :                0/0           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]
    
```

This table describes the significant fields shown in the display.

Table 1: show policy-map interface Field Descriptions

Field	Description
Classification statistics	
Matched	Number of packets or bytes that matched this class.
Transmitted	Number of packets or bytes transmitted for this class.

Field	Description
Total Dropped	Number of packets or bytes dropped for this class.
Policing statistics	
Policed(conform)	Number of packets or bytes that conformed to the police rate for this class.
Policed(exceed)	Number of packets or bytes that exceeded the police rate for this class.
Policed(violate)	Number of packets or bytes that violated the police rate for this class.
Policed and dropped	Number of packets or bytes dropped by the policer of this class.
Queuing statistics	
Queue ID	VOQ number of the packet in this class.
Taildropped (bytes)	Number of bytes taildropped for this queue.

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 <i>node-id</i>	(Optional) Displays information about the interfaces on which policy maps are applied for the specified location. The <i>node-id</i> argument is entered in the <i>rack/slot/module</i> notation.
pmap-name <i>name</i>	(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 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		
<i>interface-name</i>		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		Attaches the specified policy map to the input interface.
output		Attaches the specified policy map to the output interface.
location <i>node-id</i>		(Optional) Displays detailed QoS information for the designated node. The <i>node-id</i> 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 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.

Task ID	Task ID	Operations
	qos	read

Examples

This is the 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
```

show qos interface

```

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

Default Policer Bucket ID               = 0x102a0
Default Policer Stats Handle            = 0x8b304d98
Policer not configured for this class

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

Default Policer Bucket ID               = 0x102a1
Default Policer Stats Handle            = 0x8b304b48
Policer not configured for this class

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

Default Policer Bucket ID               = 0x102a2
Default Policer Stats Handle            = 0x8b3048f8
Policer not configured for this class

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

Default Policer Bucket ID               = 0x102a3
Default Policer Stats Handle            = 0x8b3046a8
Policer not configured for this class

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

Default Policer Bucket ID               = 0x102a4
Default Policer Stats Handle            = 0x8b304458
Policer not configured for this class

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

Default Policer Bucket ID               = 0x102a5
Default Policer Stats Handle            = 0x8b304208
Policer not configured for this class

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

Default Policer Bucket ID               = 0x102a6
Default Policer Stats Handle            = 0x8b303fb8
Policer not configured for this class

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

Default Policer Bucket ID               = 0x102a7
Default Policer Stats Handle            = 0x8b303d68
Policer not configured for this class

```

```

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

Default Policer Bucket ID = 0x102a8
Default Policer Stats Handle = 0x8b303b18
Policer not configured for this class

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

Default Policer Bucket ID = 0x102a9
Default Policer Stats Handle = 0x8b3038c8
Policer not configured for this class

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

Default Policer Bucket ID = 0x102aa
Default Policer Stats Handle = 0x8b303678
Policer not configured for this class

Level1 Class = inet6-classifier-af1
New qos group = 1

Default Policer Bucket ID = 0x102ab
Default Policer Stats Handle = 0x8b303428
Policer not configured for this class

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

Default Policer Bucket ID = 0x102ac
Default Policer Stats Handle = 0x8b3031d8
Policer not configured for this class

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

Default Policer Bucket ID = 0x102ad
Default Policer Stats Handle = 0x8b302f88
Policer not configured for this class

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

Default Policer Bucket ID = 0x102ae
Default Policer Stats Handle = 0x8b302d38
Policer not configured for this class

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

Default Policer Bucket ID = 0x102af
Default Policer Stats Handle = 0x8b302ae8
Policer not configured for this class

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

Default Policer Bucket ID = 0x102b0
Default Policer Stats Handle = 0x8b302898
Policer not configured for this class

Level1 Class = inet-classifier-ipv6-af1

```

show qos interface

```

New qos group = 1

Default Policer Bucket ID = 0x102b1
Default Policer Stats Handle = 0x8b302648
Policer not configured for this class

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

Default Policer Bucket ID = 0x102b2
Default Policer Stats Handle = 0x8b3023f8
Policer not configured for this class

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

Default Policer Bucket ID = 0x102b3
Default Policer Stats Handle = 0x8b3021a8
Policer not configured for this class

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

Default Policer Bucket ID = 0x102b4
Default Policer Stats Handle = 0x8b301f58
Policer not configured for this class

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

Default Policer Bucket ID = 0x102b5
Default Policer Stats Handle = 0x8b301d08
Policer not configured for this class

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

Default Policer Bucket ID = 0x102b6
Default Policer Stats Handle = 0x8b301ab8
Policer not configured for this class

Level1 Class = inet-management-classifier-af4
New qos group = 7

Default Policer Bucket ID = 0x102b7
Default Policer Stats Handle = 0x8b301868
Policer not configured for this class

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

Default Policer Bucket ID = 0x102b8
Default Policer Stats Handle = 0x8b301618
Policer not configured for this class

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

Default Policer Bucket ID = 0x102b9
Default Policer Stats Handle = 0x8b3013c8
Policer not configured for this class

```



```

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

Default Policer Bucket ID                   =   0x102ba
Default Policer Stats Handle                =   0x8b301178
Policer not configured for this class

Level1 Class                               =   class-default

Default Policer Bucket ID                   =   0x102bb
Default Policer Stats Handle                =   0x8b3074e8
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

```

This table describes the significant fields shown in the display.

Table 2: show QoS interface Field Descriptions

Field	Description
Level 1 class	Level 1 class identifier in decimal format.
Policer Bucket ID	Policer bucket identifier.
Policer Stats Handle	Policer statistics handle for this class.
Queue ID	VOQ number of the packet in this class.
Queue Max. BW	Maximum bandwidth of the queue.
Queue Min. BW	Minimum bandwidth of the queue.

Field	Description
Inverse Weight / Weight	Remaining bandwidth weight. Note The hardware weight is expressed in inverse value.
TailDrop Threshold	Number of bytes tailedropped for this queue and the default/user-configured queue-limit expressed in milliseconds/user-configured unit.

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 <i>options</i> Configures the specified packet properties. Replace <i>options</i> with one of the following keywords or keyword arguments: <ul style="list-style-type: none"> • discard-class <i>value</i> —Sets the discard class value. Range is 0 to 1.
	transmit Transmits the packets.

Command Default No default behavior or values

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 9](#) command. The **violate-action** command can set the discard class values for IP packets and MPLS packets.

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
```

violate-action

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

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
```

random-detect ecn