Quality of Service Commands

This chapter describes the Cisco NX-OS quality of service (QoS) commands available on the Cisco Nexus 3548 switch.

bandwidth (QoS)

To allocate a minimum percentage of the interface bandwidth to a queue, use the **bandwidth** command. To remove a bandwidth configuration, use the **no** form of this command.

bandwidth percent *percent*

no bandwidth percent *percent*

Syntax Description

percent	Specifies the percentage of bandwidth of the underlying link rate.
percent	Percent value. The range is from 0 to 100.

Command Default

None.

Command Modes

Policy map type queuing class configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to set the bandwidth for the specified queue:

```
switch(config)# policy-map type queuing my_policy1
switch(config-pmap-que)# class type queuing 1p7q4t-out-pq1
switch(config-pmap-c-que)# bandwidth percent 25
switch(config-pmap-c-que)#
```

This example shows how to remove the bandwidth for the specified queue:

```
switch(config)# policy-map type queuing my_policy1
switch(config-pmap-que)# class type queuing 1p7q4t-out-pq1
switch(config-pmap-c-que)# no bandwidth percent 25
switch(config-pmap-c-que)#
```

Related Commands

Command	Description
show class-map	Displays class maps.
show policy-map	Displays policy maps.

class (policy map type qos)

To add a reference to an existing qos class map in a policy map and enter the class mode, use the **class** command. To remove a class from the policy map, use the **no** form of this command.

class [**type qos**] *class-map-name*

no class *class-map-name*

Syntax Description

type qos	(Optional) Specifies the component type, which is qos for this class. By default, the type is qos.
class-map-name	Reference to a class map. The class map name can be a maximum of 40 characters. The name is case sensitive and can only contain alphabetic characters, numbers, hyphens, and underscores.

Command Default

None

Command Modes

Qos policy map configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Policy actions in the first class that matches the traffic type are performed.

By default, the class-default class of type qos is created under every policy map of type qos in the system and it is mapped to the QoS group 0. You cannot change this mapping.

You cannot remove the class-default of type qos. If you attempt to delete the class-default class, the switch returns an error message.

Examples

This example shows how to add a reference to a qos class map at the end of a policy map:

```
switch(config)# policy-map my_policy1
switch(config-pmap-qos)# class traffic_class2
switch(config-pmap-c-qos)#
```

This example shows how to remove a class map reference in a policy map:

```
switch(config)# policy-map my_policy1
switch(config-pmap-qos)# no class traffic_class1
switch(config-pmap-qos)#
```

Related Commands

Command	Description
set dscp	Assigns a DSCP value to the traffic class.
set precedence	Assigns a IP precedence to the traffic class.
set qos-group	Assigns a QoS group to the traffic class.
show class-map type qos	Displays type qos class maps.
show policy-map	Displays policy maps.

class class-default

To add a reference to the system default class that does not match any traffic class, use the **class class-default** command. To remove the system default class from the policy map, use the **no** form of this command.

class class-default

no class class-default

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

QoS policy map configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Traffic that fails to match any class is assigned to a default class of traffic called class-default. You cannot delete this class.

Examples

This example shows how to add a reference to the system default class at the end of a policy map:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# policy-map type qos my_policy1
switch(config-pmap-qos)# class class-default
switch(config-pmap-c-qos)#
```

Related Commands

Command	Description
set dscp	Sets the DSCP value for the QoS traffic.
set precedence	Sets the IP precedence value for the QoS traffic.
set qos-group	Assigns a QoS group identifier for a class of traffic.
show policy-map	Displays policy maps.

class-map type qos

To create or modify a Quality of Service (QoS) class map and enter the class-map configuration mode, use the **class-map type qos** command in global configuration mode. To remove a QoS class map, use the **no** form of this command.

class-map type qos [match-all |match-any] *class-map-name*

no class-map type qos [match-all |match-any] *class-map-name*

Syntax Description

match-all	Specifies that if the packet matches all the criteria configured for this class map with the **match** command, then this class map is applied to the packet
match-any	Specifies that if the packet matches any of the criteria configured for this class map with the **match** command, then this class map is applied to the packet This is the default action if match-all is not specified.
class-map-name	Name of the QoS class map. The name can be a maximum of 40 characters. The name is case sensitive and can only contain alphanumeric characters, hyphens, and underscores. The name class-default is reserved.

Command Default

The class map is not created.

Command Modes

Global configuration (config#)

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

Use the **class-map type qos** command to create a QoS class map that contains QoS class match criteria. The **class-map type qos** command enables QoS class-map configuration mode, in which you can enter match commands to configure the match criteria for this class. Packets are checked against the match criteria configured for a class map to determine if the packet belongs to that QoS class.

After a QoS class map has been defined, use the **class type qos** command to associate the QoS class map with a service policy map. A service can contain one QoS class and the default class..

Examples

The following example shows how to create a QoS class map The following example shows the configuration of a QoS class map called "class1". The class map is defined so that traffic is matched on the basis of a Layer 2 class of service value. The traffic class map is then referenced in service policy map "my_qos_policy":

```
switch# configure terminal
switch(config)# class-map type qos class1
switch(config-cmap-qos)# match cos 2
switch(config-cmap-qos)# policy-map type qos my_qos_policy
```

```
switch(config-pmap-qos)# class type qos class1
switch(config-pmap-c-qos)# set qos-group 1
switch(config-pmap-c-qos)# system qos
switch(config-sys-qos)# system-policy type qos input my_qos_policy
```

Related Commands

Command	Description
class type qos	Assciates a QoS class map with a QoS policy map.
policy-map-type qos	Creates or modifies a QoS policy map.
service-policy type qos	Attached a QoS policy map to a system policy.

class type network-qos

To add a reference to an existing network QoS class map in a policy map and enter the class mode, use the **class type network-qos** command. To remove a class from the policy map, use the **no** form of this command.

class type network-qos *class-map-name*

no class type network-qos *class-map-name*

Syntax Description

class-map-name	Reference to a network QoS class map. The class map name can be a maximum of 40 characters. The name is case sensitive and can only contain alphabetic characters, numbers, hyphens, and underscores.

Command Default

None

Command Modes

Policy map type network-qos configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Policy actions in the first class that matches the traffic type are performed.

Examples

This example shows how to add a reference to a class map in a type network-qos policy map:

```
switch(config)# policy-map type network-qos nqos_policy
switch(config-pmap-nq)# class type network-qos nqos_class
switch(config-pmap-nq-c)#
```

This example shows how to remove a class map reference in a type network-qos policy map:

```
switch(config)# policy-map type network-qos nqos_policy
switch(config-pmap-nq)# no class type network-qos nqos_class
switch(config-pmap-nq)#
```

Related Commands

Command	Description
mtu	Enables jumbo frames on a traffic class.
set cos	Assigns a CoS value for a class of traffic.
show class-map type network-qos	Displays type network-qos class maps.
show policy-map	Displays policy maps.

class type queuing

To add a reference to an existing queuing class map in a policy map and enter the class mode, use the **class type queuing** command. To remove a class from the policy map, use the **no** form of this command.

class type queuing *class-map-name*

no class type queuing *class-map-name*

Syntax Description

class-map-name	Reference to a queuing class map. The class map name can be a maximum of 40 characters. The name is case sensitive and can only contain alphabetic characters, numbers, hyphens, and underscores.

Command Default

None

Command Modes

Policy map type queuing configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Policy actions in the first class that matches the traffic type are performed.

Examples

This example shows how to add a reference to a class map in a type queuing policy map:

```
switch(config)# policy-map type queuing my_policy1
switch(config-pmap-que)# class type queuing 1p7q4t-out-q3
switch(config-pmap-c-que)#
```

This example shows how to remove a class map reference in a type queuing policy map:

```
switch(config)# policy-map type queuing my_policy1
switch(config-pmap-que)# no class type queuing 1p7q4t-out-q3
switch(config-pmap-que)#
```

Related Commands

Command	Description
show class-map type queuing	Displays the type queuing class maps.
show policy-map	Displays policy maps.

class-map

To create or modify a class map and enter the class-map configuration mode, use the **class-map** command. To remove a class map, use the **no** form of this command.

class-map [**type qos**] [**match-all** | **match-any**] *class-map-name*

no class-map [**type qos**] [**match-all** | **match-any**] *class-map-name*

Syntax Description

type qos	(Optional) Specifies the component type qos for the class map. By default, the class map type is qos.
match-all	Specifies that if the packet matches all the criteria configured for this class map with the **match** command, then this class map is applied to the packet.
match-any	Specifies that if the packet matches any of the criteria configured for this class map with the **match** command, then this class map is applied to the packet. This is the default action if match-all is not specified.
class-map-name	Name assigned to the QoS class map. The name can be a maximum of 40 characters. The name is case sensitive and can only contain alphanumeric characters, hyphens, and underscores. The name class-default is reserved.

Command Default

type—qos

match-all

Command Modes

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can define a class map for each class of traffic to be used in QoS policies.

If the packet matches any of the criteria configured for this class map with the **match** command, then this class map is applied to the packet. If no execution strategy is specified (match-any or match-all), then the default value of match-any is applied to the traffic class.

Examples

This example shows how to create or modify a qos class map:

