CHAPTER 4

Configuring Marking

This chapter describes how to configure the marking features that you can use to define the class of traffic to which the packet belongs to.

This chapter includes the following sections:

Information About Marking

Marking is a method that you use to modify the QoS fields of the incoming and outgoing packets. The QoS fields that you can mark are CoS in Layer 2, and IP precedence and DSCP in Layer 3. QoS group and discard class are two labels local to the system that you can assign intermediate marking values, which you can then use to determine the final values marked in a packet.

You can use marking commands in traffic classes that are referenced in a policy map. The marking features that you can configure are listed in Table 4-1.

Table 4-1 Configurable Marking Features

Marking Feature	Description
	Layer 3 Differentiated Service Code Point (DSCP). **Note** **dscp** **discard class**
	(TOS) field. The device overwrites the first 3 bits of the TOS field to 0.

Configurable Marking Features (continued)

	discard class **dscp**

Unless noted as a restriction, you can apply marking features to both incoming and outgoing packets.

Licensing Requirements for Marking

Product	License Requirement
NX-OS	QoS requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For a complete explanation of the NX-OS licensing scheme, see the *Cisco Nexus 7000 Series NX-OS Licensing Guide, Release 4.0*

Prerequisites for Marking

- Chapter 2, “Using Modular QoS CLI.”

  You are logged on to the switch.

  You are in the correct virtual device context (VDC). A VDC is a logical representation of a set of system resources. You can use the **switchto vdc**

Guidelines and Limitations

- **set cos** command is applicable only to 802.1Q interfaces, and you can only use it in egress policies.

  You can only use the **set qos-group**

  set discard-class

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Do not press Enter after you use the command and before you add the rest of the command. If you press Enter directly after entering the keyword, you will be unable to continue to configure with the QoS configuration.

Configuring DSCP Marking

Note

Table 4-2 Standard DSCP Values

Value	List of DSCP Values
	AF11 dscp (001010)—decimal value 10
af12	AF12 dscp (001100)—decimal value 12
af13	AF13 dscp (001110)—decimal value 14
af21	AF21 dscp (010010)—decimal value 18
af22	AF22 dscp (010100)—decimal value 20
af23	AF23 dscp (010110)—decimal value 22
af31	AF31 dscp (011010)—decimal value 26
af32	AF40 dscp (011100)—decimal value 28
af33	AF33 dscp (011110)—decimal value 30

For more information about DSCP, see RFC 2475.

SUMMARY STEPS

1. **config t**
2. **policy-map** [**type qos**] [ ] *policy-map-name*
3.] { | } [**insert-before** *before-class-map-name*
4. *dscp-value*

DETAILED STEPS

	Command	Purpose
Step 1	**config t** **Example:** switch# config t switch(config)#	
	[**type qos**] [**match-first** *policy-map-name* switch(config)# policy-map policy1 switch(config-pmap-qos)#	
	[ ] {*class-map-name* | **class-default**} [**insert-before** *before-class-map-name*	
	dscp-value switch(config-pmap-c-qos)# set dscp af31 switch(config-pmap-c-qos)#	

switch# **show policy-map policy1**

Configuring IP Precedence Marking

You can set the value of the IP precedence field in bits 0–2 of the IPv4 Type of Service (ToS) field of the IP header.

Note The device rewrites the last 3 bits of the ToS field to 0 for packets that match this class.

Table 4-3 shows the precedence values.

Table 4-3 Precedence Values

<0-7>	IP precedence value
critical	Critical precedence (5)
flash	Flash precedence (3)
flash-override	Flash override precedence (4)

immediate	Immediate precedence (2)
internet	Internetwork control precedence (6)
network	Network control precedence (7)
priority	Priority precedence (1)
routine	Routine precedence (0)

[ ] [ ]

[ ] { | } [ ]

	Enters configuration mode.
	Creates or accesses the policy map named and then enters policy-map mode. The policy-map name can contain alphabetic, hyphen, or underscore characters, is case sensitive, and can be up to 40 characters.
	Creates a reference to and enters policy-map class configuration mode. The class is added to the end of the policy map unless is used to specify the class to insert before. Specify to select all traffic not currently matched by classes in policy map.
`precedence 3` `switch(config-pmap-c-qos)#`	

