QoS Configuration Commands
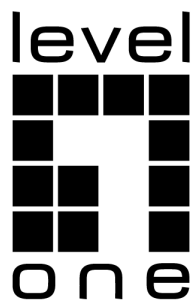
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Chapter 1 QoS Configuration Commands

1.1 QoS Configuration Commands

QoS configuration commands include:

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- scheduler policy

- policy-map

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1.1.1 cos default

Syntax

To configure the default COS value, run cos default cos. To return to the default setting, use the no form of this command.

cos default *cos*

no cos default

Parameters

Parameters	Description
cos	The COS value ranges between 0 and 7.

Default Value

The COS value is 0 by default.

Usage Guidelines

It works in L2 interface configuration mode or global configuration mode

Example

The following example shows how to set the CoS value of the untagged frame received by interface g0/0/1 to 4.

Switch(config)#interface g0/0/1

Switch(config-g0/0/1)#cos default 4

1.1.2 cos map

Syntax

To set the CoS priority queues, use the cos map command. To return to the default setting, use the no form of this command.

cos map *quid cos1..cosn*

no cos map

Parameters

Parameters	Description
quid	Stands for the ID of the CoS priority queue, 1 to 8.
cos1..cosn	CoS value defined by IEEE802.1p, ranging between 0 and 7

Default Value

CoS Value	S Priority Queue
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8

Usage Guidelines

The command is run in the global configuration mode.

Configuring this command in global configuration mode will affect the CoS priority queues of all ports

Example

The following example shows how to map CoS 0-2 to CoS priority queue 1 and CoS 3 to CoS priority queue 2.

Switch(config)# cos map 1 0 1 2
Switch(config)# cos map 2 3

1.1.3   cos map-local-priority

Syntax

cos map-local-priority *cos-value1* {**cos** *cos-value2* | **cng** *cng-bit* }

no cos map

To remap the internal CoS priority and congestion bits according to the cos value, run the above command.

Parameters

Parameters	Description
cos-value1	CoS value defined by IEEE802.1p, 0-7.
cos *cos-value2*	Remapped internal priority cos, 0-7.
cng *cng-bit*	Congestion bits of cos mapping, GREEN(0), YELLOW(3), RED(1)

Default Value

None

Usage Guidelines

The command is run in the global configuration mode.

Configuring this command in global configuration mode will affect the CoS priority queues of all ports

Example

The following example shows how to remap CoS 1 to internal CoS priority 5.

Switch(config)#cos map-local-priority 1 cos 5

1.1.4   cos bandwidth

Syntax

To set the minimum bandwidth or the maximum bandwidth of the port cos queue, run the following command.

cos bandwidth *quid min-bandwidth max-bandwidth*

no cos bandwidth *quid*

Parameters

Parameters	Description
quid	Stands for the ID of the CoS priority queue, 1 to 8.
min-bandwidth	Stands for the minimum bandwidth, the unit is 64Kbps. The range is related to the port type.
max-bandwidth	Stands for the maximum bandwidth, unit 64Kbps. The range is related to the port type.

Default Value

The minimum bandwidth of each queue is 0 and the maximum port rate of the maximum bandwidth.

Usage Guidelines

It works in L2 port configuration mode. The scheduling policy is effective between the minimum and the maximum bandwidth. The data flow lower than the minimum bandwidth passes through and the data flow higher than the maximum bandwidth drops.

Example

The following example shows how to set the minimum bandwidth 100 and the maximum bandwidth 1000 on interface g0/0/1.

Switch(config)#int g0/0/1

Switch(config-g0/0/1)#cos bandwidth 1 100 1000

1.1.5 dscp map

Syntax

To set the CoS priority queues according to dscp, use the cos map command. To return to the default setting, use the no form of this command.

dscp map *word*   { **dscp** dscp-value **| cos** *cos-value* | **cng** *cng-bit* }

no dscp map

Parameters

Parameters	Description
word	Dscp range table, for instance, (1,3,5,7), (1, 3-5,7), (1-7).
dscp *dscp-value*	Dscp value of Dscp mapping, 0-63.
cos cos-value	The priority cos of Dscp mapping, 0-7.
cng *cng-bit*	Congestion bits mapped by Dscp, GREEN(0), YELLOW(3), RED(1)

Default Value

None

Usage Guidelines

This command is run in global configuration mode.