```
switch(config)# class-map my_class1
switch(config-cmap-qos)#
```

This example shows how to create a qos class map to match all traffic packets:

```
switch(config)# class-map type qos match-all my_class2
switch(config-cmap-qos)#
```

This example shows how to remove a qos class map:

```
switch(config)# no class-map my_class1
```

```
switch(config)#
```

Related Commands

Command	Description
description	Adds a summary purpose for the class map.
match	Configures traffic class criteria.
policy-map type qos	Creates or modifies a qos policy map.
service-policy	Attaches a policy map to an interface or system policy.
show class-map type qos	Displays qos class maps.

class-map type network-qos

To create or modify a class map that defines a network QoS class of traffic and enter the class-map configuration mode, use the **class-map type network-qos** command. To remove a class map, use the **no** form of this command.

class-map type network-qos *class_map_name*

no class-map type network-qos *class_map_name*

Syntax Description

class-map-name	Name assigned to the class map. The name class-default is reserved. The name can be a maximum of 40 characters. The name is case sensitive and can only contain alphanumeric characters, hyphens, and underscores.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Class maps of type network qos support only the **match qos-group** command. If a traffic packet matches any of the criteria configured for this class map with the **match** command, then this class map is applied to the packet. By default, traffic is filtered using the implicit match-any option.

Examples

This example shows how to create or modify a network qos class map named my_class1:

```
switch(config)# class-map type network-qos my_class1
switch(config-cmap-nq)#
```

This example shows how to remove a network qos class map:

```
switch(config)# no class-map my_class1
switch(config)#
```

Related Commands

Command	Description
match qos-group	Defines a traffic class that matches the QoS group values.
show class-map type network-qos	Displays network qos class maps configured in the system.

class type qos (policy map)

To associate a Quality of Service (QoS) class map with a QoS policy map and enter policy-map type qos class configuration mode, use the **class type qos** command in policy map type qos configuration mode. To remove the class from the service policy map, use the **no** form of this command.

class type qos *class-map-name*

no class type qos *class-map-name*

Syntax Description

class-map-name	Reference to a class map. The class map name can be a maximum of 40 characters. The name is case sensitive and can only contain alphabetic characters, numbers, hyphens, and underscores..

Command Default

Command Modes

Policy map type qos configuration (config-pmap-qos)#

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

Before you can associate a QoS class map with a QoS policy map, the class map must be configured using the **class-map type qos** command.

Examples

The following example shows how to configure the class1 class map, and associate the class map with the policy-map called my_qos_policy.

```
switch# configure terminal
switch(config)# class-map type qos class1
switch(config-cmap-qos)# match cos 2
switch(config-cmap-qos)# policy-map type qos my_qos_policy
switch(config-pmap-qos)# class type qos class1
switch(config-pmap-c-qos)# set qos-group 1
```

Related Commands

Command	Description
class-map type qos	Creates or modifies a Quality of Service (QoS) class map.
policy-map type qos	Creates or modifies a QoS policy map.
service-policy type qos	Attaches a QoS policy map to a system policy.

class-map type queuing

To create or modify a class map that defines a queuing class of traffic and enter the class-map configuration mode, use the **class-map type queuing** command. To remove the queuing class map, use the **no** form of this command.

class-map type queuing *class_map_name*

no class-map type queuing *class_map_name*

Syntax Description

class-map-name	Name assigned to the class map or a system-defined queuing class map name. The name class-default is reserved. The name can be a maximum of 40 characters. The name is case sensitive and can only contain alphanumeric characters, hyphens, and underscores.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

If you modify the queuing type class maps, the configuration for all ports of the specified port type also changes.

You cannot delete the system-defined queuing class map names.

Class maps of type queuing support only the **match qos-group** command. If a traffic packet matches any of the criteria configured for this class map with the **match** command, then this class map is applied to the packet. By default, traffic is filtered using the implicit match-any option.

Examples

This example shows how to create or modify a queuing class map:

```
switch(config)# class-map type queuing my_class1
switch(config-cmap-que)#
```

This example shows how to remove a queuing class map:

```
switch(config)# no class-map type queuing my_class1
switch(config)#
```

Related Commands

Command	Description
match qos-group	Configures a traffic class that matches the QoS group values.
show class-map type queuing	Displays queuing class maps configured in the system.

clear qos statistics

To clear the quality of service (QoS) statistics, use the **clear qos statistics** command.

clear qos statistics

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to clear all the QoS statistics:

```
switch# clear qos statistics
switch#
```

Related Commands

Command	Description
show queuing interface	Displays the queuing information on interfaces.

congestion-control dctcp ecn-threshold

To configure the Data Center TCP (DCTCP) threshold in bytes, use the **congestion-control dctcp ecn-threshold** command. This command sets an explicit congestion notification (ECN) threshold at which point ECN marking will start to happen. To remove the this configuration, use the no form of this command.

congestion-control dctcp ecn-threshold *value* **bytes**

no congestion-control dctcp ecn-threshold *value* **bytes**

Syntax Description

value	The number of bytes to be used as the ecn-threshold. When this threshold is reached, ECN marking begins.
bytes	Indicates that the threshold value is in bytes.

Command Default

None

Command Modes

Policy-map type network-qos configuration mode under class maps

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced. This command supersedes the **congestion-control random-detect ecn** command.

Usage Guidelines

DCTCP marks the ECN bits when packets exceed the user specified ecn-threshold.

This command does not require a license.

Examples

This example shows how to configure an ECN with a threshold value of 20000 bytes:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
switch(config)# policy-map type network-qos my_policy
switch(config-pmap-nq)# class type network-qos nc1
switch(config-pmap-nq-c)# congestion-control dctcp ecn-threshold 20000 bytes
switch(config-pmap-nq-c)#
```

Related Commands

Command	Description
class type network-qos	References a type network-qos class map in a policy map.
show policy-map	Displays all policy maps.

control-plane

To enter control-plane configuration mode, which allows users to associate attributes that are associated with the control plane of the device, use the **control-plane** command.

control-plane

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

After you use the **control-plane** command, you can associate a service policy to police all traffic that is destined to the control plane.

Examples

This example shows how to enter the control plane configuration mode:

```
switch# configure terminal
switch(config)# control-plane
switch(config-cp)#
```

description

To add a description to a class map, policy map, or table map, use the **description** command. To remove the description, use the **no** form of this command.

description *text*

no description *text*

Syntax Description

text	Description for the class map, policy map, or table map. The description can be a maximum of 200 alphanumeric characters.

Command Default

None

Command Modes

Class map (type network qos, qos, queuing) configuration mode
Policy map (type network qos, qos, queuing) configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to add a description to a qos class map:

```
switch(config)# class-map my_class1
switch(config-cmap-qos)# description This class map filters packets that matches an ACL
switch(config-cmap-qos)#
```

Related Commands

Command	Description
class-map	Creates or modifies a class map.
policy-map	Creates or modifies a policy map.
show class-map	Displays class maps.
show policy-map	Displays policy maps.

flowcontrol

To configure a port to send or receive pause frames, use the **flowcontrol** command in interface configuration mode. To return to the default settings, use the **no** form of this command.

flowcontrol {**send** | **receive**} {**desired** | **off** | **on**}

no flowcontrol {**send** | **receive**} {**desired** | **off** | **on**}

Syntax Description

send	Specifies that a port sends pause frames.
receive	Specifies that a port processes pause frames.
desired	Obtains predictable results regardless of whether a remote port is set to **on**, **off**, or **desired**.
off	Prevents a local port from receiving and processing pause frames from remote ports or from sending pause frames to remote ports.
on	Enables a local port to receive and process pause frames from remote ports or send pause frames to remote ports.

Command Default

Flow control is disabled.

