

1 QoS Commands

Command	Function
class	Associate a class with a policy.
class-map	Configure a class.
drop	Configure the traffic behavior of discarding packets.
drr-queue bandwidth	Configure the deficit round robin (DRR) scheduling weights for output queues.
match	Configure a matching rule for a class.
mls qos cos	Configure the IEEE 802.1p value for an interface.
mls qos enable	Enable the global QoS function.
mls qos map cos-dscp	Configure the IEEE 802.1p-to-DSCP mappings for an interface.
mls qos map dscp-cos	Configure the DSCP-to-CoS mappings.
mls qos map ip-precedence-dscp	Configure the IP PRE-to-DSCP mappings.
mls qos scheduler	Configure a scheduling policy for output queues.
mls qos trust	Configure the trust mode for an interface.
police	Configure a bandwidth limit and the traffic behavior of processing packets out of the limit.
policy-map	Configure a policy.
priority-queue	Set the scheduling policy to SP for output queues.
priority-queue cos-map	Configure the CoS-to-queue mappings.
qos queue	Configure the minimum guaranteed bandwidth or maximum limited bandwidth for a queue.
queueing wred	Enable the WRED function.
rate-limit	Configure the rate limit for an interface.
service-policy	Apply a policy.
set	Configure the traffic behavior of modifying a QoS priority.

show class-map	Display information about a class.
show mls qos interface	Display the QoS information of an interface.
show mls qos maps	Display the mappings of different priorities.
show mls qos queueing	Display the CoS-to-queue mappings and the scheduling weights of queues.
show mls qos rate-limit	Display the rate limit information of an interface.
show mls qos scheduler	Display the scheduling policy information of output queues.
show mls qos virtual-group	Display policies associated with a logical interface group.
show policy-map	Display policy information.
show qos bandwidth	Display the queue bandwidth information.
show queueing wred	Display WRED information.
show virtual-group	Display information about members contained in a logical interface group.
virtual-group	Create a logical interface group.
wfq-queue bandwidth	Configure the WFQ scheduling weights for output queues.
wrr-queue bandwidth	Configure the WRR scheduling weights for output queues.
wrr-queue cos-map	Configure the mappings from CoS values to threshold groups.
wrr-queue random-detect min-threshold	Configure the lower threshold value for WRED to discard packets.
wrr-queue random-detect probability	Configure the maximum discarding probability for WRED.

1.1 class

Function

Run the **class** command to associate a class with a policy.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No class is associated with a policy by default.

Syntax

class *class-map-name*

no class *class-map-name*

default class *class-map-name*

Parameter Description

class *class-map-name*: Configures the name of a class. The value is a case-sensitive string of 1 to 31 characters.

Command Modes

Policy configuration mode

Default Level

14

Usage Guidelines

Before running this command, you must run the **class-map** command to configure a class, run the **policy-map** command to configure a policy, and enter the policy configuration mode.

When multiple classes are associated with the same policy, you are not advised to match the multiple classes with the same flow. Otherwise, the traffic behavior bound to a class takes effect on the flow randomly, and, when the device restarts, the effective traffic behavior may change.

Examples

The following example configures the policy pmap1, associates the class cmap1 with the policy, and enters the policy class configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# class-map cmap1
Hostname(config-cmap)# exit
Hostname(config)# policy-map pmap1
Hostname(config-pmap)# class cmap1
Hostname(config-pmap-c)#
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- class-map
- policy-map

1.2 class-map

Function

Run the **class-map** command to configure a class.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No class is configured by default.

Syntax

class-map *class-map-name*

no class-map *class-map-name*

default class-map *class-map-name*

Parameter Description

class-map *class-map-name*: Configures the name of a class. The value is a case-sensitive string of 1 to 31 characters.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

This command is used to configure a class and enter the class configuration mode. You can run the **match** command to configure matching rules for a class.

Examples

The following example configures the class `cm_acl` and associates the class with an MAC extended access control list (ACL) that permits all the packets with the source MAC address 1111.2222.3333 to pass through.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# mac access-list extended me
Hostname(config-ext-macl)# permit host 1111.2222.3333 any
```

```
Hostname(config-ext-macl)# exit
Hostname(config)# class-map cm_acl
Hostname(config-cmap)# match access-group me
```

The following example configures the class `cm_dscp` for matching packets with the differentiated services code point (DSCP) values 8, 16, and 24.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# class-map cm_dscp
Hostname(config-cmap)# match ip dscp 8 16 24
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- `match`

1.3 drop

Function

Run the **drop** command to configure the traffic behavior of discarding packets.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

The traffic behavior of discarding packets is not configured by default.

Syntax

drop

no drop

default drop

Parameter Description

N/A

Command Modes

Policy class configuration mode

Default Level

14

Usage Guidelines

This command can be configured only when no traffic behavior is specified for the class associated with a policy. After the traffic behavior of discarding packets is configured, you need to delete this traffic behavior before configuring other traffic behaviors.

Examples

The following example configures the policy pmap1, associates the class cm-acl with the policy, and configures the traffic behavior of discarding packets in the policy.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# policy-map pmap1
Hostname(config-pmap)# class cm-acl
Hostname(config-pmap-c)# drop
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- policy-map
- class

1.4 drr-queue bandwidth

Function

Run the **drr-queue bandwidth** command to configure the deficit round robin (DRR) scheduling weights for output queues.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The default DRR scheduling weight ratio of output queues is **1:1:1:1:1:1:1**.

Syntax

drr-queue bandwidth *weight-value-list*

no drr-queue bandwidth

default drr-queue bandwidth

Parameter Description

weight-value-list: DRR scheduling weights for output queues. The weight value range is from 0 to 15. The value **0** indicates that the SP scheduling policy is used.

Command Modes

Global configuration mode
L2 Ethernet interface configuration mode
L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

When the DRR scheduling weights are configured for output queues in both global configuration mode and L2/L3 Ethernet interface configuration mode, the interface configuration prevails.

Examples

The following example sets the DRR scheduling weight ratio to **1:1:1:2:2:4:6:8** for global output queues.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# drr-queue bandwidth 1 1 1 2 2 4 6 8
```

The following example sets the DRR scheduling weight ratio to **1:1:2:2:2:2:4:4** for output queues on L2 Ethernet interface GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# drr-queue bandwidth 1 1 2 2 2 2 4 4
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.5 match

Function

Run the **match** command to configure a matching rule for a class.
Run the **no** form of this command to remove this configuration.
Run the **default** form of this command to restore the default configuration.
No matching rules are configured for a class by default.

