

QoS Configuration Commands

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Chapter 1 QoS Configuration Commands

1.1 QoS Configuration Commands

1.1.1 class

The configuration command “class” in the configuration status of policy mapping can be used for configuring the name of class mapping used by current policy mapping, the occupied bandwidth and queue limit. The “no” format of the command can be used for deleting a class mapping or restoring the default value of parameter.

Syntas

class *class-name* **bandwidth** *bandwidth(kbps)* [**queue-limit** *packet-number*]

no class *class-name* [**bandwidth** *bandwidth(kbps)*] [**queue-limit** *packet-number*]

Parameter

Parameter	Description
<i>class-name</i>	The name of class mapping (the maximum length is 64 bytes)
<i>bandwidth</i>	Size of bandwidth
<i>packet-number</i>	The maximum length of queue

Default

The default value of the maximum length of queue is 64, the size of bandwidth has no default value

Command mode

Policy Mapping Configuration Mode

Explanation

none

Relevant command

class-map

policy-map

service-policy

1.1.2 bandwidth

To configure the bandwidth and queue limit of the current flow mirror, run the following first command in strategic mirror mode; to resume the default settings, run the following second command.

bandwidth *bandwidth(kbps)* [**queue-limit** *packet-number*]

no bandwidth *bandwidth(kbps)* [**queue-limit** *packet-number*]

Parameter

Parameter	Description
<i>bandwidth</i>	Stands for the occupied bandwidth (Kpbs).
<i>queuelimit</i>	Stands for the length limit of the queue.

Default value

The maximum length of a queue is 64 bytes by default, while the bandwidth has no default value.

Command mode

Strategic mirror mode

Instruction

policy-map 1

class 1

priority 6000

class 2

Bandwidth 1000

class 3

Bandwidth 1000

1.1.3 priority

To configure the current flow mirror to be sent in priority and its bandwidth and queue limit, run the following first command in strategic mirror mode; to resume the default settings, run the following second command.

priority *priority (kbps) [queue-limit packet-number]*

no priority *priority (kbps) [queue-limit packet-number]*

Parameter

Parameter	Description
<i>priority</i>	Stands for the occupied bandwidth (Kpbs).
<i>queuelimit</i>	Stands for the length limit of the queue.

Default value

The maximum length of a queue is 64 bytes by default, while the bandwidth has no default value.

Command mode

Strategic mirror mode

Instruction

policy-map 1

class 1

priority 6000

class 2

Bandwidth 1000

class 3

Bandwidth 1000

1.1.4 set

To modify the identifier of the current flow, run the following first command.

set *dscp(prec)(tc)(vlanpri) value*

no set dscp(prec)

Parameter

Parameter	Description
<i>Dscp</i>	Stands for the value of DSCP, which ranges between 0 and 64.
<i>precedence</i>	Stands for the value of precedence, which ranges between 0 and 7.
<i>tc</i>	Stands for the value of TC, which ranges between 0 and 255 and is used only in IPv6.
<i>vlanpri</i>	Stands for the priority of a VLAN.

Default value

There is no default value.

Command mode

Strategic mirror mode

Instruction

policy-map

3 class 1

set dscp

17 class 2

set dscp

34 class 3

set prec 5

Related command

class-map

policy-map

service-policy

1.1.5 class-map

The global configuration command “class-map” can be used for defining some class stream. The “no” format of the command can be used for deleting some class mapping.

Syntas

class-map *class-name* **match protocol** *protocol-type*

class-map *class-name* **match interface** *interface-type interface-number*

class-map *class-name* **match access-group** *list-name*

no class-map *class-name*

Parameter

Parameter	Description
<i>class-name</i>	Name of class mapping (maximum length is 64 bytes)
<i>protocol-type</i>	Type of Protocol
<i>interface-type</i>	Name of interface
<i>interface-number</i>	Number of interface
<i>List-name</i>	Name of access list

Default

None

Command mode

global communication mode

Explanation

none

Relevant command

class

policy-map

service-policy

1.1.6 custom-queue-list

The interface configuration command “custom-queue-list” can be used for using CQ algorithm on an interface. The “no” format of the command can be used for canceling CQ algorithm.

Syntas

custom-queue-list *list-number*

no custom-queue-list *list-number*

Parameter

Parameter	Description
<i>list-number</i>	User-defined list number(1-16)

Default

None

Command mode

Interface configuration mode

Explanation

None

Relevant command

queue-list default

queue-list interface

queue-list protocol

queue-list queue byte-count

queue-list queue limit

1.1.7 fair-queue

The interface configuration command “fair-queue” can be used for using fair queue policy. The “no” format of the command can be used for canceling fair queue policy (restoring to “first-in, first-out”)

Syntas**fair-queue****no fair-queue****Parameter**

none

Default

On the interface with an operating rate of 2.048Mbps or less, WFQ is the default queue mode.

Command mode

Interface configuration mode

Explanation

The command is disabled on the interface configured with X25 and LAPB

Relevant command**class****class-map****policy-map****service-policy****1.1.8 policy-map**

The global configuration command “policy-map” can be used for configuring a policy mapping. The “no” format of the command can be used for deleting some policy mapping.

Syntas**policy-map** *policy-name***no policy-map** *policy-name*

Parameter

Parameter	Description
<i>policy -name</i>	Name of policy mapping (the maximum length is 64 bytes)

Default

None

Command mode

global communication mode

Explanation

The configuration status of policy mapping can be accessed by using executing the command.

Relevant command

class**class-map****service-policy**

1.1.9 priority-group

The interface configuration command can be used for using PQ algorithm on an interface. The “no” format of the command can be used for canceling PQ algorithm.