Use the command to display the policy-map configuration:

Configuring CoS Marking

Note

Configuring QoS Group Marking

Note

SUMMARY STEPS

1.
2.
3.
4. *qos-group-value*

DETAILED STEPS

	Command	Purpose
Step 1		
Step 2		*policy-map-name,*
Step 3		*class-map-name,*

Step 4	*qos-group-value*
	
	`switch(config-pmap-c-qos)# set qos-group 100`
	`switch(config-pmap-c-qos)#`	

Configuring Discard Class Marking

Note

Note

SUMMARY STEPS

1.
2.
3.
4.

DETAILED STEPS

	Command	Purpose
Step 1		
Step 2		
Step 3		

Step 4	*discard-class-value*
	
	`discard-class 40`
	`switch(config-pmap-c-qos)#`	

Configuring Ingress and Egress Marking

Configuring DSCP Port Marking

Note

SUMMARY STEPS

1.
2.
3.
4.
5. **exit**
6.
7.
8.
9.
10.
11.
12.
13. **{[interface ethernet** *slot/* | *-id*

policy-map-name

	policy-map-name
	class-map-name
	dscp-value
exit switch(config-pmap-c-qos)# exit switch(config-pmap-qos)#	
[ ] { | } [ ] switch(config-pmap-qos)# class class2 switch(config-pmap-c-qos)#	
  switch(config-pmap-c-qos)# set dscp af13 switch(config-pmap-c-qos)#	
exit switch(config-pmap-c-qos)# exit switch(config-pmap-qos)#	
[ ] { | } [ ] switch(config-pmap-qos)# class class-default switch(config-pmap-c-qos)#	

Step 10		Sets the DSCP value to . Valid values are shown in Table 4-2.
Step 11		Returns to policy-map configuration mode.
Step 12		Returns to configuration mode.

Step 13	*slot/port*
	
	`switch(config)# interface ethernet 1/1`
	`switch(config-if)#`	

	vlan
	
	Example:
	`switch(config)# vlan 101`
	`switch(config-if)#`	

	`[ ] { |`
	`} [ ]`
	
	`switch(config-if)# service-policy input policy1`
	`switch(config-if)#`	

```
switch#
```

Configuring Table Maps for Use in Marking

command to define the destination value of unmapped source values. By default, unmapped values are copied to the destination value, so that the destination value is the same as the source value. In Cisco NX-OS Release 4.0.2 and later releases, the variable for the command is no longer supported.

Note You can use only one of the system-defined, table maps in this procedure. For information on the system-defined table maps, see Chapter 2, "Using Modular QoS CLI."

switch# config t switch(config)#	
switch(config)# table-map cos-dscp-map switch(config-tmap)#	
switch(config-tmap)# from 0 to 2 switch(config-tmap)#	
{ | }	
switch(config-tmap)# default 18 switch(config-tmap)#	
switch(config-tmap)# exit switch(config)#	

switch#

QoS Table Map Fields

QoS Table Map Field	Description

DETAILED STEPS

	Command	Purpose
Step 1	switch# config t switch(config)#	
Step 2	[ ] [ ] switch(config)# policy-map policy1 switch(config-pmap-qos)#	
Step 3	[ ] { | } [ ] switch(config-pmap-qos)# class class1 switch(config-pmap-c-qos)#	
Step 4	{ | | | | } { | | | | } switch(config-pmap-c-qos)# set cos dscp cos-dscp-map switch(config-pmap-c-qos)#	**Note**
Step 5	switch(config-pmap-c)# exit switch(config-pmap-qos)#	

Verifying the Marking Configuration

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Example Configuration

```
policy-map type qos untrust_dcsp
 class class-default
   set dscp 0
policy-map type queuing untrust_1Gport_policy
 class type queuing 2q4t-in-q-default
   set cos 0
policy-map type queuing untrust_10Gport_policy
 class type queuing 8q2t-in-q-default
   set cos 0
```

Feature History for Marking

Table 4-5 Feature History for Marking

Feature Name	Releases	Feature Information