Syntax

```
match { access-group { acl-number | acl-name } | ip { dscp dscp-value-list | precedence pre-value-list } }  
no match { access-group { acl-number | acl-name } | ip { dscp dscp-value-list | precedence pre-value-list } }
```

Parameter Description

access-group: Matches ACL rules. Both numerically indexed ACLs and named ACLs are supported.

acl-number: Number of a numerically indexed ACL for matching. IP standard ACLs: 1 to 99 or 1300 to 1999; IP extended ACLs: 100 to 199 or 2000 to 2699; MAC extended ACLs: 700 to 799; expert extended ACLs: 2700 to 2899.

acl-name: Name of an ACL for matching. The value is a case-sensitive string of 1 to 99 characters.

ip dscp dscp-value-list: Matches DSCP rules. Multiple DSCP values can be matched at the same time. The value range is from 0 to 63.

ip precedence pre-value-list: Matches IP PRE rules. Multiple IP PRE values can be matched at the same time. The value range is from 0 to 7.

Command Modes

Class configuration mode

Default Level

14

Usage Guidelines

Before running this command, you must run the **class-map** command to configure a class and enter the class configuration mode.

Examples

The following example configures the class `cmap1` for matching packets with the IP DSCP values 20, 22, 24, and 30.

```
Hostname> enable  
Hostname# configure terminal  
Hostname(config)# class-map cmap1  
Hostname(config-cmap)# match ip dscp 20 22 24 30
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- class-map

1.6 mls qos cos

Function

Run the **mls qos cos** command to configure the IEEE 802.1p value for an interface.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The default IEEE 802.1p value of an interface is **0**.

Syntax

```
mls qos cos cos-value
```

```
no mls qos cos
```

```
default mls qos cos
```

Parameter Description

cos *cos-value*: Configures the IEEE 802.1p value for an interface. The value range is from 0 to 7.

Command Modes

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

When the trust mode of an interface is set to untrusted, the packets received from the interface use the IEEE 802.1p value configured for the interface.

Examples

The following example sets the IEEE 802.1p value to **7** for L2 Ethernet interface GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# mls qos cos 7
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.7 mls qos enable

Function

Run the **mls qos enable** command to enable the global QoS function.

Run the **no** form of this command to disable this feature.

Run the **default** form of this command to restore the default configuration.

The default configuration of this command depends on the actual product version.

Syntax

mls qos enable

no mls qos enable

default mls qos enable

Parameter Description

N/A

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

N/A

Examples

The following example enables the global QoS function.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# mls qos enable
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.8 mls qos map cos-dscp

Function

Run the **mls qos map cos-dscp** command to configure the IEEE 802.1p-to-DSCP mappings for an interface.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The IEEE 802.1p values 0 to 7 of an interface are mapped to DSCP values 0, 8, 16, 24, 32, 40, 48, and 56 respectively by default.

Syntax

mls qos map cos-dscp *dscp-value-list*

no mls qos map cos-dscp

default mls qos map cos-dscp

Parameter Description

dscp-value-list: DSCP values, to which IEEE 802.1p values 0 to 7 are to be mapped respectively. The value range is from 0 to 63.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

When the trust mode of an interface is set to trusting IEEE 802.1p, if a tagged packet of IEEE 802.1q is received from the interface, the IEEE 802.1p value carried in the packet is directly used. If the packet does not carry any tag, the IEEE 802.1p value configured for the interface is used. The mapping table configured using this command and the mapping table configured using the **mls qos map dscp-cos** command are used to jointly obtain CoS values.

Examples

The following example maps IEEE 802.1p values 0 to 7 of an interface to DSCP values 8, 10, 16, 18, 24, 26, 32, and 34 respectively.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# mls qos map cos-dscp 8 10 16 18 24 26 32 34
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.9 mls qos map dscp-cos

Function

Run the **mls qos map dscp-cos** command to configure the DSCP-to-CoS mappings.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

Table 1-1 lists the default mappings from DSCP values to CoS values.

Table 1-1 Default Mappings from DSCP Values to CoS Values

DSCP	CoS Value
0 to 7	0
8 to 15	1
16 to 23	2
24 to 31	3
32 to 39	4
40 to 47	5
48 to 55	6
56 to 63	7

Syntax

mls qos map dscp-cos *dscp-value*&<1-8> **to** *cos-value*

no mls qos map dscp-cos

default mls qos map dscp-cos

Parameter Description

dscp-value&<1-8>: DSCP value. &<1-8> indicates that 1 to 8 DSCP values can be configured. The value range is from 0 to 63.

cos-value: CoS values, to which DSCP values are to be mapped. The value range is from 0 to 7.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

CoS values can be obtained based on DSCP values from the mapping table configured using this command.

Examples

The following example maps DSCP values 8, 10, 16, and 18 to CoS 0.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# mls qos map dscp-cos 8 10 16 18 to 0
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.10 mls qos map ip-precedence-dscp

Function

Run the **mls qos map ip-precedence-dscp** command to configure the IP PRE-to-DSCP mappings.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

IP PRE values 0 to 7 are mapped to DSCP values 0, 8, 16, 24, 32, 40, 48, and 56 respectively by default.

Syntax

```
mls qos map ip-precedence-dscp dscp-value-list
```

```
no mls qos map ip-precedence-dscp
```

```
default mls qos map ip-precedence-dscp
```

Parameter Description

dscp-value-list: DSCP values, to which IP PRE values 0 to 7 are to be mapped respectively. The value range is from 0 to 63.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

When the trust mode of an interface is set to trust IP PRE, if a non-IP packet is received from the interface, the packet is processed in the same way of trusting IEEE 802.1p. If an IP packet is received, the CoS value is obtained based on the IP PRE value of the packet from the mapping table configured using this command and the mapping table configured using the **mls qos map dscp-cos** command.

Examples

The following example maps IP PRE values 0 to 7 to DSCP values 8, 10, 16, 18, 24, 26, 32, and 34 respectively.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# mls qos map ip-precedence-dscp 8 10 16 18 24 26 32 34
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.11 mls qos scheduler

Function

Run the **mls qos scheduler** command to configure a scheduling policy for output queues.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

By default, the scheduling policy for global output queues is WRR, and no scheduling policy is configured for the output queues on an interface.

Syntax