Flow-control defaults depend upon port speed. The defaults are as follows:

- Gigabit Ethernet ports default to off for receive and desired for send.
- Fast Ethernet ports default to off for receive and on for send.
- On the 24-port 100BASE-FX and 48-port 10/100 BASE-TX RJ-45 modules, the default is **off** for receive and **off** for send.
- You cannot configure how WS-X6502-10GE 10-Gigabit Ethernet ports respond to pause frames. WS-X6502-10GE 10-Gigabit Ethernet ports are permanently configured to respond to pause frames.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

The send and desired keywords are supported on Gigabit Ethernet ports only.

Note The **desired** keyword is not supported on the Cisco Nexus 3500 Series Switches.

Pause frames are special packets that signal a source to stop sending frames for a specific period of time because the buffers are full.

Gigabit Ethernet ports on the Catalyst 6500 series switches and on the Cisco 7600 series routers use flow control to inhibit the transmission of packets to the port for a period of time; other Ethernet ports use flow control to respond to flow-control requests.

If a Gigabit Ethernet port receive buffer becomes full, the port transmits a “pause” packet that tells remote ports to delay sending more packets for a specified period of time. All Ethernet ports (1000 Mbps, 100 Mbps, and 10 Mbps) can receive and act upon “pause” packets from other devices.

You can configure non-Gigabit Ethernet ports to ignore received pause frames (disable) or to react to them (enable).

When used with the **receive** keyword, the **on** and **desired** keywords have the same result.

All the Gigabit Ethernet ports on the Catalyst 6500 series switches and the Cisco 7600 series routers can receive and process pause frames from remote devices.

To obtain predictable results, follow these guidelines:

- Use **sendon** only when remote ports are set to receiveon or receivedesired.
- Use **sendoff** only when remote ports are set to receiveoff or receivedesired.
- Use **receiveon** only when remote ports are set to sendon or senddesired.
- Use **sendoff** only when remote ports are set to receiveoff or receivedesired.

Examples

This example shows how to configure the local port to not support any level of flow control by the remote port:

```
switch# configure terminal
switch(config)# interface GigabitEthernet1/9 10.4.9.157 255.255.255.0
switch(config-if)# flowcontrol receive off
switch(config-if)# flowcontrol send off
```

Related Commands

Command	Description
show interface flowcontrol	Displays flow-control information.

ip dscp (ERSPAN)

To configure the differentiated services code point (DSCP) value of the packets in the Encapsulated Remote Switched Port Analyzer (ERSPAN) traffic, use the **ip dscp** command. To revert to the default settings, use the **no** form of this command.

ip dscp *dscp_value*

no ip dscp *dscp_value*

Syntax Description

dscp_value	DSCP value of the packets in the ERSPAN traffic. The range is from 0 to 63.

Command Default

0

Command Modes

ERSPAN session configuration mode

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to configure the DSCP value of the packets in the ESRSPAN traffic:

```
switch# configure terminal
switch(config)# monitor session 1 type erspan-source
switch(config-erspan-src)# ip dscp 10
switch(config-erspan-src)#
```

Related Commands

Command	Description
ip prec	Configures the IP precedence value of the ERSPAN traffic.
ip ttl	Configures the IP time-to-live (TTL) value of the ERSPAN traffic.
monitor-session	Enters the monitor configuration mode for configuring an ERSPAN session for analyzing traffic between ports.

ip prec (ERSPAN)

To configure the IP precedence value of the packets in the Encapsulated Remote Switched Port Analyzer (ERSPAN) traffic, use the **ip dscp** command. To revert to the default settings, use the **no** form of this command.

ip prec *prec_value*

no ip prec *prec_value*

Syntax Description

prec_value	IP precedence value of the packets in the ERSPAN traffic. The range is from 0 to 7.

Command Default

0

Command Modes

ERSPAN session configuration mode

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to configure the IP precedence value of the packets in the ESRSPAN traffic:

```
switch# configure terminal
switch(config)# monitor session 1 type erspan-source
switch(config-erspan-src)# ip prec 3
switch(config-erspan-src)#
```

Related Commands

Command	Description
ip dscp	Configures the differentiated services code point value of the ERSPAN traffic.
ip ttl	Configures the IP time-to-live (TTL) value of the ERSPAN traffic.
monitor-session	Enters the monitor configuration mode for configuring an ERSPAN session for analyzing traffic between ports.

ip ttl (ERSPAN)

To configure the IP time-to-live (TTL) value of the Encapsulated Remote Switched Port Analyzer (ERSPAN) traffic, use the **ip ttl** command. To revert to the default setting, use the **no** form of this command.

ip ttl *ttl_value*

no ip ttl *ttl_value*

Syntax Description

ttl_value	IP TTL value of the ERSPAN traffic. The range is from 1 to 255.

Command Default

255

Command Modes

ERSPAN session configuration mode

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

This command does not require a license.

Examples

This example shows how to configure the IP TTL value of the ESRSPAN source:

```
switch# configure terminal
switch(config)# monitor session 1 type erspan-source
switch(config-erspan-src)# ip ttl 30
switch(config-erspan-src)#

This example shows how to remove the IP TTL value from the ESRSPAN source:
switch# configure terminal
switch(config)# monitor session 1 type erspan-source
switch(config-erspan-src)# no ip ttl 30
switch(config-erspan-src)#
```

Related Commands

Command	Description
ip dscp	Configures the DSCP value of the packets in the ERSPAN traffic.
monitor-session	Enters the monitor configuration mode for configuring an ERSPAN session for analyzing traffic between ports.

match access-group

To identify a specified access control list (ACL) group as a match criteria for a class map, use the **match access-group** command. To remove an ACL match criteria from a class map, use the **no** form of this command.

match access-group name *acl-name*

no match access-group name *acl-name*

Syntax Description

name *acl-name*	Matches on the characteristics in the ACL name specified.

Command Default

None

Command Modes

QoS class-map configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You must create the IP ACLs before you reference them in this command.

Note The **permit** and **deny** ACL keywords do not affect the matching of packets.

Examples

This example shows how to create a qos class map that matches characteristics of the ACL my_acl:

```
switch# configure terminal
switch(config)# class-map class_acl
switch(config-cmap-qos)# match access-group name my_acl
switch(config-cmap-qos)#
```

Related Commands

Command	Description
show class-map	Displays class maps.

match cos

To define the class of traffic using the class of service (CoS) value in a type qos class map, use the **match cos** command. To remove the match on the CoS value, use the **no** form of this command.

match [**not**] **cos** *cos-list*

no match [**not**] **cos** *cos-list*

Syntax Description

not	(Optional) Negates the specified match result.
cos-list	Specified CoS value or list of specified CoS values. Valid values are from 0 to 7.

Command Default

None

Command Modes

Class-map type qos configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

To specify a list of values, use one of the following options:

- Specify a range of values separated by a dash
- Specify a noncontiguous list of values separated by commas

Note Only class maps of type qos support the optional **not** keyword form of this command. Class maps of type queuing do not support the **not** keyword.

Examples

This example shows how to match on the CoS value for a type qos class map:

```
switch(config)# class-map type qos match-any class_acl
switch(config-cmap-qos)# match cos 5-7
switch(config-cmap-qos)#
```

Related Commands

Command	Description
show class-map	Displays class maps.

match dscp

To identify specific differentiated services code point (DSCP) values as a match criteria, use the **match dscp** command. To remove specified DSCP values as a match criteria, use the **no** form of this command.

match [**not**] **dscp** *dscp-list*

no match [**not**] **dscp** *dscp-list*

Syntax Description

not	(Optional) Negates the specified match result.
dscp-list	Specified DSCP value or list of DSCP values. See Table 1 for a list of valid DSCP values.

Command Default

None

Command Modes

Class-map type qos configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The standard DSCP values are shown in Table 1.

