



Modular QoS CLI (MQC) Unconditional Packet Discard

Feature History

Release	Modification
12.2(13)T	This feature was introduced.

Supported Platforms

For platforms supported in Cisco IOS Release 12.2(13)T, consult Cisco Feature Navigator.

This document describes the Modular QoS CLI (MQC) Unconditional Packet Discard feature in Cisco IOS Release 12.2(13)T. It includes the following sections:

- [Feature Overview, page 1](#)
- [Supported Platforms, page 2](#)
- [Supported Standards, MIBs, and RFCs, page 3](#)
- [Configuration Tasks, page 4](#)
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Feature Overview

The Modular QoS CLI (MQC) Unconditional Packet Discard feature allows customers to classify traffic matching certain criteria and then configure the system to unconditionally discard any packets matching that criteria. The Modular QoS CLI (MQC) Unconditional Packet Discard feature is configured using the Modular Quality of Service Command-Line Interface (MQC) feature. For more information about the MQC feature, refer to the *Quality of Service Cisco IOS Solutions Configuration Guide*, Release 12.2.

Packets are unconditionally discarded by using the new **drop** command within the MQC. For more information about the **drop** command, see the “[Command Reference](#)” section later in this document.

Benefits

Enhanced System Utilization

This feature allows you to discard (drop), without any further system processing, the packets of a particular class. This function is very useful when you want to discard all the packets for nonessential applications (for instance, Internet browsing applications or unauthorized video applications) and allocate system resources to more essential applications. This feature allows the user to discard those nonessential packets and simultaneously obtain the bit and drop rate statistics for that particular class and the traffic within that class. The statistics are gathered through the CISCO-CLASS-BASED-QOS-MIB.

Restrictions

Packets are unconditionally discarded by configuring the drop action inside a traffic class (inside of a policy map). This drop action is accomplished with the new **drop** command. Note the following restrictions for configuring the drop action within a traffic class:

- The discarding action is the only action that can be configured in a traffic class. That is, no other actions can be configured in the traffic class.
- When a traffic class is configured with the **drop** command, a “child” (nested) policy cannot be configured for this specific traffic class through the **service policy** command.
- The discarding action cannot be configured for the default class known as the class-default class.

Related Features and Technologies

- Modular quality of service command-line interface (MQC)

Related Documents

- *Cisco IOS Quality of Service Solutions Configuration Guide*, Release 12.2
- *Cisco IOS Quality of Service Solutions Command Reference*, Release 12.2

Supported Platforms

Determining Platform Support Through Cisco Feature Navigator

Cisco IOS software is packaged in feature sets that are supported on specific platforms. To obtain updated information about platform support for this feature, access Cisco Feature Navigator. Cisco Feature Navigator dynamically updates the list of supported platforms as new platform support is added for the feature.

Cisco Feature Navigator is a web-based tool that enables you to determine which Cisco IOS software images support a specific set of features and which features are supported in a specific Cisco IOS image. You can search by feature or release. In the release section, you can compare releases side by side to display both the features unique to each software release and the features that releases have in common.

To access Cisco Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions at <http://www.cisco.com/register>.

Cisco Feature Navigator is updated regularly when major Cisco IOS software releases and technology releases occur. For the most current information, go to the Cisco Feature Navigator home page at the following URL:

<http://www.cisco.com/go/fn>

Availability of Cisco IOS Software Images

Platform support for particular Cisco IOS software releases is dependent on the availability of the software images for those platforms. Software images for some platforms may be deferred, delayed, or changed without prior notice. For updated information about platform support and availability of software images for each Cisco IOS software release, refer to the online release notes or, if supported, Cisco Feature Navigator.

Supported Standards, MIBs, and RFCs

Standards

None

MIBs

- CISCO-CLASS-BASED-QOS-MIB
- CISCO-CLASS-BASED-QOS-CAPABILITY-MIB

To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:

<http://tools.cisco.com/ITDIT/MIBS/servlet/index>

If Cisco MIB Locator does not support the MIB information that you need, you can also obtain a list of supported MIBs and download MIBs from the Cisco MIBs page at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>

To access Cisco MIB Locator, you must have an account on Cisco.com. If you have forgotten or lost your account information, send a blank e-mail to cco-locksmith@cisco.com. An automatic check will verify that your e-mail address is registered with Cisco.com. If the check is successful, account details with a new random password will be e-mailed to you. Qualified users can establish an account on Cisco.com by following the directions found at this URL:

<http://www.cisco.com/register>

RFCs

None

Configuration Tasks

See the following sections for configuration tasks for the Modular QoS CLI (MQC) Unconditional Packet Discard feature. Each task in the list is identified as either required or optional.