```
mls qos scheduler { drr | rr | sp | wfq | wrr }
```

```
no mls qos scheduler
```

```
default mls qos scheduler
```

Parameter Description

drr: Configures DRR scheduling.

- rr**: Configures round robin (RR) scheduling.
- sp**: Configures strict priority (SP) scheduling.
- wfq**: Configures weighted fair queuing (WFQ) scheduling.
- wrr**: Configures weighted round robin (WRR) scheduling.

Command Modes

- Global configuration mode
- L2 Ethernet interface configuration mode
- L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

If a scheduling policy is configured for an output queue in both global configuration mode and L2/L3 Ethernet interface configuration mode, the interface configuration prevails.

- In SP scheduling, packets are scheduled strictly based on the queue priorities. Only after all the packets in a queue with a higher priority are processed, can the packets in a queue with a lower priority be processed.
- RR scheduling uses the round robin method to schedule multiple queues. Only one packet in a queue is processed each time.
- WRR scheduling solves the problem that weight cannot be set for RR scheduling. WRR scheduling also adopts the round robin method to schedule multiple queues. The number of packets in a queue processed each time is proportional to the weight of the queue. RR scheduling is equivalent to WRR scheduling with the weight 1.
- DRR scheduling is similar to WRR scheduling, but implements scheduling based on the time slice, instead of the number of packets.
- WFQ scheduling fixes the problem that the queues using WRR scheduling have no fixed egress bandwidth. WFQ scheduling allocates an egress bandwidth to queues based on the queue weight, and different queues can have the opportunity of fair scheduling.

Examples

The following example sets the scheduling policy to SP scheduling for output queues.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# mls qos scheduler sp
```

The following example sets the scheduling policy to DRR scheduling for output queues of L2 Ethernet interface GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# mls qos scheduler drr
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.12 mls qos trust

Function

Run the **mls qos trust** command to configure the trust mode for an interface.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The default trust mode of an interface is untrusted, and the IEEE 802.1p value configured for the interface is used.

Syntax

```
mls qos trust { cos | dscp | ip-precedence }
```

```
no mls qos trust
```

```
default mls qos trust
```

Parameter Description

cos: Configures trusting IEEE 802.1p.

dscp: Configures trusting DSCP.

ip-precedence: Configures trusting IP PRE.

Command Modes

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

N/A

Examples

The following example sets the trust mode of L2 Ethernet interface GigabitEthernet 0/1 to trust the IEEE 802.1p value configured for the interface.


```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# mls qos trust cos
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.13 police

Function

Run the **police** command to configure a bandwidth limit and the traffic behavior of processing packets out of the limit.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the configuration.

No bandwidth limit and the traffic behavior of processing packets out of the limit are configured by default.

Syntax

```
police rate-value burst-value [ exceed-action { cos cos-value [ none-tos ] | drop | dscp dscp-value } ]
```

Parameter Description

rate-value: Rate limit value, in kbps. The value range is from 64 to 33554432.

burst-value: Burst traffic limit value, in Kbytes. The value range is from 4 to 8192.

drop: Discards packets out of the bandwidth limit.

dscp *dscp-value*: Changes the DSCP value of the packets out of the bandwidth limit. The value range is from 0 to 63.

cos *cos-value*: Changes the CoS value of the packets out of the bandwidth limit. The value range is from 0 to 7.

none-tos: Keeps the DSCP value of packets unchanged when the CoS value of packets is changed.

Command Modes

Policy class configuration mode

Default Level

14

Usage Guidelines

After the traffic behavior of discarding packets is configured, you need to delete the configured traffic behavior before configuring the traffic behavior of processing packets out of the limit.

Examples

The following example configures the policy pmap1, associates the class cm-acl with the policy, sets the traffic rate limit to 102400 kbps (namely, 100 Mbps), the burst traffic limit to 4096 Kbytes, and configures the action of changing the DSCP value to 16 for traffic out of the limit.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# policy-map pmap1
Hostname(config-pmap)# class cm-acl
Hostname(config-pmap-c)# police 102400 4096 exceed-action dscp 16
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- policy-map
- class

1.14 policy-map

Function

Run the **policy-map** command to configure a policy.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No policy is configured by default.

Syntax

policy-map *policy-map-name*

no policy-map *policy-map-name*

default policy-map *policy-map-name*

Parameter Description

policy-map *policy-map-name*: Configures a policy name. The value is a case-sensitive string of 1 to 31 characters.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

Run this command to enter the policy configuration mode. Then, run the **class** command to enter the policy class configuration mode.

Examples

The following example configures the policy po, associates the class cmap1 with the policy, sets the traffic rate limit to 10240 kbps and the burst traffic limit to 256 Kbytes, and configures the action of discarding packets out of the limit in the policy.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# policy-map po
Hostname(config-pmap)# class cmap1
Hostname(config-pmap-c)# police 10240 256 exceed-action drop
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- class
- police

1.15 priority-queue

Function

Run the **priority-queue** command to set the scheduling policy to SP for output queues.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The default scheduling policy of output queues is **WRR**.

Syntax

priority-queue

no priority-queue

default priority-queue

Parameter Description

N/A

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

When you run this command to set the scheduling policy to SP for output queues, the effect is the same as that of the **mls qos scheduler sp** command. When you run the **show running-config** command, the **mls qos scheduler sp** command is displayed instead of the **priority-queue** command.

Examples

The following example sets the scheduling policy to SP for output queues.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# priority-queue
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.16 priority-queue cos-map

Function

Run the **priority-queue cos-map** command to configure the CoS-to-queue mappings.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

CoS values 0 to 7 are mapped to queues 1 to 8 respectively by default.

Syntax

```
priority-queue cos-map qid cos-value&<1-8>
```

```
no priority-queue cos-map
```

default priority-queue cos-map

Parameter Description

qid: Queue ID, to which a CoS value is to be mapped. The value range is from 1 to 8.

cos-value<1-8>: CoS value to be mapped to a specified queue. <1-8> means that you can configure the mappings from 1–8 CoS values to queues. The value range is from 0 to 7.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

You can run this command to enable packets to enter queues based on their CoS values.

Examples

The following example configures mappings from CoS values 3 and 5 to queue 1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# priority-queue cos-map 1 3 5
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.17 qos queue

Function

Run the **qos queue** command to configure the minimum guaranteed bandwidth or maximum limited bandwidth for a queue.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No minimum guaranteed bandwidth and maximum limited bandwidth are configured for a queue by default.

Syntax

```
qos queue queue-id bandwidth { maximum bandwidth | minimum bandwidth }
```

```
no qos queue queue-id bandwidth { maximum | minimum }  
default qos queue queue-id bandwidth { maximum | minimum }
```

Parameter Description

queue-id: ID of a queue. The value range is from 1 to 8.

bandwidth maximum *bandwidth*: Configures the maximum limited bandwidth. The value range is from 64 to 10000000.

bandwidth minimum *bandwidth*: Configures the minimum guaranteed bandwidth. The value range is from 64 to 10000000.

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

N/A

Examples

The following example sets the maximum limited bandwidth to 10 Mbps and minimum guaranteed bandwidth to 5 Mbps for queue 1 on L2 Ethernet interface GigabitEthernet 0/1, sets the minimum guaranteed bandwidth to 2 Mbps for queue 2.