Table 1 Standard DSCP Values

DSCP Value	Description
af11	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
af41	AF41 dscp (100010)—decimal value 34
af42	AF42 dscp (100100)—decimal value 36
af43	AF43 dscp (100110)—decimal value 38
cs1	CS1 (precedence 1) dscp (001000)—decimal value 8
cs2	CS2 (precedence 2) dscp (010000)—decimal value 16

Table 1 Standard DSCP Values (continued)

DSCP Value	Description
cs3	CS3 (precedence 3) dscp (011000)—decimal value 24
cs4	CS4 (precedence 4) dscp (100000)—decimal value 32
cs5	CS5 (precedence 5) dscp (101000)—decimal value 40
cs6	CS6 (precedence 6) dscp (110000)—decimal value 48
cs7	CS7 (precedence 7) dscp (111000)—decimal value 56
default	Default dscp (000000)—decimal value 0
ef	EF dscp (101110)—decimal value 46

To specify a list of values, use one of the following options:

- Specify a range of values separated by a dash
- Specify a noncontiguous list of values separated by commas

Examples

This example shows how to match on DSCP value af21:

```
switch(config)# class-map type qos my_test
switch(config-cmap-qos)# match dscp af21
switch(config-cmap-qos)#
```

Related Commands

Command	Description
show class-map	Displays class maps.

match ip rtp

To configure a class map to use the Real-Time Protocol (RTP) port as a match criteria, use the **match ip rtp** command. To remove the RTP port as a match criteria, use the **no** form of this command.

match [**not**] **ip rtp** *port-list*

no match [**not**] **ip rtp** *port-list*

Syntax Description

not	(Optional) Negates the specified match result.
port-list	Specified UDP port or list of UDP ports that are using RTP. Valid values range from 2000 to 65535.

Command Default

None

Command Modes

Class-map type qos configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

To specify a list of values, use one of the following options:

- Specify a range of values separated by a dash
- Specify a noncontiguous list of values separated by commas

Examples

This example shows how to match on a port using RTP:

```
switch(config)# class-map type qos my_test
switch(config-cmap-qos)# match ip rtp 2300
switch(config-cmap-qos)#
```

Related Commands

Command	Description
show class-map	Displays class maps.

match precedence

To configure a class map to use the precedence value in the type of service (ToS) byte field of the IP header as a match criteria, use the **match precedence** command. To remove the precedence values as a match criteria, use the **no** form of this command.

match [**not**] **precedence** *precedence-list*

no match [**not**] **precedence** *precedence-list*

Syntax Description

not	(Optional) Negates the specified match result.
precedence-list	Specified IP precedence value or list of IP precedence values specified in bytes. Valid values are shown in Table 2.

Command Default

None

Command Modes

Class-map type qos configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

See Table 2 for a list of precedence values.

Table 2 Precedence Values

Precedence Value	Description
<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)
routine	Routine precedence (0)

To specify a list of values, use one of the following options:

- Specify a range of values separated by a dash
- Specify a noncontiguous list of values separated by commas

Examples

This example shows how to match on an IP precedence value:

```
switch(config)# class-map my_test
switch(config-cmap-qos)# match precedence 7
switch(config-cmap-qos)#
```

Related Commands

Command	Description
show class-map	Displays class maps.

match qos-group

To configure a class map to use a specific QoS group value as a match criterion, use the **match qos-group** command. To remove the specified protocol as a match criteria, use the **no** form of this command.

match qos-group *qos-group-list*

no match qos-group *qos-group-list*

qos-group-list	Specified Qos group value or list of QoS group values specified in bytes. The valid values are from 1 to 4.

Command Default

None

Command Modes

Class map type network-qos configuration
Class map type queuing configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The QoS group is an internal label and is not part of the packet payload or any packet header. The QoS group values have no mathematical significance. For example, a QoS group value of 2 is not greater than 1; the values are used only to internally differentiate QoS groups. As such, this value has local significance only.

You match on the QoS group only in egress policies because its value is undefined until you set it in an ingress policy.

To specify a list of values, use one of the following options:

- Specify a range of values separated by a dash
- Specify a noncontiguous list of values separated by commas

Examples

This example shows how to match on a specified QoS group value:

```
switch(config)# class-map type queuing my_test
switch(config-cmap-qos)# match qos-group 4
switch(config-cmap-qos)#
```

Related Commands

Command	Description
class-map type network-qos	Creates or modifies a network qos class map.
class-map type queuing	Creates or modifies a queuing class map.
show class-map	Displays class maps.

mtu (interface)

To configure the maximum transmission unit (MTU) size for Layer 2 and Layer 3 Ethernet interfaces, use the **mtu** command. To remove the configured MTU, use the **no** form of this command.

mtu *mtu-value*

no mtu *mtu-value*

Syntax Description

mtu-value	MTU value for the class of service (CoS). Valid values are 1500 to 9216.

Command Default

Default MTU value is 1500.

Command Modes

Policy map type network-qos class configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can specify the MTU value for either a single Layer 3 interface or a range of Layer 3 interfaces. When you change the Layer 3 interface MTU value to the Jumbo MTU value (1500 bytes or greater), you must also change the network QoS MTU value to 1500 bytes or greater. The device generates a syslog message to inform you of this requirement.

The MTU value you configure is determined by the MTU value configured on the class-default class map.

Note Make sure you configure the same MTU value on all class maps in the system.

Examples

This example shows how to set an MTU value for a class in a type network-qos policy map:

```
switch(config)# class-map type network-qos my_class1
switch(config-cmap-nq)# match qos-group 1
switch(config-cmap-nq)# exit
switch(config)# policy-map type network-qos my_policy1
switch(config-pmap-nq)# class type network-qos my_class1
switch(config-pmap-nq-c)# mtu 5000
switch(config-pmap-nq-c)#
```

This example shows how to set an MTU value for a class in a network-qos policy map:

```
switch# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.

switch(config)# policy-map type network-qos sp-nwpolicy
switch(config-pmap-nq)# class type network-qos sp-nwpolicy-class
switch(config-pmap-nq-c)# mtu 3000
```

```
switch(config-pmap-nq-c)#
```

Related Commands

Command	Description
service-policy	Attaches a policy map to an interface or system policy.
show class-map	Displays class maps.
show policy-map	Displays policy maps.
system qos	Configures a system policy.

pause no-drop

To enable Link Level Flow Control (LLFC) pause characteristics on a class referenced in a type network-qos policy map, use the pause no-drop command in policy map type network-qos class configuration mode. To disable the LLFC pause characteristics on a class use the no form of the command.

pause no-drop

no pause no-drop

Command Default

The pause action is undefined.

Command Modes

Policy map type network-qos class configuration (config-pmap-nq-c)

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

Examples

This example shows how

```
switch# configure terminal
switch(config)# policy-map type network-qos my_network_policy
switch(config-pmap-nq)# class type network-qos class1
switch(config-pmap-nq-c)# pause no-drop
```

Related Commands

Command	Description
class type network-qos	Adds a reference to an existing network QoS class map in a policy map.
class-map type network-qos	Creates or modifies a class map that defines a network QoS class of traffic.
policy-map type network-qos	Creates or modifies a QoS policy map.
service-policy type network-qos	Attaches a QoS policy map to a system policy.

policy-map type network-qos

To create or modify a policy map and enter the policy map type network-qos configuration mode, use the **policy-map type network-qos** command. To remove a policy map, use the **no** form of this command.

policy-map type network-qos *policy-map-name*

no policy-map type network-qos *policy-map-name*

Syntax Description

policy-map-name	Name assigned to a type network-qos policy map. The name can be a maximum of 40 alphanumeric characters.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use the **service-policy** command to assign policy maps to interfaces.

The Cisco Nexus 3548 switch supports up to 64 different QoS policies.

Examples

This example shows how to create or modify a type network-qos policy map:

```
switch(config)# policy-map type network-qos my_policy1
switch(config-pmap-nq)#
```

This example shows how to remove a type network-qos policy map:

```
switch(config)# no policy-map type network-qos my_policy1
switch(config)
```

Related Commands

Command	Description
class type network-qos	References a type network-qos class map in a policy map.
description	Adds a description to a class map or policy map.
set qos-group	Assigns a QoS group identifier for a class of traffic.
show policy-map	Displays policy maps.

policy-map (type qos)

To create or modify a policy map and enter the policy map type qos configuration mode, use the **policy-map** command. To remove a QoS policy map, use the **no** form of this command.

policy-map [**type qos**] *qos-policy-map-name*

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

Syntax Description

type qos	(Optional) Specifies the type qos policy map.
qos-policy-map-name	Name assigned to a type qos policy map. The name can be a maximum of 40 alphanumeric characters.

Command Default

The software enters the policy map type qos configuration mode if you enter the **policy-map** command without specifying a type.

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use the **service-policy** command to assign policy maps to interfaces.

The Cisco Nexus 3548 switch supports up to 64 different QoS policies.