Example

The following example shows how to map dscp 0-2 to CoS priority 1; the mapping dscp value is 5, and the congestion bit is 0.

Switch(config)#dscp map 0-2 cos 1   dscp 5 cng 0

1.1.6 scheduler weight bandwidth

Syntax

To set the bandwidth of the CoS priority queue, run the following command. To return to the default setting, use the no form of this command.

scheduler weight bandwidth *weight1...weightn*

no scheduler weight bandwidth

Parameters

Parameters	Description
weight1…weight8	DRR/WRR/WFQ CoS priority queue weights, weight1~6 with range 1~15, weight7,8 with range 0~15, 0 is sp mode.

Default Value

The weight value of each CoS priority queue is same. 8 weight values of eight CoS priority queues are 1.

Usage Guidelines

This command is run in global configuration mode.

If this command is run, the bandwidth of all priority queues on all interfaces are affected. This command validates only when the queue schedule mode is set to drr/wrr/wfq. This command decides the bandwidth weight value of the CoS priority queue when the drr/wrr/wfq schedule policy is used.

Example

The following example shows how to set the CoS queue weight value to 1, 2, 3, 4, 5, 6, 7 and 8 respectively.

Switch(config)# scheduler weight bandwidth 1 2 3 4 5 6 7 8

1.1.7   scheduler policy

Syntax

To set CoS priority queue debug policy, use the scheduler policy command. To return to the default setting, use the no form of this command.

scheduler policy { **sp | wrr | wfq | drr** }

no scheduler policy

Parameters

Parameters	Description
sp	Uses the SP schedule policy.
wrr	Uses the WRR schedule policy.
wfq	Uses wfqr schedule policy.
drr	Uses drr schedule policy.

Default Value

The SP schedule policy is used by default.

Usage Guidelines

This command is run in global configuration mode.

After this command is configured, the schedule mode of the interface is set to the designated value.

Example

The following example shows how to send transmission schedule mode to drr globally.

Switch(config)# scheduler policy drr

1.1.8   policy-map

Syntax

To set the QoS policy map, run policy-map name. To return to the default setting, use the no form of this command.

policy-map *name*

no policy-map *name*

Parameters

Parameters	Description
name	Name of the QoS policy map, consisting of 1 to 20 characters.

Default Value

None

Usage Guidelines

Global configuration mode

After the command is entered, the system enters the QoS policy mapping configuration mode. In this mode, the following commands are used:

- **classify:** Used to set the QoS flow.

- **description**: Used to describe the QoS policy map.

- **exit**: Used to exit from the QoS policy mapping configuration mode.

- **no**: Used to cancel the previously-entered command.

- **action**: Used to define the QoS action.

Example

The following example shows how to set the QoS policy map.

Switch(config)# policy-map myqos

1.1.9   classify

Syntax

To configure the matchup data flow of the QoS policy map, run the following command. To return to the default setting, use the no form of this command.

classify {**seq** *seq* | **any** | **cos** *cos* | **icos** *icos* | **vlan** *vlanid* | **ivlan** *ivlanid* | **ethernet-type** *ethernet-type* | **precedence** *precedence-value* | **dscp** *dscp-value* | **ip** *ip-access-list* | **ipv6** *ipv6-access-list* | **mac** *mac-access-list* | **exp** *exp* **| tag-num** *tag-num*}

no classify { **cos** | **icos** | **vlan** | **ivlan** | **ethernet-type** | **precedence** | **dscp** | **ip** | **ipv6** | **mac** }

Parameters

Parameters	Description
seq *seq*	Configure the matching seq value, 1-100.
any	Matches up with any packet.
cos *cos*	Configures the matching COS value; the valid range is 0 to 7
icos *icos*	Configures the matching interior COS value; the valid range is 0 to 7.
vlan *vlanid*	Configures the matching VLAN; the valid range is 1 to 4094
ivlan *ivlanid*	Configures interior vlan id. 1-4094.
ethernet-type *ethernet-type*	Configures the packet type, 0x0600-0xFFFF
precedence *precedence-value*	The priority field in tos of ip packet (5-7 of tos), 0-7.
dscp *dscp-value*	dscp field of tos in ip packet (2 to 7 of tos), 0~63
ip *ip-access-list*	Configures the name of the matched IP access list. The name has 1 to -20 characters.
ipv6 *ipv6-access-list*	Configures the name of the matched IPV6 access list. The name has 1 to 20 characters.

mac *mac-access-list*	Configures the name of the matched MAC access list. The name has 1 to 20 characters.
exp *exp*	Configures matching exp values, 0-7.
tag-num *tag-num*	Configures matching tag-num values, 0-1.