```
Hostname> enable  
Hostname# configure terminal  
Hostname(config)# interface gigabitethernet 0/1  
Hostname(config-if-GigabitEthernet 0/1)# qos queue 1 bandwidth maximum 10240  
Hostname(config-if-GigabitEthernet 0/1)# qos queue 1 bandwidth minimum 5120  
Hostname(config-if-GigabitEthernet 0/1)# qos queue 2 bandwidth minimum 2048
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.18 queueing wred

Function

Run the **queueing wred** command to enable the WRED function.

Run the **no** form of this command to disable this feature.

Run the **default** form of this command to restore the default configuration.

The WRED function is disabled by default.

Syntax

queueing wred

no queueing wred

default queueing wred

Parameter Description

N/A

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

You need to configure an interface to trust DSCP so that the WRED function takes effect on the interface.

Examples

The following example enables the WRED function.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# queueing wred
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.19 rate-limit

Function

Run the **rate-limit** command to configure the rate limit for an interface.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No rate limit is configured for an interface by default.

Syntax

rate-limit { **input** | **output** } *rate-value* *burst-value*

no rate-limit { **input** | **output** }

default rate-limit { **input** | **output** }

Parameter Description

input: Limits the traffic in the input direction of an interface.

output: Limits the traffic in the output direction of an interface.

rate-value: Traffic rate limit value, in kbps. The value range is from 64 to 1000000.

burst-value: Burst traffic limit value, in Kbytes. The value range is from 4 to 8192.

Command Modes

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

N/A

Examples

The following example sets the traffic rate limit to 102400 kbps (namely, 100 Mbps) and burst traffic limit to 2048 Kbytes for L2 Ethernet interface GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# rate-limit input 102400 2048
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.20 service-policy

Function

Run the **service-policy** command to apply a policy.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No policy is applied by default.

Syntax

service-policy { **input** | **output** } *policy-map-name*

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

default service-policy { **input** | **output** } *policy-map-name*

Parameter Description

input: Applies a policy to the input direction of an interface.

output: Applies a policy to the output direction of an interface.

policy-map-name: Name of a policy to be applied. The value is a case-sensitive string of 1 to 31 characters.

Command Modes

Global configuration mode

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Logical Interface group configuration mode

Default Level

14

Usage Guidelines

Before running this command, you must run the **policy-map** command to configure a policy.

When policies are applied in both global configuration mode and L2/L3 Ethernet interface configuration mode, the interface configuration prevails.

Examples

The following example applies the policy po to the input direction of L2 Ethernet interface GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# service-policy input po
```

The following example applies the policy po to the output direction of all the interfaces.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# service-policy output po
```

The following example applies the policy po to the output direction of logical interface group 3.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# virtual-group 3
Hostname(config-VirtualGroup)# service-policy output po
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- virtual-group

1.21 set

Function

Run the **set** command to configure the traffic behavior of modifying a QoS priority.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

The traffic behavior of modifying a QoS priority is not configured by default.

Syntax

```
set { cos cos-value | ip dscp dscp-value }
```

```
no set { ip dscp | cos }
```

Parameter Description

cos *cos-value*: Changes the IEEE 802.1p value of an interface. The value range is from 0 to 7.

ip dscp *dscp-value*: Changes the DSCP value. The value range is from 0 to 63.

Command Modes

Policy class configuration mode

Default Level

14

Usage Guidelines

After the traffic behavior of discarding packets is configured, you need to delete the configured traffic behavior before configuring the traffic behavior of modifying a QoS priority.

Examples

The following example configures the policy pmap1, associates the class cmap1 with the policy, and changes the IEEE 802.1p value of packets to 3.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# policy-map pmap1
Hostname(config-pmap)# class cmap1
Hostname(config-pmap-c)# set cos 3
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- policy-map
- class

1.22 show class-map

Function

Run the **show class-map** command to display information about a class.

Syntax

```
show class-map [ class-map-name ]
```

Parameter Description

class-map-name: Class name. The value is a case-sensitive string of 1 to 31 characters.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

When no class name is specified, information about all the classes is displayed.

Examples

The following example displays information about all the classes.

```
Hostname> enable
Hostname# show class-map

Class Map cmap1
  Match ip dscp 20 40
```

```
Class Map cmap2
  Match access-group 110
```

Table 1-1 Output Fields of the show class-map Command

Field	Description
Class Map	Name of a class.
Match	Matching rule.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.23 show mls qos interface

Function

Run the **show mls qos interface** command to display the QoS information of an interface.

Syntax

```
show mls qos interface [ interface-type interface-number | policers ]
```

Parameter Description

interface: Displays the QoS information of all the interfaces.

interface-type interface-number: Interface type and interface number. After this parameter is specified, the QoS information of a specified interface is displayed.

policers: Displays the information about policies associated with all the interfaces.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

If the *interface-type interface-number* parameter is not specified, the QoS information of all the interfaces is displayed.