Examples

This example shows how to create or modify a type qos policy map:

```
switch(config)# policy-map my_policy1
switch(config-pmap-qos)#
```

This example shows how to remove a type qos policy map:

```
switch(config)# no policy-map my_policy1
```

Related Commands

Command	Description
class-map type qos	Configures a qos class map.
service-policy	Attaches a policy map to an interface.
set dscp	Sets the DSCP value for the QoS traffic.
set precedence	Sets the IP precedence value for the QoS traffic.
set qos-group	Assigns a QoS group identifier for a class of traffic.
show policy-map	Displays policy maps.

policy-map type queuing

To create or modify a policy map and enter the policy map type queuing configuration mode, use the **policy-map type queuing** command. To remove a policy map, use the **no** form of this command.

policy-map type queuing *queuing-policy-map-name*

no policy-map type queuing *queuing-policy-map-name*

Syntax Description

queuing-policy-map-name	Name assigned to a type queuing policy map. The name can be a maximum of 40 alphanumeric characters.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use the **service-policy** command to assign policy maps to interfaces.

The Cisco Nexus 3548 switch supports up to 64 different QoS policies.

Examples

This example shows how to create or modify a queuing policy map:

```
switch(config)# policy-map type queuing my_policy1
switch(config-pmap-que)# class type queuing my_class1
switch(config-pmap-c-que)# bandwidth percent 75
switch(config-pmap-c-que)# exit
switch(config-pmap-que)#
```

This example shows how to remove a type queuing policy map:

```
switch(config)# no policy-map type queuing my_policy1
switch(config)#
```

Related Commands

Command	Description
bandwidth	Configures the interface bandwidth.
service-policy	Attaches a policy map to an interface.
set qos-group	Assigns a QoS group identifier for a class of traffic.
show policy-map	Displays policy maps.

service-policy (policy-map class)

To attach a policy map to an interface, use the **service-policy** command. To remove a service-policy from an interface, use the **no** form of this command.

service-policy {**input** | **type** {**qos input** | **queuing output**}} *policy-map-name*

no service-policy {**input** | **type** {**qos input** | **queuing output**}} *policy-map-name*

Syntax Description

input	Applies this policy map to packets coming into this interface.
type	Specifies whether the policy map is of type qos or queuing.
qos	Specifies a policy map of type qos.
queuing	Specifies a policy map of type queuing.
output	Applies this policy map to packets going out of this interface.
policy-map-name	Name of the policy map to attach to this interface. Only one policy map can be attached to the input and one to the output of a given interface for each of the policy type qos and queuing. The policy map name can be a maximum of 40 alphanumeric characters.

Command Default

None

Command Modes

Interface configuration mode
Subinterface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can attach one egress type queuing policy map to an interface of type port, and port channel. Only one policy map can be attached to the input of a given interface for the policy type qos.

Examples

This example shows how to attach qos type policy maps to the incoming packets of a Layer 2 interface:

```
switch# configure terminal
switch(config)# system qos
switch(config-sys-qos)# service-policy type qos input my_policy1
switch(config-sys-qos)#
```

This example shows how to attach a qos type policy map named set-dscp to the incoming packets of a Layer 2 interface:

```
switch# configure terminal
switch(config)# policy-map type qos set-dscp
switch(config-pmap-qos)# class class-0
switch(config-pmap-c-qos)# set dscp ef
```

```
switch(config-pmap-c-qos)# exit
switch(config-pmap-qos)# class class-1-2
switch(config-pmap-c-qos)# set precedence 4
switch(config-pmap-c-qos)# exit
switch(config-pmap-qos)# exit
switch(config)# interface ethernet 2/1
switch(config-if)# service-policy type qos input set-dscp
switch(config-if)#
```

Related Commands

Command	Description
no switchport	Configures an interface as a Layer 3 routed interface.
show policy-map interface brief	Displays all interfaces and VLANs with attached service policies in a brief format.
system qos	Configures a system policy.

service-policy (system qos)

To attach a policy map to a system policy, use the **service-policy** command. To remove a service-policy from a system policy, use the **no** form of this command.

service-policy {**input** | **type** {**network-qos** | **qos input** | **queuing output**}} *policy-map-name*

no service-policy {**input** | **type** {**network-qos** | **qos input** | **queuing output**}} *policy-map-name*

Syntax Description

input	Applies this policy map to packets coming into this interface.
type	Specifies whether the policy map is of type network-qos, qos, or queuing.
network-qos	Specifies a policy map of type network-qos.
qos	Specifies a policy map of type qos.
queuing	Specifies a policy map of type queuing.
output	Applies this policy map to packets going out of this interface.
policy-map-name	Name of the policy map to attach to this interface. The policy map name can be a maximum of 40 alphanumeric characters.

Command Default

None

Command Modes

System QoS configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to attach a queuing policy map to the system policy:

```
switch# configure terminal
switch(config)# system qos
switch(config-sys-qos)# service-policy type queuing output my_input_q_policy
switch(config-sys-qos)#
```

Related Commands

Command	Description
show policy-map	Displays policy maps.
system qos	Configures a system policy.

service-policy type network-qos

To create or modify a policy map and enter the policy map type network-qos configuration mode use the **policy-map type network-qos** command in global configuration mode. To remove a policy-map use the **no** form of the command.

policy-map type network-qos *policy-map-name*

no policy-map type network-qos *policy-map-name*

Syntax Description

policy-map-name	The name of the network-qos policy map.

Command Default

No policy map is created

Command Modes

Global configuration (config)

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

After you create and configure the policy map, use the **service-policy** command to apply the network QoS policy map to a system policy.

Examples

The following example shows how to create the policy map and apply the map to the system policy.

```
switch# configure terminal
switch(config)# policy-map type network-qos my_network_policy
switch(config-pmap-nq)# class type network-qos class1
switch(config-pmap-nq-c)# pause no-drop
switch(config-pmap-nq-c)# system qos
```

Related Commands

Command	Description
class type network-qos	Associates a QoS class map with a QoS policy map.
class-map type network-qos	Creates or modifies a network QoS class map.
policy-map type network-qos	Creates or modifies a policy map.

service-policy type qos (system)

To attach a quality of service (QoS) policy map to a system policy, use the **service-policy type qos** command in QoS system configuration mode. To remove the QoS policy map, use the **no** form of this command.

service-policy type qos input *policy-map-name*

no service-policy type qos input *policy-map-name*

Syntax Description

input	Specifies an ingress QoS policy map.
policy-map-name	The name of the policy map.

Command Default

No QoS policy map is applied.

Command Modes

QoS system configuration (config-sys-qos)

Command History

Release	Modification
6.0(2)A1(1)	This command was introduced.

Usage Guidelines

The **input** keyword indicates the direction in which the policy map is applied.

The value for the *policy-map-name* argument represents a QoS policy map configured at the system level using the **policy-map type qos** *policy-map-name* command.

Examples

The following example attaches a QoS policy map to a system policy:

```
switch# configure terminal
switch(config)# system qos
switch(config-sys-qos)# service-policy type qos input my-in-policy
```

Related Commands

Command	Description
class type qos	Associates a QoS class map with a QoS policy map.
class-map type qos	Creates or modifies a Quality of Service (QoS) class map.
policy-map type qos	Creates or modifies a QoS policy map.

set cos (policy map type network-qos)

To assign a class of service (CoS) value for a class of traffic in a type network-qos policy map, use the **set cos** command. To remove the assigned value from the class, use the **no** form of this command.

set cos *cos-value*

no set cos *cos-value*

Syntax Description

cos-value	CoS value to assign for this class of traffic. The range is from 0 to 7.

Command Default

None

Command Modes

Policy map type network-qos class configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can use this command only on type network-qos policies that are attached to egress ports.

Examples

This example shows how to assign a CoS value for a class of traffic in a type network-qos policy map:

```
switch(config)# policy-map type network-qos my_policy1
switch(config-pmap-nq)# class type network-qos traffic_class2
switch(config-pmap-nq-c)# set cos 3
switch(config-pmap-nq-c)#
```

This example shows how to remove the assignment of CoS for a class of traffic in a type network-qos policy map:

```
switch(config)# policy-map type network-qos my_policy1
switch(config-pmap-nq)# class type network-qos traffic_class2
switch(config-pmap-nq-c)# no set cos 3
switch(config-pmap-nq-c)#
```

Related Commands

Command	Description
show policy-map	Displays policy maps.

set dscp

To assign a Differentiated Services Code Point (DSCP) value for a traffic class in a type qos policy map, use the **set dscp** command. To remove a previously set DSCP value, use the **no** form of this command.

set dscp *dscp-value*

no set dscp *dscp-value*

Syntax Description

dscp-value	DSCP value or parameter to assign for this class of traffic. Valid values are from 0 to 63. For a list of standard DSCP values, see Table 1.