- [Configuring the Class Map](#) (required)
- [Creating a Policy Map](#) (required)
- [Attaching the Policy Map to an Interface or a VC](#) (required)
- [Verifying the Discard Action Configuration in the Traffic Class](#) (optional)

Configuring the Class Map

To configure a class map to discard packets belonging to a specific class, use the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	Router(config) # class-map <i>class-map-name</i>	Specifies the name of the class map to be created. If match-all or match-any is not specified, traffic must match all the match criteria to be classified as part of the traffic class. Enters class-map configuration mode.
Step 2	Router(config-cmap) # match access-group { <i>access-group</i> name <i>access-group-name</i> }	Specifies that traffic matching the specified access group will be placed in the map class created above. This command provides just an example of the match criterion you can specify. For more information about the additional match criteria available, refer to the “Configuring the Quality of Service Command-Line Interface” chapter of the <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> , Release 12.2.
Step 3	Router(config-cmap) # exit	Exits from the configuration mode.

Creating a Policy Map

To create a policy map (also sometimes referred to as a service policy or a traffic policy), use the following commands beginning in global configuration mode.

A policy map can be created using the MQC feature. For more information about creating a policy map using the MQC feature, refer to the “Configuring the Modular Quality of Service Command-Line Interface” chapter of the *Cisco IOS Quality of Service Solutions Configuration Guide*, Release 12.2.

	Command	Purpose
Step 1	Router (config)# policy-map <i>policy-name</i>	Specifies the name of the policy map to be created. Enters policy-map configuration mode.
Step 2	Router (config-pmap)# class <i>class-name</i>	Specifies the name of the traffic class configured earlier in the “Configuring the Class Map” section above. This traffic class is used to classify traffic to the policy map. Enters policy-map class configuration mode.
Step 3	Router (config-pmap)# drop	Discards the packets in the specified traffic class.
Step 4	Router (config-cmap)# exit	Exits policy-map configuration mode.

Attaching the Policy Map to an Interface or a VC

To attach the policy map to an interface or a virtual circuit (VC), use the following commands beginning in global configuration mode:

	Command	Purpose
Step 1	Router (config)# interface <i>type number</i> [<i>name-tag</i>]	Configures the interface type and enters interface configuration mode.
Step 2	Router (config-if)# pvc [<i>name</i>] <i>vpi/vci</i> [ilmi qsaal smds]	(Optional) Creates or assigns a name to an ATM permanent virtual circuit (PVC), and specifies the encapsulation type on an ATM PVC. Enters ATM VC configuration mode (config-if-atm-vc). This step is required only if you are attaching the policy map to an ATM PVC.
Step 3	Router (config-if)# service-policy input <i>policy-map-name</i> or Router (config-if-atm-vc)# service-policy output <i>policy-map-name</i>	Specifies the name of the policy map to be attached to the input or output direction of an interface or VC. The policy map evaluates all traffic entering or leaving that interface or VC.
Step 4	Router (config-if)# exit	Exits interface configuration mode.

Verifying the Discard Action Configuration in the Traffic Class

To verify that the discard action has been configured in the traffic class and the policy map (and to display the number of packets discarded), use the following commands in EXEC or privileged EXEC mode, as needed:

Command	Purpose
Router# show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
Router# show policy-map interface interface-name	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.

Configuration Examples

This section provides the following configuration examples:

- [Configuring the Discard Action Configuration in a Traffic Class Example](#)
- [Verifying the Discard Action Configuration in the Policy Map Example](#)

Configuring the Discard Action Configuration in a Traffic Class Example

In the following sample configuration, a traffic class called “class1” has been created and configured for use in a policy-map called “policy1.” The policy-map policy1 is attached to an output serial interface 2/0. All packets matching access-group 101 are placed in a class called “c1.” Packets belonging to this class are discarded.

```
Router(config)# class-map class1
Router(config-cmap)# match access-group 101
Router(config-cmap)# policy-map policy1
Router(config-pmap)# class c1
Router(config-pmap-c)# drop
Router(config-pmap-c)# interface s2/0
Router(config-if)# service-policy output policy1
Router(config-if)# exit
```