Examples

The following example displays the QoS information of L2 Ethernet interface GigabitEthernet 0/1.

```

Hostname> enable
Hostname# show mls qos interface gigabitethernet 0/1
Interface: GigabitEthernet 0/1
Ratelimit input: 10240 256
Ratelimit output: 51200 4096
Attached input policy-map: pmap1
Attached output policy-map:
Default trust: dscp
Default cos: 3
Scheduler type: drr
Wrr queue bandwidth: 1 1 1 1 2 2 2 2
Drr queue bandwidth: 1 1 2 2 2 2 4 4
Wfq queue bandwidth: 1 1 2 2 4 4 4 4

```

Table 1-1 Output Fields of the show mls qos interface Command

Field	Description
Interface	Name of an interface.
Ratelimit input	Rate limit in the input direction of the interface.
Ratelimit output	Rate limit in the output direction of the interface.
Attached input policy-map	Policy associated in the input direction of the interface.
Attached output policy-map	Policy associated in the output direction of the interface.
Default trust	Trust mode of the interface.
Default cos	Default IEEE 802.1p value of the interface.
Scheduler type	Scheduling policy of the interface.
Wrr queue bandwidth	WRR scheduling weights of the output queues of the interface.
Drr queue bandwidth	DRR scheduling weights of the output queues of the interface.
Wfq queue bandwidth	WFQ scheduling weights of the output queues of the interface.

The following example displays information about policies associated with all the interfaces.

```

Hostname> enable
Hostname# show mls qos interface policers
Interface: GigabitEthernet 0/1
Attached input policy-map: pmap1
Attached output policy-map: pmap1
Interface: GigabitEthernet 0/2
Attached input policy-map: p1
.....

```

Table 1-2 Output Fields of the show mls qos interface policers Command

Field	Description
Interface	Name of an interface.
Attached input policy-map	Policy associated in the input direction of the interface.
Attached output policy-map	Policy associated in the output direction of the interface.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.24 show mls qos maps

Function

Run the **show mls qos maps** command to display the mappings of different priorities.

Syntax

```
show mls qos maps [ cos-dscp | dscp-cos | ip-prec-dscp ]
```

Parameter Description

cos-dscp: Displays the IEEE 802.1p-to-DSCP mappings.

dscp-cos: Displays the DSCP-to-CoS mappings.

ip-prec-dscp: Displays the IP PRE-to-DSCP mappings.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

When no parameter is specified, the mappings of all the priorities are displayed.

Examples

The following example displays the IEEE 802.1p-to-DSCP mappings.

```

Hostname> enable
Hostname# show mls qos maps cos-dscp
cos dscp

```

```

-----
0 0
1 8
2 16
3 24
4 32
5 40
6 48
7 56
    
```

Table 1-1Output Fields of the show mls qos maps cos-dscp Command

Field	Description
cos	IEEE 802.1p value of the interface.
dscp	DSCP value, to which an IEEE 802.1p value of the interface is mapped.

The following example displays the DSCP-to-CoS mappings.

```

Hostname> enable
Hostname# show mls qos maps dscp-cos
dscp cos      dscp cos      dscp cos      dscp cos
-----
0 0           1 0           2 0           3 0
4 0           5 0           6 0           7 0
8 1           9 1           10 1          11 1
12 1          13 1          14 1          15 1
16 2          17 2          18 2          19 2
20 2          21 2          22 2          23 2
24 3          25 3          26 3          27 3
28 3          29 3          30 3          31 3
32 4          33 4          34 4          35 4
36 4          37 4          38 4          39 4
40 5          41 5          42 5          43 5
44 5          45 5          46 5          47 5
48 6          49 6          50 6          51 6
52 6          53 6          54 6          55 6
56 7          57 7          58 7          59 7
60 7          61 7          62 7          63 7
    
```

Table 1-2Output Fields of the show mls qos maps dscp-cos Command

Field	Description
dscp	DSCP value.
cos	CoS value, to which a DSCP value is mapped.

The following example displays the IP PRE-to-DSCP mappings.

```

Hostname> enable
Hostname# show mls qos maps ip-prec-dscp
ip-precedence dscp
-----
      0 0
      1 8
      2 16
      3 24
      4 32
      5 40
      6 48
      7 56
    
```

Table 1-3Output Fields of the show mls qos maps ip-prec-dscp Command

Field	Description
ip-precedence	IP PRE value.
dscp	DSCP value, to which an IP PRE value is mapped.

The following example displays the DSCP-to-EXP mappings.

```

Hostname> enable
Hostname# show mls qos maps dscp-exp
dscp exp      dscp exp      dscp exp      dscp exp
---- ---      ---- ---      ---- ---      ---- ---
0  0          1  0          2  0          3  0
4  0          5  0          6  0          7  0
8  1          9  1          10 1          11 1
12 1          13 1          14 1          15 1
16 2          17 2          18 2          19 2
20 2          21 2          22 2          23 2
24 3          25 3          26 3          27 3
28 3          29 3          30 3          31 3
32 4          33 4          34 4          35 4
36 4          37 4          38 4          39 4
40 5          41 5          42 5          43 5
44 5          45 5          46 5          47 5
48 6          49 6          50 6          51 6
52 6          53 6          54 6          55 6
56 7          57 7          58 7          59 7
60 7          61 7          62 7          63 7
    
```


Table 1-4Output Fields of the show mls qos maps dscp-exp Command

Field	Description
dscp	DSCP value.
exp	EXP value, to which a DSCP value is mapped.

The following example displays the EXP-to-DSCP mappings.

```

Hostname> enable
Hostname# show mls qos maps exp-dscp
exp dscp
--- ----
0    7
1   14
2   21
3   28
4   35
5   42
6   49
7   56

```

Table 1-5Output Fields of the show mls qos maps exp-dscp Command

Field	Description
exp	EXP value.
dscp	DSCP value, to which an EXP value is mapped.

The following example displays the EXP-to-CoS mappings.

```

Hostname> enable
Hostname# show mls qos maps exp-cos
exp cos
--- ----
0    0
1    1
2    2
3    2
4    2
5    2
6    2
7    7

```

Table 1-6 Output Fields of the show mls qos maps exp-cos Command

Field	Description
exp	EXP value.
cos	CoS value, to which an EXP value is mapped.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.25 show mls qos queueing

Function

Run the **show mls qos queueing** command to display the CoS-to-queue mappings and the scheduling weights of queues.

Syntax

```
show mls qos queueing [ interface interface-type interface-number ]
```

Parameter Description

interface *interface-type interface-number*: Displays the information about the specified interface type and number.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

When the **interface** *interface-type interface-number* parameter is not specified, the mappings from all the CoS values to queues and the scheduling weights of all the queues are displayed.