Command Default

None

Command Modes

Policy map type qos configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Marking is a method that you use to modify the QoS fields of the incoming and outgoing packets.

You can set the value of standard QoS fields IP precedence, DSCP, class of service (CoS), and internal labels that can be used in subsequent actions. Marking is used to identify the traffic type for use in policing, queuing, and scheduling traffic (only CoS is used in scheduling).

Use this command to classify the traffic based on the DSCP packet header field. When you set the DSCP value for a packet, make sure that you use a traffic class other than the class-default system class. For example, you would use qos-group *x*, where *x* is any value from 1 to 7.

Note You cannot set the DSCP packet header field if the traffic is in the class-default system class (qos-group 0).

You can set the DSCP value in the six most significant bits of the DiffServ field of the IP header to a specified value. You can enter numeric values from 0 to 63, as well as the standard DSCP values shown in Table Table 1.

If you set the values for more than two IP header fields, an error similar to the following appears:

```
ERROR: Only 2 sets out of qos-group/cos/dscp/precedence/discard-class are allowed. Please
remove other set action before applying this one.
```

Note You can set DSCP or IP precedence but you cannot set both values because they modify the same field in the IP packet.

After you set the DSCP value, for the QoS policy map to work correctly and create the specified QoS groups, make sure that you attach the QoS policy map to a system policy, define a network-qos policy map, and attach it to the system policy. Make sure that the QoS group of the QoS policy map matches the QoS group of the network-qos policy.

The Cisco Nexus 3548 switch supports up to 248 combinations of Differentiated Services Code Point (DSCP) and qulaity of service (QoS) group groups.

Examples

This example shows how to set the DSCP value for a QoS policy:

```
switch(config)# policy-map type qos my_policy
switch(config-pmap-qos)# class type qos my_class
switch(config-pmap-c-qos)# set dscp cs6
switch(config-pmap-c-qos)# set qos-group 2
switch(config-pmap-c-qos)# exit
switch(config-pmap-qos)# exit
switch(config)# system qos
switch(config-sys-qos)# service-policy type qos input my_policy
switch(config-sys-qos)# exit
switch(config)# class-map type network-qos nqos_class
switch(config-cmap-nq)# match qos-group 2
switch(config-cmap-nq)# exit
switch(config)# policy-map type network-qos nqos_policy
switch(config-pmap-nq)# class type network-qos nqos_class
switch(config-pmap-nq-c)# exit
switch(config-pmap-nq)# exit
switch(config)# system qos
switch(config-sys-qos)# service-policy type network-qos nqos_policy
switch(config-sys-qos)# exit
switch(config)#
```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration file.
show policy-map type qos	Displays the QoS policy maps.
show running-config ipqos	Displays the QoS running configuration.

set precedence

To set the precedence value in an IP header for a class of traffic in a type qos policy map, use the **set precedence** command. To leave the precedence value unchanged for the class, use the **no** form of this command.

set precedence *precedence-value*

no set precedence *precedence-value*

Syntax Description

precedence-value	IP precedence value to assign for this class of traffic. Valid values are from 0 to 7. For a list of standard precedence values, see Table 2.

Command Default

None

Command Modes

Policy map type qos configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Marking is a method that you use to modify the QoS fields of the incoming and outgoing packets.

You can set the value of standard QoS fields IP precedence, DSCP, class of service (CoS), and internal labels that can be used in subsequent actions. Marking is used to identify the traffic type for use in policing, queuing, and scheduling traffic (only CoS is used in scheduling).

Use this command to classify the traffic based on the IP precedence packet header field. When you set the IP precedence value for a packet, make sure that you use a traffic class other than the class-default system class. For example, you would use qos-group *x*, where *x* is any value from 1 to 7.

Note You cannot set the IP precedence packet header field if the traffic is in the class-default system class (qos-group 0).

If you set the values for more than two IP header fields, you see the following error message:

```
ERROR: Only 2 sets out of qos-group/cos/dscp/precedence/discard-class are allowed. Please
remove other set action before applying this one.
```

Note You can set DSCP or IP precedence but you cannot set both values because they modify the same field in the IP packet.

After you set the IP precedence value, for the QoS policy map to work correctly and create the specified QoS groups, make sure that you attach the QoS policy map to a system policy, define a network-qos policy map, and attach it to the system policy. Make sure that the QoS group of the QoS policy map matches the QoS group of the network-qos policy.

Examples

This example shows how to set the IP precedence value for a QoS policy:

```
switch(config)# policy-map type qos my_policy
switch(config-pmap-qos)# class type qos my_class
switch(config-pmap-c-qos)# set precedence 5
switch(config-pmap-c-qos)# set qos-group 1
switch(config-pmap-c-qos)# exit
switch(config-pmap-qos)# exit
switch(config)# system qos
switch(config-sys-qos)# service-policy type qos input my_policy
switch(config-sys-qos)# exit
switch(config)# class-map type network-qos nqos_class
switch(config-cmap-nq)# match qos-group 1
switch(config-cmap-nq)# exit
switch(config)# policy-map type network-qos nqos_policy
switch(config-pmap-nq)# class type network-qos nqos_class
switch(config-pmap-nq-c)# exit
switch(config-pmap-nq)# exit
switch(config)# system qos
switch(config-sys-qos)# service-policy type network-qos nqos_policy
switch(config-sys-qos)# exit
switch(config)#
```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration file.
show policy-map type qos	Displays the QoS policy maps.
show running-config ipqos	Displays the QoS running configuration.
show startup-config ipqos	Displays the QoS configuration stored in the startup file.

set qos-group

To assign the qulaity of service (QoS) group identifier for a class of traffic in a type qos policy map, use the **set qos-group** command. To remove the assigned value from the class, use the **no** form of this command.

set qos-group *qos-group-value*

no set qos-group *qos-group-value*

Syntax Description

qos-group-value	QoS group value to assign for this class of traffic. The range is from 1 to 4.

Command Default

None

Command Modes

Policy map type qos class configuration

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

You can set the QoS group identifier value only in ingress policies. You can set a maximum of seven QoS groups in ingress policies.

The Cisco Nexus 3548 switch supports up to 248 combinations of Differentiated Services Code Point (DSCP) and qulaity of service (QoS) group groups.

Examples

This example shows how to assign a QoS group identifier for a class of traffic in a type qos policy map:

```
switch(config)# policy-map my_policy1
switch(config-pmap-qos)# class traffic_class2
switch(config-pmap-c-qos)# set qos-group 3
switch(config-pmap-c-qos)#
```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration file.
show policy-map type qos	Displays the QoS policy maps.
show running-config ipqos	Displays the QoS running configuration.
show startup-config ipqos	Displays the QoS configuration stored in the startup file.

show class-map type network-qos

To display type network-qos class maps, use the **show class-map type network-qos** command.

show class-map type network-qos [*class-map-name*]

Syntax Description

class-map-name	Name of the class map. The name can be a maximum of 40 alphanumeric characters.

Command Default

Displays all type network-qos class maps if no class map name is specified.

Command Modes

Any command mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

If you do not specify the type, the command displays all the class maps configured in the system.

Examples

This example shows how to display all type network-qos class maps:

```
switch# show class-map type network-qos

    class-map type network-qos cn1
      match qos-group 1

    class-map type network-qos cn2
      match qos-group 2

    class-map type network-qos cn3
      match qos-group 3

    class-map type network-qos cn4
      match qos-group 4

    class-map type network-qos class-default
      match qos-group 0

switch#
```

This example shows how to display all network-qos class maps:

```
switch# show class-map


  Type qos class-maps
  ===================

    class-map type qos match-all cqos1
      match cos 1
```

```
    class-map type qos match-all cqos4
      match cos 4

    class-map type qos match-any class-default
      match any


  Type queuing class-maps
  =======================

    class-map type queuing cqu1
      match qos-group 1

    class-map type queuing cqu4
      match qos-group 4

    class-map type queuing class-default
      match qos-group 0



  Type network-qos class-maps
  ===========================

    class-map type network-qos cnq1
      match qos-group 1

    class-map type network-qos cnq4
      match qos-group 4

    class-map type network-qos class-default
      match qos-group 0

switch#
```

Related Commands

Command	Description
class-map	Creates or modifies a class map.

show class-map type qos

To display type qos class maps, use the **show class-map type qos** command.

show class-map type qos [*class-map-name*]

Syntax Description

class-map-name	Named class map. The name *class-default* is reserved. The name can be a maximum of 40 alphanumeric characters.

Command Default

Displays all type qos class maps if no class map name is specified.