The following sample output of the **show policy-map** command displays the contents of the policy map called “policy1.” All the packets belonging to the class called “c1” are discarded.

```
Router# show policy-map policy1

Policy Map policy1
Class c1
drop
```

Verifying the Discard Action Configuration in the Policy Map Example

The following sample output of the **show policy-map interface** command displays the statistics for the Serial2/0 interface, to which a policy map called “policy1” is attached. The discard action has been specified for all the packets belonging to a class called “c1.” In this example, 32000 bps of traffic is sent (“offered”) to the class and all of them are dropped. Therefore, the drop rate shows 32000 bps.

```
Router# show policy-map interface Serial2/0

Serial2/0

Service-policy output: policy1

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

Command Reference

This section documents new and modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications.

New Commands

- [drop](#)

Modified Commands

- [show policy-map](#)
- [show policy-map interface](#)

drop

To configure a traffic class to discard packets belonging to a specific class, use the **drop** command in policy-map class configuration mode. To disable the packet discarding action in a traffic class, use the **no** form of this command.

drop

no drop

Syntax Description This command has no arguments or keywords.

Defaults This command is disabled by default.

Command Modes Policy-map class configuration

Command History	Release	Modification
	12.2(13)T	This command was introduced.

Usage Guidelines Note the following points when configuring the **drop** command to unconditionally discard packets in a traffic class:

- Discarding packets is the only action that can be configured in a traffic class. That is, no other actions can be configured in the traffic class.
- When a traffic class is configured with the **drop** command, a “child” (nested) policy cannot be configured for this specific traffic class through the **service policy** command.
- Discarding packets cannot be configured for the default class known as the class-default class.

Examples In the following example a traffic class called “class1” has been created and configured for use in a policy map called “policy1.” The policy map (service policy) is attached to an output serial interface 2/0. All packets matching access-group 101 are placed in a class called “c1.” Packets belonging to this class are discarded.

```
Router(config)# class-map class1
Router(config-cmap)# match access-group 101
Router(config-cmap)# policy-map policy1
Router(config-pmap)# class c1
Router(config-pmap-c)# drop
Router(config-pmap-c)# interface s2/0
Router(config-if)# service-policy output policy1
Router(config-if)# exit
```

Related Commands

Command	Description
show class-map	Displays all class maps and their matching criteria.
show policy-map	Displays the configuration of all classes for a specified service policy map or all classes for all existing policy maps.
show policy-map interface	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.

show policy-map

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

```
show policy-map [policy-map]
```

Syntax Description	<i>policy-map</i>	(Optional) Name of the service policy map whose complete configuration is to be displayed.
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Defaults All existing policy map configurations are displayed.

Command Modes EXEC

Command History	Release	Modification
	12.0(5)T	This command was introduced.
	12.0(5)XE	This command was incorporated into Cisco IOS Release 12.0(5)XE.
	12.0(7)S	This command was incorporated into Cisco IOS Release 12.0(7)S.
	12.1(1)E	This command was incorporated into Cisco IOS Release 12.1(1)E.
	12.2(13)T	This command was modified as part of the Modular QoS CLI (MQC) Unconditional Packet Discard feature. Traffic classes can now be configured to discard packets belonging to a specified class.

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

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

```
Router# show policy-map policy1

Policy Map policy1
Class c1
  drop
```

[Table 1](#) describes the significant fields shown in the display.

Table 1 *show policy-map Field Descriptions*

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

Related Commands

Command	Description
drop	Configures a traffic class to discard packets belonging to a specific class.
policy-map	Creates or modifies a policy map that can be attached to one or more interfaces to specify a service policy.
show policy-map class	Displays the configuration for the specified class of the specified policy map.
show policy-map interface	Displays the packet statistics of all classes that are configured for all service policies either on the specified interface or subinterface or on a specific PVC on the interface.

show policy-map interface

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