Examples

The following example displays the CoS-to-queue mappings and the scheduling weight of queues.

```
Hostname> enable
Hostname# show mls qos queueing
Cos-queue map:
cos qid
```

```
--- ---
0 1
1 2
2 3
3 4
4 5
5 6
6 7
7 8

wrr bandwidth weights:
qid weights
--- -----
1 1
2 2
3 3
4 4
5 5
6 6
7 7
8 8

drr bandwidth weights:
qid weights
--- -----
1 3
2 3
3 3
4 3
5 3
6 3
7 3
8 3

wfq bandwidth weights:
qid weights
--- -----
1 3
2 4
3 5
4 6
5 7
6 8
7 9
8 10
```

```
Interface: GigabitEthernet 0/1
Wrr queue bandwidth: 1 1 1 1 2 2 2 2
Drr queue bandwidth: 1 1 2 2 2 2 4 4
Wfq queue bandwidth: 1 1 2 2 4 4 4 4
```

Table 1-1 Output Fields of the show mls qos queueing Command

Field	Description
Cos-queue map	CoS-to-queue mappings.
wrr bandwidth weights	WRR scheduling weights of global output queues.
drr bandwidth weights	DRR scheduling weights of global output queues.
wfq bandwidth weights	WFQ scheduling weights of global output queues.
cos	CoS.
qid	Queue ID.
weights	Weight.
Interface	Interface name.
Wrr queue bandwidth	WRR scheduling weights of the output queues of the interface.
Drr queue bandwidth	DRR scheduling weights of the output queues of the interface.
Wfq queue bandwidth	WFQ scheduling weights of the output queues of the interface.

The following example displays the scheduling policy weights of output queues of L2 Ethernet interface GigabitEthernet 0/1.

```
Hostname> enable
Hostname# show mls qos queueing interface gigabitethernet 0/1
Interface: GigabitEthernet 0/1
Wrr queue bandwidth: 1 1 1 1 2 2 2 2
Drr queue bandwidth: 1 1 2 2 2 2 4 4
Wfq queue bandwidth: 1 1 2 2 4 4 4 4
```

Table 1-2 Output Fields of the show mls qos queueing interface Command

Field	Description
Interface	Interface name.
Wrr queue bandwidth	WRR scheduling weights of the output queues of the interface.
Drr queue bandwidth	DRR scheduling weights of the output queues of the interface.
Wfq queue bandwidth	WFQ scheduling weights of the output queues of the interface.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.26 show mls qos rate-limit

Function

Run the **show mls qos rate-limit** command to display the rate limit information of an interface.

Syntax

```
show mls qos rate-limit [ interface interface-type interface-number ]
```

Parameter Description

interface interface-type interface-number: Displays the rate limit information of a specified interface type and number.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

If the **interface interface-type interface-number** parameter is not specified, the rate limit information of all the interfaces is displayed.

Examples

The following example displays the rate limit information of all the interfaces.

```

Hostname> enable
Hostname# show mls qos rate-limit
Interface: GigabitEthernet 0/1
  rate limit input Kbps = 10240 burst = 256

```

Table 1-1 Output Fields of the show mls qos rate-limit Command

Field	Description
Interface	Interface name.
rate limit input Kbps = x burst = y	The bandwidth limit per second in the input direction of the interface is x kbps, and the burst traffic limit value is y Kbytes per second.

Field	Description
rate limit output Kbps = x burst = y	The bandwidth limit per second in the output direction of the interface is x kbps, and the burst traffic limit is y Kbytes per second.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.27 show mls qos scheduler

Function

Run the **show mls qos scheduler** command to display the scheduling policy information of output queues.

Syntax

```
show mls qos scheduler [ interface interface-type interface-number ]
```

Parameter Description

interface *interface-type interface-number*: Displays the scheduling policy information of the output queues of a specified interface type and number.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

If the **interface** *interface-type interface-number* parameter is not specified, the scheduling policy information of the global output queues is displayed.

Examples

The following example displays the scheduling policy information of global output queues.

```

Hostname> enable
Hostname# show mls qos scheduler
Global Multi-Layer Switching scheduling
  Weighted Round Robin
Interface GigabitEthernet 0/1 Multi-Layer Switching scheduling:
  Deficit Round Robin

```

Table 1-1 Output Fields of the show mls qos scheduler Command

Field	Description
Weighted Round Robin	The queue scheduling policy is WRR, and the other types of scheduling policies are as follows: <ul style="list-style-type: none"> ● SP ● RR ● WFQ ● DRR
Interface	Interface name

The following example displays the scheduling policy of L2 Ethernet interface GigabitEthernet 0/1.

```

Hostname> enable
Hostname# show mls qos scheduler interface gigabitethernet 0/1
Interface GigabitEthernet 0/1 Multi-Layer Switching scheduling:
Deficit Round Robin

```

Table 1-2 Output Fields of the show mls qos scheduler interface Command

Field	Description
Interface	Interface name.
Deficit Round Robin	The scheduling policy of the interface is DRR.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.28 show mls qos virtual-group**Function**

Run the **show mls qos virtual-group** command to display policies associated with a logical interface group.

Syntax

```
show mls qos virtual-group [ virtual-group-number | policers ]
```

Parameter Description

virtual-group-number: Number of a logical interface group. After this parameter is specified, policies associated with a specified logical interface group are displayed. The value range is from 1 to 128.

policers: Displays the policies associated with all the logical interface groups.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

If the *virtual-group-number* parameter is not specified, policies associated with all the logical interface groups are displayed.

Examples

The following example displays policies associated with all the logical interface groups.

```

Hostname> enable
Hostname# show mls qos virtual-group policers
Virtual-group: 1
Attached input policy-map: pmap1
Virtual-group: 20
Attached output policy-map: pmap2

```

Table 1-1Output Fields of the show mls qos virtual-group policers Command

Field	Description
Virtual-group	Number of a logical Interface group.
Attached input policy-map	Policy applied to the input direction of the logical interface group.
Attached output policy-map	Policy applied to the output direction of the logical interface group.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.29 show policy-map

Function

Run the **show policy-map** command to display policy information.

Syntax

```
show policy-map [ policy-map-name [ class class-map-name ] ]
```

Parameter Description

policy-map-name: Name of a policy. The value is a case-sensitive string of 1 to 31 characters.

class *class-map-name*: Name of the class associated with the policy. The value is a case-sensitive string of 1 to 31 characters.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

If the *policy-map-name* parameter is not specified, information about all the policies is displayed.