Command Modes

Any command mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display all type qos class maps:

```
switch(config)# show class-map type qos


  Type qos class-maps
  ===================

    class-map type qos match-all cq1
      match cos 1

    class-map type qos match-all cq2
      match cos 2

    class-map type qos match-all cq3
      match cos 3

    class-map type qos match-all cq4
      match cos 4

    class-map type qos match-all cl_acl
<--Output truncated-->
switch#
```

Related Commands

Command	Description
class-map	Creates or modifies a class map.

show class-map type queuing

To display type queuing class maps, use the **show class-map type queuing** command.

show class-map type queuing [*class-map-name*]

Syntax Description

class-map-name	Named class map. The name can be a maximum of 40 alphanumeric characters.

Command Default

Displays all type queuing class maps if no class map name is specified.

Command Modes

Any command mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display all type queuing class maps:

```
switch(config)# show class-map type queuing


  Type queuing class-maps
  =======================

    class-map type queuing q1
      match qos-group 1

    class-map type queuing q2
      match qos-group 2

    class-map type queuing q3
      match qos-group 3

    class-map type queuing q4
      match qos-group 4

    class-map type queuing class-default
      match qos-group 0

switch(config)#
```

Related Commands

Command	Description
class-map	Creates or modifies a class map.

show interface untagged-cos

To display the untagged class of service (CoS) values for a specified interface, use the **show interface untagged-cos** command.

show interface untagged-cos [**module** *module_no*]

Syntax Description

module	(Optional) Displays the interfaces on this module of the switch chassis.
module_no	Module number in the switch chassis. The range is from 1 to 18.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the untagged CoS values for interfaces:

```
switch# show interface untagged-cos
================================

Interface      Untagged-CoS
================================

port-channel1
port-channel10
port-channel100
port-channel200
port-channel234
port-channel300
port-channel400
Ethernet1/1
Ethernet1/2
Ethernet1/3
Ethernet1/4
Ethernet1/5
<--Output trunctaed-->
switch#
```

Related Commands

Command	Description
untagged cos	Sets a CoS value for untagged Ethernet frames.

show policy-map

To display policy maps, use the **show policy-map** command.

show policy-map [**type** {**network-qos** | **qos** | **queuing**}] [*policy-map-name*]

Syntax Description

type	(Optional) Specifies the component type to display.
network-qos	Displays policy maps of type network-qos.
qos	Displays policy maps of type qos only.
queuing	Displays policy maps of type queuing only.
policy-map-name	(Optional) Named policy map. The name can be a maximum of 40 alphanumeric characters.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

When you enter the **show policy-map** command with no arguments or keywords.

Examples

This example shows how to display all configured policy maps on a switch that runs Cisco NX-OS Release 5.0(3)A1(1):

```
switch# show policy-map


  Type qos policy-maps
  ====================

  policy-map type qos pqos
    class type qos cqos1
      set qos-group 1
    class type qos cqos4
      set qos-group 4
    class type qos class-default
      set qos-group 0
  policy-map type qos default-in-policy
    class type qos class-default
      set qos-group 0

  Type queuing policy-maps
  ========================

  policy-map type queuing pqu
```

```
    class type queuing cqu1
      bandwidth percent 10
    class type queuing cqu6
      bandwidth percent 20
    class type queuing class-default
      bandwidth percent 70
  policy-map type queuing default-out-policy
    class type queuing class-default
      bandwidth percent 100


  Type network-qos policy-maps
  ============================

  policy-map type network-qos pnqos
    class type network-qos cnq1
      mtu 1500
      set cos 4
    class type network-qos cnq4
      mtu 1500
      set cos 5
      congestion-control random-detect ecn
    class type network-qos class-default
      mtu 1500
  policy-map type network-qos default-nq-policy
    class type network-qos class-default
      mtu 1500

switch#
```

This example shows how to display a named network-qos policy map on a switch that runs Cisco NX-OS Release 5.0(3)A1(1):

```
switch# show policy-map type network-qos my_pnq
```

This example shows how to display all configured policy maps on a switch that runs Cisco NX-OS Release 5.0(3)A1(1):

```
switch# show policy-map


  Type qos policy-maps
  ====================

  policy-map type qos mix
    class type qos ip-rtp-2000-3000
      set qos-group 2
      set dscp 20
    class type qos ip-rtp-4000-5000
      set qos-group 3
      set prec 5
    class type qos cos-prec
      set qos-group 4
      set dscp 25
    class type qos class-default
      set qos-group 0
:
<--snip-->
:
  Type queuing policy-maps
  ========================

  policy-map type queuing qqq
    class type queuing q1
```

```
      bandwidth percent 10
      priority
    class type queuing q2
      bandwidth percent 10
    class type queuing q3
      bandwidth percent 10
    class type queuing q4
      bandwidth percent 20
    class type queuing q5
      bandwidth percent 20
    class type queuing q6
      bandwidth percent 10
    class type queuing q7
      bandwidth percent 10
    class type queuing class-default
      bandwidth percent 10
  policy-map type queuing default-out-policy
    class type queuing class-default
      bandwidth percent 100
switch#
```

Related Commands

Command	Description
policy-map	Creates or modifies a policy map.

show policy-map interface

To display the service policy maps configured on the interfaces, use the **show policy-map interface** command.

show policy-map interface [**ethernet** *slot/port* | **port-channel** *channel-number*] [**input** | **output**] [**type** {**qos** | **queuing**}]

Syntax Description

ethernet	(Optional) Displays policy maps assigned to Ethernet interfaces.
slot/port	Ethernet interface slot number and port number. The slot number is from 1 to 255, and the port number is from 1 to 128.
port-channel	(Optional) Displays policy maps assigned to EtherChannels.
channel-number	EtherChannel number. The number is from 1 to 4096.
input	(Optional) Displays policy maps assigned to input traffic only.
output	(Optional) Displays policy maps assigned to output traffic only.
type	(Optional) Specifies the component type to display.
qos	Displays policy maps of type qos only.
queuing	Displays policy maps of type queuing only.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Statistics are on by default.

Examples

This example shows how to display policy maps assigned to a specified interface:

```
switch# show policy-map interface ethernet 1/1


Global statistics status :   disabled

Ethernet1/1

  Service-policy (qos) input:   pqos
    policy statistics status:   disabled

    Class-map (qos):   cqos1 (match-all)
      Match: cos 1
      set qos-group 1
```

```
    Class-map (qos):   cqos6 (match-all)
      Match: cos 6
      set qos-group 6

    Class-map (qos):   class-default (match-any)
      Match: any
      set qos-group 0

  Service-policy (queuing) output:   pqu
    policy statistics status:   disabled
<--Output truncated-->
switch#
```

This example shows how to display QoS policy maps assigned to a specified interface:

```
switch# show policy-map interface ethernet 1/1 type qos


Global statistics status :   disabled

Ethernet1/1

  Service-policy (qos) input:   default-in-policy
    policy statistics status:   disabled

    Class-map (qos):   class-default (match-any)
      Match: any
      set qos-group 0

switch#
```

This example shows how to display the policy maps assigned to the output traffic of a specified interface:

```
switch# show policy-map interface ethernet 3/1 output


Global statistics status :   disabled

Ethernet1/1

  Service-policy (queuing) output:   default-out-policy
    policy statistics status:   disabled

    Class-map (queuing):   class-default (match-any)
      Match: qos-group 0
      bandwidth percent 100

switch#
```

Related Commands

Command	Description
policy-map	Creates or modifies a policy map.

show policy-map interface brief

To display policy maps applied to interfaces in a brief format, use the **show policy-map interface brief** command.

show policy-map interface brief

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Any command mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display assigned policy maps in a brief format:

```
switch(config)# show policy-map interface brief


 Interface/VLAN [Status]:INP QOS       OUT QOS       INP QUE       OUT QUE
================================================================================
Ethernet1/1     [Active]:default-in-po                              default-out-p

Ethernet1/2     [Active]:default-in-po                              default-out-p

Ethernet1/3     [Active]:default-in-po                              default-out-p

Ethernet1/4     [Active]:default-in-po                              default-out-p

Ethernet1/5     [Active]:default-in-po                              default-out-p

<--output truncated-->
switch(config)#
```

Related Commands

Command	Description
policy-map	Creates or modifies a policy map.
show policy-map	Displays policy maps.

show policy-map system

To display all active policy maps in the system, use the **show policy-map** system command.

show policy-map system [**type** {**network-qos** | **qos** [**input**] | **queuing** [**input** | **output**]}]

Syntax Description

type	(Optional) Specifies the component type to display.
network-qos	Displays policy maps of type network-qos only.
qos	Displays policy maps of type qos only.
input	(Optional) Displays policy maps assigned to input traffic.
queuing	Displays policy maps of type queuing only.
output	(Optional) Displays policy maps assigned to output traffic.