Default Value

Any packet is matched by default.

Command Mode

QoS policy map configuration mode

Usage Guidelines

QoS policy map configuration mode

All data flows in a QoS policy table must have the same mask value, and the port number in the **ip access-list** must be determined, not a range.

The **permit** rules in the IP access list and MAC access list used to match the data flow are valid, that is, the **permit** rule is used to match the data flow, and the **deny** rule is not used to configure the data flow.

In the **qinq** mode, that is, after the **dot1q-tunnel** command is configured, when matching the vlan or cos value of the source packet, the ivlan and icos configuration is required.

Example

Switch(policy-map)#classify vlan 4

1.1.10 action

Syntax

To configure the data flow policy of a QoS policy map, run the following command. To return to the default setting, use the no form of this command.

action{**seq** *seq* | **bandwidth** *max-band* **| copy-to-cpu** | {**cir** *commit-band* **bc** *commit-burst-size* {**pir** *pir-band* **be** *peak-burst-size*} | {**eir** *excess-band* **ebs** *excess-burst-size}* | {**ebs** *excess-burst-size}* [**confirm** { **forward** | **dscp** *dscp-value* | **discardable** {**green** | **yellow** | **red** } | **copy-to-cpu** | **cos** *cos* | **queue** *qid* } | **exceed** {**forward** | **drop** | **dscp** *dscp-value* | **discardable** {**green** | **yellow** | **red**} | **copy-to-cpu** | **cos** *cos* | **queue** *qid*} | **violate** { **forward** | **drop** | **dscp** *dscp-value* | **discardable** {**green** | **yellow** | **red**} | **copy-to-cpu** | **cos** *cos* | **queue** *qid*}][**color-blind**][**tcm-end**]} | **cos** *cos* | **drop** | **dscp** *dscp-value* | **precedence** *precedence-value* | **forward** | **icos** *icos* | **ivlan** {**add** *ivlanid* | **del** *ivlanid* | *ivlanid*} |

mac *mac-addr* **| monitor** *session-value* **| queue** *queue-value* **| redirect** *interface-id* **| stat-packet | stat-byte | vlanID** { **add** *vlanid* | *vlanid* }

no action {**bandwidth | copy-to-cpu | cir | cos | drop | dscp | precedence | forward | icos | ivlan | mac | monitor | queue | redirect | stat-packet | stat-byte | vlanID**}

Parameters

Parameters	Description
seq *seq*	Configure the matching seq value, 1-100.
bandwidth *max-band*	Configure the maximum bandwidth allowed by the data stream, 1-163840 units of 64Kbps.
copy-to-cpu	Copy message to cpu
cir *commit-band* **bc** *commit-burst-size* {**pir** *pir-band* **be** *peak-burst-size*} | {**eir** *excess-band* **ebs** *excess-burst-size*} | {**ebs** *excess-burst-size*} [**confirm** { **forward** | **dscp** *dscp-value* | **discardable** {**green** | **yellow** | **red** } | **copy-to-cpu** | **cos** *cos* | **queue** *qid* } | **exceed** {**forward** | **drop** | **dscp** *dscp-value* | **discardable** {**green** | **yellow** | **red**} | **copy-to-cpu** | **cos** *cos* | **queue** *qid*} | **violate** { **forward** | **drop** | **dscp** *dscp-value* | **discardable** {**green** | **yellow** | **red**} | **copy-to-cpu** | **cos** *cos* | **queue** *qid*}][**color-blind**][**tcm-end**]	Configuring policing, cir commit-band guaranteed bandwidth 1-156250, unit: 64Kbps; bc commit-burst-size burst data packet 4-4096, unit: Kb; pir pir-band peak bandwidth 1-156250 units 64Kbps; be peak-burst-size peak burst size 0-4096 units Kb; **eir** *excess-band* is the increment of the peak bandwidth minus the guaranteed bandwidth, 1-156250, in 64Kbps; **ebs** *excess-burst-size* is the burst size of eir increments 0-4096 units Kb; confirm { forward | dscp dscp-value | discardable {green | yellow | red } | copy-to-cpu | cos cos | queue qid } guarantees the bandwidth operation, forward no operation is carried out, dscp modifying dscp value, 0-63; discardable to set the discarding priority, copy-to-cpu to copy the message to the cpu, cos to modify the cos value, 0-7, queue to modify the message queue, 1-8; exceed {forward | drop | dscp dscp-value | discardable {green | yellow | red} | copy-to-cpu | cos cos | queue qid} the operation which the bandwidth greater than cir and smaller than pir , forward no operation is carried out, drop drop, dscp modifying dscp value, 0-63; discardable to set the discarding priority, copy-to-cpu to copy the message to the cpu, cos to modify the cos value, 0-7, queue to modify the message queue, 1-8; violate { forward | drop | dscp dscp-value | discardable {green | yellow | red} | copy-to-cpu | cos cos | queue the operation which the bandwidth greater than pir, forward no operation is carried out, drop drop, dscp modifying dscp value, 0-63; discardable to set the discarding priority, copy-to-cpu to copy the message to the cpu, cos to modify the cos value, 0-7, queue to modify the message queue, 1-8; color-blind set to color blind mode tcm-end means to end the policing configuration
cos *cos*	Sets the matched COS field to cos-value 0-7.
drop	Drops the matched packets.