Examples

The following example displays information about policy pmap1.

```

Hostname> enable
Hostname# show policy-map pmap1

Policy Map pmap1
  Class cmap1
    set ip dscp 16
  Class cmap2
    police 10240 256 exceed-action dscp 8
  Class cmap3
    police 512000 4096 exceed-action drop

```

Table 1-1 Output Fields of the show policy-map Command

Field	Description
Policy Map	Name of a policy.
Class	Name of a class associated with the policy.
set	The bound traffic behavior is modifying the 802.1p and DSCP.
police	The bound traffic behavior is limiting the bandwidth and processing packets out of the limit.

The following example displays the policy pmap1, in which the traffic behavior bound to the class cmap1 is associated.

```

Hostname> enable
Hostname# show policy-map pmap1 class cmap1

Class cmap1
  set ip dscp 16

```

Table 1-2Output Fields of the show policy-map class Command

Field	Description
Class	Name of a class associated with the policy.
set	The bound traffic behavior is modifying the 802.1p and DSCP.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.30 show qos bandwidth

Function

Run the **show qos bandwidth** command to display the queue bandwidth information.

Syntax

```
show qos bandwidth [ interface interface-type interface-number ]
```

Parameter Description

interface *interface-type interface-number*: Displays the queue bandwidth information of a specified interface type and number.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

If the **interface** *interface-type interface-number* parameter is not specified, bandwidth information of all the queues is displayed.

Examples

The following example displays the bandwidth information of L2 Ethernet interface GigabitEthernet 0/1. The following information is displayed only for device interfaces that support separate configuration of bandwidths of unicast queues and multicast queues.

```

Hostname> enable
Hostname# show qos bandwidth interface gigabitethernet 0/1

Interface: GigabitEthernet 0/1
-----
uc-queue-id | minimum-bandwidth | maximum-bandwidth
-----
           1           5120           10240
           2             0             0
           3             0             0
           4             0             0
           5             0             0
           6             0             0
           7             0             0
           8             0             0
-----
Total ucast-queue minimum-bandwidth:           5120
Total ucast-queue maximum-bandwidth:          10240

Interface: GigabitEthernet 0/1
-----
mc-queue-id | minimum-bandwidth | maximum-bandwidth
-----
           1           1024           5120
           2             0             0
           3             0             0
           4             0           2048
-----
Total mcast-queue minimum-bandwidth:           1024
Total mcast-queue maximum-bandwidth:           5120

```

Table 1-1 Output Fields of the show qos bandwidth interface Command

Field	Description
Interface	Name of an interface.
queue-id	Queue ID. It is displayed when the bandwidth of unicast and multicast queues is configured together.
uc-queue-id	Unicast queue ID. It is displayed when the bandwidth of unicast queues is configured separately.

Field	Description
mc-queue-id	Multicast queue ID. It is displayed when the bandwidth of multicast queues is configured separately.
minimum-bandwidth	Minimum guaranteed bandwidth, in Kbytes per second.
maximum-bandwidth	Maximum limited bandwidth, in Kbytes per second.
Total queue minimum-bandwidth	Sum of the minimum guaranteed bandwidths configured for all the queues. It is displayed when the bandwidth of unicast and multicast queues is configured together.
Total queue maximum-bandwidth	Sum of the maximum limited bandwidths configured for all the queues. It is displayed when the bandwidth of unicast and multicast queues is configured together.
Total ucast-queue minimum-bandwidth	Sum of the minimum guaranteed bandwidths configured for all the unicast queues. It is displayed when the bandwidth of unicast queues is configured separately.
Total ucast-queue maximum-bandwidth	Sum of the maximum limited bandwidths configured for all the unicast queues. It is displayed when the bandwidth of unicast queues is configured separately.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.31 show queueing wred

Function

Run the **show queueing wred** command to display WRED information.

Syntax

```
show queueing wred [ interface interface-type interface-number ]
```

Parameter Description

interface *interface-type interface-number*: Displays the WRED information of a specified interface type and number.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

If the **interface** *interface-type interface-number* parameter is not specified, the WRED information configured for all the interfaces is displayed.

Examples

The following example displays the WRED information configured for L2 Ethernet interface GigabitEthernet 0/1.

```

Hostname> enable
Hostname# show queueing wred interface gigabitethernet 0/1
-----
-----
qid  max_cell_1  min_cell_1  max_1  min_1  prob_1  max_cell_2  min_cell_2  max_2  min_2
prob_2
-----
-----
1    120000      120000     100   30    100    120000      120000     100   70
100
2    120000      120000     100   60    100    120000      120000     100   30
100
3    120000      120000     100   80    30     120000      120000     100   30
40
4    120000      120000     100   80    100    120000      120000     100   100
100
5    120000      120000     100   80    100    120000      120000     100   100
100
6    120000      120000     100   80    100    120000      120000     100   100
100
7    120000      120000     100   80    100    120000      120000     100   100
100
8    120000      120000     100   80    100    120000      120000     100   100
100

-----
-----
cos  qid  threshold_id
-----
0    1    1
1    2    2
2    3    2
3    4    2

```

4	5	2
5	6	1
6	7	1
7	8	1

Table 1-1 Output Fields of the show queueing wred interface Command

Field	Description
qid	Queue ID.
max_cell_x	Higher threshold value of group x, in the unit of cell.
min_cell_x	Lower threshold value of group x, in the unit of cell.
max_x	Higher threshold value of group x, in percentage.
min_x	Lower threshold value of group x, in percentage.
prob_x	Maximum discarding probability of group x.
cos qid threshold_id	CoS-to-queue mapping and CoS-to-threshold group mapping.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.32 show virtual-group

Function

Run the **show virtual-group** command to display information about members contained in a logical interface group.

Syntax

```
show virtual-group [ virtual-group-number | summary ]
```

Parameter Description

virtual-group-number: Number of a logical interface group. After this parameter is specified, information about members contained in a specified logical interface group is displayed. The value range is from 1 to 128.

summary: Displays information about members contained in all the logical interface groups.

Command Modes

All modes except the user EXEC mode

Default Level

14

Usage Guidelines

If the *virtual-group-number* parameter is not specified, information about members contained in all the logical interface groups is displayed.

Examples

The following example displays information about members contained in all the logical interface groups.

```

Hostname> enable
Hostname# show virtual-group summary
  virtual-group      member
  -----          -
  1                  Gi0/1 Gi0/2
  2                  Gi0/0

```

Table 1-1 Output Fields of the show virtual-group summary Command

Field	Description
virtual-group	Number of a logical Interface group.
member	Member interface in the logical interface group.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.33 virtual-group**Function**

Run the **virtual-group** command to create a logical interface group.