Command Default

All policy maps

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

If you do not specify a policy map type and name, the system displays all the active policy maps in the system.

Examples

This example shows how to display all active policy maps in the system:

```
switch# show policy-map system


  Type network-qos policy-maps
  ============================

  policy-map type network-qos pnqos
    class type network-qos cnq1      match qos-group 1

      mtu 1500
      set cos 4
    class type network-qos cnq4 match qos-group 4

      mtu 1500
      set cos 5
      congestion-control random-detect ecn
    class type network-qos class-default      match qos-group 0

      mtu 1500

  Service-policy (qos) input:   pqos
```

```
    policy statistics status:   disabled

    Class-map (qos):   cqos1 (match-all)
      Match: cos 1
      set qos-group 1

    Class-map (qos):   cqos4 (match-all)
      Match: cos 6
      set qos-group 4

    Class-map (qos):   class-default (match-any)
      Match: any
      set qos-group 0

  Service-policy (queuing) output:   pqu
    policy statistics status:   disabled

    Class-map (queuing):   cqu1 (match-any)
      Match: qos-group 1
      bandwidth percent 10

    Class-map (queuing):   cqu4 (match-any)
      Match: qos-group 4
      bandwidth percent 20

    Class-map (queuing):   class-default (match-any)
      Match: qos-group 0
      bandwidth percent 70

switch#
```

This example shows how to display active network-qos policy maps in the system:

```
switch# show policy-map system type network-qos
```

Related Commands

Command	Description
show policy-map	Displays all policy maps.

show queuing interface

To display the queuing information on interfaces, use the **show queuing interface** command.

show queuing interface [**ethernet** *slot-no*/*port-no*]

Syntax Description

ethernet	(Optional) Specifies that queuing information to be displayed for an Ethernet interface.
slot-no	Slot number of the Ethernet interface. The range is from 1 to 255.
port-no	Port number of the Ethernet interface. The range is from 1 to 128.

Command Default

Displays the queuing information for all interfaces.

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the queuing information for a specific interface:

```
switch# show queuing interface ethernet 1/7
Ethernet1/5 queuing information:
  TX Queuing
    qos-group  sched-type  oper-bandwidth
        0       WRR            100

  RX Queuing
    qos-group 0
    HW MTU: 1500 (1500 configured)
    drop-type: drop, xon: 0, xoff: 0
    Statistics:
        Ucast pkts dropped                      : 0
        Mcast pkts dropped                      : 0
switch#
```

Table 3 describes the significant fields shown in the display.

Table 3 show queuing interface Field Descriptions

Field	Description
Ethernet ...	Ethernet interface information.
qos-group	Information about QoS groups configured on the switch.
sched-type	Type of schedule.
WRR	Weighted round robin(WRR). Queue eight for scheduling.
MTU	Maximum transmit unit (MTU) for the queue.

Table 3 show queuing interface Field Descriptions (continued)

Field	Description
drop-type	Queue drop type can be either drop or no-drop.
Xon	Transmission on at this threshold.
Xoff	Transmission off at this threshold.

show running-config ipqos

To display information about the running-system configuration for quality of service (QoS), use the **show running-config ipqos** command.

show running-config ipqos [**all**]

Syntax Description

all	(Optional) Displays configured and default information.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use this command to view a list of default and configured class maps and policy maps and the policies attached to interfaces.

Examples

This example shows how to display QoS information:

```
switch# show running-config ipqos

!Time: Fri Nov  2 07:22:09 2012

version 5.0(3)A1(1)
policy-map type qos my_policy
class-map type network-qos my_class1
  match qos-group 1
policy-map type network-qos jumbo
  class type network-qos class-default
    mtu 9216
policy-map type network-qos my_policy1
  class type network-qos my_class1
  class type network-qos class-default
policy-map type network-qos NetworkQoS-3048
  class type network-qos class-default

switch#
```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration file.
show class-map	Displays information about class maps.
show policy-map	Displays information about policy maps.

show startup-config ipqos

To display quality of service (QoS) configuration information in the startup configuration, use the **show startup-config ipqos** command.

show startup-config ipqos [**all**]

Syntax Description

all	(Optional) Displays configured and default information.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the QoS information in the startup configuration file:

```
switch# show startup-config ipqos


!Command: show startup-config ipqos
!Time: Fri Jun  4 06:10:27 2010
!Startup config saved at: Thu Jun  3 18:13:44 2010

version 5.0(3)A1(1)
policy-map type network-qos jumbo
  class type network-qos class-default
    mtu 9216
system qos
  service-policy type network-qos jumbo


switch#
```

Related Commands

Command	Description
copy running-config startup-config	Copies the running configuration to the startup configuration file.
show class-map	Displays information about class maps.
show policy-map	Displays information about policy maps.

show wrr unicast-bandwidth

To display the weighted round robin (WRR) bandwidth information, use the **show wrr unicast-bandwidth** command.

show wrr unicast-bandwidth

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to display the WRR bandwidth value:

```
switch# show wrr unicast-bandwidth
UCAST Bandwidth percent:         75
switch#
```

Related Commands

Command	Description
wrr unicast-bandwidth	Assigns a weighted round robin (WRR) bandwidth value for interfaces.

system jumbomtu

To define the upper bound of any maximum transmission unit (MTU) in the system, use the **system jumbomtu** command.

system jumbomtu [*value*]

Syntax Description

value	Jumbomtu value. The range is from 1500 to 9216.

Command Default

9216 bytes

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Examples

This example shows how to define the upper bound of any MTU in the system:

```
switch(config)# system jumbomtu 9216
switch(config)#
```

This example shows how to define the upper bound of any MTU in a switch:

```
switch# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
switch(config)# system jumbomtu 3000
switch(config)#
```

Related Commands

Command	Description
show interface	Displays the jumbo MTU frames sent and received on the specified interface.

system qos

To configure a system policy, use the **system qos** command.

system qos

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

The Cisco Nexus 3548 switch supports up to 64 different QoS policies.

Examples

This example shows how to configure a system qos to apply a queuing policy to all interfaces in the system:

```
switch(config)# system qos
switch(config-sys-qos)#
```

Related Commands

Command	Description
service-policy	Associates the system class policy-map to the service policy for the system.

untagged cos

To override the class of service (CoS) value for the selected interface, use the **untagged cos** command. To revert to the defaults, use the **no** form of this command.

untagged cos *cos-value*

no untagged cos *cos-value*

Syntax Description

cos-value	Class of service (CoS) value for untagged frames. Values can range from 0 to 7.

Command Default

None

Command Modes

Interface configuration mode
Subinterface configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Ethernet frames received with no CoS value are given a CoS value of 0.

Examples

This example shows how to set the CoS value to 4 for untagged frames received on an interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/2
switch(config-if)# untagged cos 4
```

This example shows how to set the CoS value to 3 for untagged frames received on a Layer 3 interface:

```
switch# configure terminal
switch(config)# interface ethernet 1/5
switch(config-if)# no switchport
switch(config-if)# untagged cos 3
switch(config-if)#
```

Related Commands

Command	Description
match cos	Sets the CoS value to match for the selected class.
no switchport	Configures an interface as a Layer 3 routed interface.
show interface untagged-cos	Displays the untagged CoS values for interfaces.

wrr unicast-bandwidth

To assign weighted round robin (WRR) weights, as a percentage of the interface data rate, to the egress queues, use the **wrr unicast-bandwidth** command. To unassign the WRR bandwidth values, use the **no** form of this command.

wrr unicast-bandwidth *percentage-value*

no wrr unicast-bandwidth *percentage-value*

Syntax Description

percentage-value	Percentage of the bandwidth. The range is from 0 to 100.

Command Default

50

Command Modes

Global configuration mode

Command History

Release	Modification
5.0(3)A1(1)	This command was introduced.

Usage Guidelines

Use this command to change the bandwidth alloted to unicast and multicast traffic on traffic congestion.

Examples

This example shows how to set the bandwidth to 75 percent for a specific interface:

```
switch# configure terminal
switch(config)# wrr unicast-bandwidth 75
switch(config)#
```

Related Commands

Command	Description
show wrr unicast-bandwidth	Displays the weighted round robin (WRR) bandwidth information.