dscp *dscp-value*	Sets the matched DSCP field to dscp-value 0~63.
precedence *precedence-value*	The priority field in tos of ip packet (5~7 of tos). 0-7.
forward	Conducts no operations to the matched packets.
icos *icos*	Sets inner cos field matched with the flow to cos-value 0~7.
ivlan {**add** *ivlanid* | **del** *ivlanid* | *ivlanid*}	Sets replace, add or delete inner vlanid, 1 to 4094.
mac *mac-addr*	Sets destination mac address.
monitor *session-value*	Send the packets to monitor interface; the range is 1-4.
queue *queue-value*	Sets mapping queue; the range is 1-8.
redirect *interface-id*	Redirects the egress port of the matched flow.
stat-packet	Calculates the number of packets.
stat-byte	Calculate the number of bytes.
vlanID { **add** *vlanid* | *vlanid* }	Sets to replace or add outer vlanid, 1 to 4094

Default Value

None

Command Mode

QoS policy map configuration mode

Usage Guidelines

QoS policy map configuration mode.

After enabling the **dot1q** function, **ivlan** and **icos** need to be configured when operating vlan and cos on the downlink port.

When **Monitor** action is applied to the egress, a policymap must be configured independently. Otherwise, the result may be abnormal.

cir, precedence, queue, vlan add, ivlan add/del cannot be applied to the egress.

Example

Switch(policy-map)#action redirect g0/0/1

1.1.11   qos policy

Syntax

To configure the QoS policy of a port, run the following command. To return to the default setting, use the no form of this command.

[**no**] **qos policy** *name* { **ingress|egress**}

Parameters

Parameters	Description
name	Stands for the name of QoS policy mapping.
ingress	Functions on the ingress port.
egress	Functions on the egress port.

Default Value

None

Usage Guidelines

Global configuration mode and L2 interface configuration mode

Example

The following example shows how to configure the pmap QoS policy on interface g0/0/1.

Switch(config)#inter g0/0/1

Switch(config-g0/0/1)# qos policy pmap ingress

1.1.12   show policy-map

Syntax

To displays all or some designated QoS policy maps, run the following command.

show policy-map {*policy-map-name* | **interface** [*interface-id*] | **global** }

Parameters

Parameters	Description
policy-map-name	Stands for the name of a QoS policy map.

interface [*interface-id*]	Stands for the policy of interface application
global	Globally Configured Policies

Default Value

None

Usage Guidelines

None

Example

The following example shows how to display all QoS policy maps.

Switch(config)#show policy-map

policy-map   1

   classify any

   action redirect g0/0/1

policy-map   11

   classify any

   action

Switch(config)#

1.1.13 trust

Syntax

[**no**] **qos trust {** *cos* **|** *dscp* **|** *untrust* **}**

To configure in trust mode, use **qos trust** command.

Parameter

Parameter	Description
cos	Modes of trust.
dscp	Trust mode.
untrust	Untrust mode.

Default

None

Usage Guidelines

Use the command in global configuration mode.

Example

The following example shows how to configure trust cos:

Switch(config)#qos trust cos