Run the **no** form of this command to remove this configuration.

Run the **default** form of this command to restore the default configuration.

No logical interface group is created by default.

Syntax

virtual-group *virtual-group-number*

no virtual-group *virtual-group-number*

default virtual-group *virtual-group-number*

Parameter Description

virtual-group-number: Number of a logical interface group. The value range is from 1 to 128.

Command Modes

Global configuration mode

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

In the global configuration mode, you can run this command to create a logical interface group and enter the logical interface group configuration mode.

In the L2/L3 Ethernet interface configuration mode, you can run this command to add the interface to a logical interface group. If the logical interface group is created, this command creates the logical interface group and adds the interface to the logical interface group.

Members to be added to a logical interface group must be physical interfaces or aggregation ports. The members of a logical interface group must be in the same line card or the same device.

Examples

The following example adds L2 Ethernet interface GigabitEthernet 0/1 to logical interface group 3.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# virtual-group 3
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.34 wfq-queue bandwidth

Function

Run the **wfq-queue bandwidth** command to configure the WFQ scheduling weights for output queues.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The default WFQ scheduling weight ratio of output queues is **1:1:1:1:1:1:1**.

Syntax

wfq-queue bandwidth *weight-value-list*

no wfq-queue bandwidth

default wfq-queue bandwidth

Parameter Description

weight-value-list: WFQ scheduling weights for output queues. The weight value range is from 0 to 15. The value **0** indicates that the SP scheduling policy is used.

Command Modes

Global configuration mode

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

When the WFQ scheduling weights are configured for output queues in both global configuration mode and L2/L3 Ethernet interface configuration mode, the interface configuration prevails.

Examples

The following example sets the WFQ scheduling weight ratio of global output queues to **1:1:2:4:4:4:6:8**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# wfq-queue bandwidth 1 1 2 4 4 4 6 8
```

The following example sets the WFQ scheduling weight ratio of output queues on L2 Ethernet interface GigabitEthernet 0/1 to **1:1:2:2:2:2:4:4**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# wfq-queue bandwidth 1 1 2 2 2 2 4 4
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.35 wrr-queue bandwidth

Function

Run the **wrr-queue bandwidth** command to configure the WRR scheduling weights for output queues.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The default WRR scheduling weight ratio of output queues is **1:1:1:1:1:1:1**.

Syntax

wrr-queue bandwidth *weight-value-list*

no wrr-queue bandwidth

default wrr-queue bandwidth

Parameter Description

weight-value-list: WRR scheduling weights of output queues. The weight value range is from 0 to 15. The value **0** indicates that the SP scheduling policy is used.

Command Modes

Global configuration mode

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

When the WRR scheduling weights are configured for output queues in both global configuration mode and L2/L3 Ethernet interface configuration mode, the interface configuration prevails.

Examples

The following example sets the WRR scheduling weight ratio of global output queues to **1:1:1:2:2:4:8**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# wrr-queue bandwidth 1 1 1 1 2 2 4 8
```

The following example sets the WRR scheduling weight ratio of output queues on L2 Ethernet interface GigabitEthernet 0/1 to **1:1:2:2:2:4:4**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# wrr-queue bandwidth 1 1 2 2 2 2 4 4
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.36 wrr-queue cos-map

Function

Run the **wrr-queue cos-map** command to configure the mappings from CoS values to threshold groups.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

All CoS values are mapped to threshold group 1 by default.

Syntax

wrr-queue cos-map *threshold-id* *cos*&<1-8>

no wrr-queue cos-map *threshold-id*

default wrr-queue cos-map *threshold-id*

Parameter Description

threshold-id: ID of a threshold group. Two threshold groups are supported. The value range is from 1 to 2.

cos&<1-8>: CoS value. &<1-8> indicates that you can configure the mappings from 1–8 CoS values to threshold groups. The value range is from 0 to 7.

Command Modes

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

You can run the **mls qos map dscp-cos** and **wrr-queue cos-map** commands to configure DSCP-to-threshold mappings. When all the CoS values are mapped to the same threshold group, the enabled WRED on the interface is changed to RED.

Examples

The following example maps CoS values 1 and 6 to threshold group 2.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
```

```
Hostname(config-if-GigabitEthernet 0/1)# wrr-queue cos-map 2 1 6
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.37 wrr-queue random-detect min-threshold

Function

Run the **wrr-queue random-detect min-threshold** command to configure the lower threshold value for WRED to discard packets.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The lower threshold value for WRED to discard packets is not configured by default.

Syntax

```
wrr-queue random-detect min-threshold queue-id [ threshold&<1-2> ]
```

```
no wrr-queue random-detect min-threshold queue-id
```

```
default wrr-queue random-detect min-threshold queue-id
```

Parameter Description

queue-id: ID of an interface queue. The value range is from 1 to 8.

threshold&<1-2>: Lower threshold value for WRED to discard packets, in percentage. &<1-2> indicates that you can configure 1 to 2 groups of lower threshold values. The value range is from 1 to 100.

Command Modes

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

The maximum value of the configuration range of the lower threshold is equal to the current higher threshold.

When configuring a lower threshold, pay attention to the configuration of the higher threshold.

Examples

The following example sets the two groups of lower thresholds to 60 and 70 respectively for queue 1 of L2 Ethernet interface GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# wrr-queue random-detect min-threshold 1
60 70
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A

1.38 wrr-queue random-detect probability

Function

Run the **wrr-queue random-detect probability** command to configure the maximum discarding probability for WRED.

Run the **no** form of this command to restore the default configuration.

Run the **default** form of this command to restore the default configuration.

The maximum discarding probability for WRED is not configured by default.

Syntax

wrr-queue random-detect probability *queue-id probability*&<1-2>

no wrr-queue random-detect probability *queue-id*

default wrr-queue random-detect probability *queue-id*

Parameter Description

queue-id: ID of an interface queue. The value range is from 1 to 8.

probability&<1-2>: Maximum discarding probability of WRED, in percentage. &<1-2> indicates that you can configure 1 to 2 groups of maximum discarding probabilities. The value range is from 1 to 100.

Command Modes

L2 Ethernet interface configuration mode

L3 Ethernet interface configuration mode

Default Level

14

Usage Guidelines

N/A

Examples

The following example sets the two groups of maximum discarding probabilities to 50 and 70 respectively for queue 1 of L2 Ethernet interface GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# wrr-queue random-detect probability 1 50
70
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

N/A