```
show policy-map interface interface-name [vc [vpi/ vci]][dcli dcli] [input | output]
```

Syntax Description	
<i>interface-name</i>	Name of the interface or subinterface whose policy configuration is to be displayed.
vc	(Optional) For ATM interfaces only, shows the policy configuration for a specified PVC. The name can be up to 16 characters long.
<i>vpi/</i>	(Optional) ATM network virtual path identifier (VPI) for this PVC. On the Cisco 7200 and 7500 series routers, this value ranges from 0 to 255. The absence of both the forward slash (/) and a <i>vpi</i> value defaults the <i>vpi</i> value to 0. If this value is omitted, information for all virtual circuits (VCs) on the specified ATM interface or subinterface is displayed. The <i>vpi</i> and <i>vci</i> arguments cannot both be set to 0; if one is 0, the other cannot be 0.
<i>vci</i>	(Optional) ATM network virtual channel identifier (VCI) for this PVC. This value ranges from 0 to 1 less than the maximum value set for this interface by the atm vc-per-vc command. Typically, the lower values 0 to 31 are reserved for specific traffic (F4 Operation, Administration, and Maintenance (OAM), switched virtual circuit (SVC) signaling, Integrated Local Management Interface (ILMI), and so on) and should not be used. The VCI is a 16-bit field in the header of the ATM cell. The VCI value is unique only on a single link, not throughout the ATM network, because it has local significance only. The <i>vpi</i> and <i>vci</i> arguments cannot both be set to 0; if one is 0, the other cannot be 0.
dcli	(Optional) Indicates a specific PVC for which policy configuration will be displayed.
<i>dcli</i>	(Optional) Specific data-link connection identifier (DLCI) number used on the interface. Policy configuration for the corresponding PVC will be displayed when a DLCI is specified.
input	(Optional) Indicates that the statistics for the attached input policy will be displayed.
output	(Optional) Indicates that the statistics for the attached output policy will be displayed.

Defaults This command has no default behavior or values.

Command Modes EXEC

Command History

Release	Modification
12.0(5)T	This command was introduced.
12.0(5)XE	This command was incorporated into Cisco IOS Release 12.0(5)XE.
12.0(7)S	This command was incorporated into Cisco IOS Release 12.0(7)S.
12.1(1)E	This command was incorporated into Cisco IOS Release 12.1(1)E.
12.1(2)T	This command was integrated into Cisco IOS Release 12.1(2)T. This command was modified to display information about the policy for all Frame Relay PVCs on the interface, or, if a DLCI is specified, the policy for that specific PVC. This command was also modified to display the total number of packets marked by the quality of service (QoS) set action.
12.1(3)T	This command was integrated into Cisco IOS Release 12.1(3)T. This command was modified to display per-class accounting statistics.
12.2(13)T	This command was modified as part of the Modular QoS CLI (MQC) Unconditional Packet Discard feature. Traffic classes in policy maps can now be configured to discard packets belonging to a specified class.

Usage Guidelines

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

Examples

The following sample output of the **show policy-map interface** command displays the statistics for the Serial2/0 interface, to which a policy map called “policy1” is attached. The discarding action has been specified for all the packets belonging to a class called “c1.” In this example, 32000 bps of traffic is sent (“offered”) to the class and all of them are dropped. Therefore, the drop rate shows 32000 bps.

```
Router# show policy-map interface Serial2/0

Serial2/0

Service-policy output: policy1

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

[Table 2](#) describes the significant fields shown in the display.

Table 2 *show policy-map interface Field Descriptions¹*

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

Table 2 *show policy-map interface Field Descriptions¹ (continued)*

Field	Description
offered rate	Rate, in kbps, of packets coming in to the class.
drop rate	Rate, in kbps, at which packets are dropped from the class. The drop rate is calculated by subtracting the number of successfully transmitted packets from the offered rate.
Match	Match criteria specified for the class of traffic. Choices include criteria such as the Layer 3 packet length, IP precedence, IP Differentiated Services Code Point (DSCP) value, Multiprotocol Label Switching (MPLS) experimental value, access groups, and QoS groups. For more information about the variety of match criteria options available, refer to the chapter “Configuring the Modular Quality of Service Command-Line Interface” in the <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> , Release 12.2.
drop	Indicates that the packet discarding action for all the packets belonging to the specified class has been configured.

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

Related Commands

Command	Description
drop	Configures a traffic class to discard packets belonging to a specific class.
show frame-relay pvc	Displays statistics about PVCs for Frame Relay interfaces.
show policy-map class	Displays the configuration for the specified class of the specified policy map.