Syntas

priority-group *list-number***no priority-group** *list-number*

Parameter

Parameter	Description
<i>list-number</i>	Number of priority list(1-16)

Default

None

Command mode

Interface configuration mode

Explanation

None

Relevant command

priority-list default**priority-list interface****priority-list protocol****priority-list queue-limit**

1.1.10 priority-list default

The global configuration command “priority-list default” can be used for distributing a priority queue for the data packet that does not comply with any rules of priority list. The “no” format of the command can be used for restoring default value.

Syntas

priority-list *list-number* **default** {**high** | **medium** | **normal** | **low**}**no priority-list** *list-number* **default**

Parameter

Parameter	Description
list-number	Number of priority list(1-16)
high medium normal low	Priority level

Default

The default value of each priority list is normal

Command mode

global communication mode

Explanation

None

Relevant command

priority-group**priority-list interface****priority-list protocol****priority-list queue-limit**

1.1.11 priority-list interface

The global configuration command “priority-list interface” can be used for creating queue priority for the data packet accessed to some given interface. The “no” format of the command can be used for deleting some definition.

Syntas

priority-list *list-number* **interface** *interface-type interface-number* {**high** | **medium** | **normal** | **low**}

no priority-list *list-number* **interface** [*interface-type interface-number* **high** | **medium** | **normal** | **low**]

Parameter

Parameter	Description
<i>list-number</i>	Number of priority list(1-16)
<i>interface-type</i>	Name of interface
<i>interface-number</i>	Number of interface
high medium normal low	Priority level

Default

None

Command mode

global communication mode

Explanation

If queue number is 0, it means that such kind of packet shall be put into default queue.

When “no” is used for deleting, the key “enter” shall be entered after interface, which will delete all the items using interface as match standards in the list. If not so, the item can be deleted only when the name of interface, interface number and priority level match with each other.

Relevant command

priority-group

priority-list default

priority-list protocol

priority-list queue-limit

1.1.12 priority-list protocol

The global configuration command “priority-list protocol” can be used for creating queue priority on the protocol type. The “no” format of the command can be used for deleting some definition.

Syntas

priority-list *list-number* **protocol** *protocol-type* {**high** | **medium** | **normal** | **low**}
[*keyword keyword-value*]

no priority-list *list-number* **protocol** [*protocol-type* **high** | **medium** | **normal** | **low**]
keyword keyword-value]

Parameter

Parameter	Description
<i>list-number</i>	Number of Priority List (1-16)
<i>protocol-type</i>	Protocol type (including ip,arp,compressed_tcp)
high medium normal low	Priority level
Keyword	Keyword type
<i>keyword-value</i>	The value of keyword (for gt and lt, it means the length of packet; For access-list, it means the name of access-list; For tcp and udp, it means interface number; fragment has no this item)

Default

none

Command mode

global communication mode

Explanation

The keyword type of arp and compressed_tcp is gt and lt.

If queue number is 0, it means that such kind of packet shall be put into default queue.

When “no” is used for deleting, the key “enter” shall be entered after protocol, which will delete all the items using **protocol** as match standards in the list. If not so, the item can be deleted only when the protocol type, priority level, keyword type and value of keyword match with each other.

Relevant command

priority-group

priority-list default

priority-list interface

priority-list queue-limit

1.1.13 priority-list queue-limit

The global configuration command “priority-list queue-limit” can be used for designating the queue limit of each priority queue list. The “no” format of the command can be used for restoring the default value.

Syntas

priority-list *list-number* **queue-limit** *high-limit* *medium-limit* *normal-limit* *low-limit*

no priority-list *list-number* **queue-limit**

Parameter

Parameter	Description
<i>list-number</i>	Number of priority list
<i>high-limit</i>	The limit of high priority queue (1-32767)
<i>middle-limit</i>	The limit of middle priority queue
<i>normal-limit</i>	The limit of normal priority queue

Default

Default values of high, middle and low priority are 20, 60 and 80 respectively.

Command mode

global communication mode

Explanation

none

Relevant command

priority-group

priority-list default

priority-list interface

priority-list protocol

1.1.14 queue-list default

The global configuration command “queue-list default” can be used for distributing a queue number for the data packet that does not comply with any rules of user-defined list. The “no” format of the command can be used for restoring default value.

Syntas

queue-list *list-number* **default** *queue-number*

no queue-list *list-number* **default**

Parameter

Parameter	Description
<i>list-number</i>	Number of User-defined list (1-16)
<i>queue-number</i>	(queue number)

Default

Default value is 1

Command mode

global communication mode

Explanation

none

Relevant command

queue-list interface

queue-list protocol

queue-list queue byte-count

queue-list queue limit

1.1.15 queue-list interface

The global configuration command “queue-list interface” can be used for creating user-defined queue for the data accessing to some given interface. The “no” format of the command can be used for deleting some definition.

Syntas

queue-list *list-number* **interface** *interface-type* *interface-number* *queue-number*

no queue-list *list-number* **interface** [*interface-type* *interface-number* *queue-number*]

Parameter

Parameter	Description
<i>list-number</i>	Number of priority list (1-16)
<i>interface-type</i>	Name of interface
<i>interface-number</i>	Interface number
<i>queue-number</i>	Queue number

Default

none

Command mode

global communication mode

Explanation

If queue number is 0, it means that such kind of packet shall be put into default queue.

When “no” is used for deleting, the key “enter” shall be entered after **interface**, which will delete all the items using **interface** as match standards in the list. If not so, the item can be deleted only when the name of interface, interface number, queue number match with each other.

Relevant command

queue-list default

queue-list protocol

queue-list queue byte-count

queue-list queue limit

1.1.16 queue-list protocol

The global configuration command “queue-list protocol” can be used for creating user-defined queue on the protocol type.

Syntas

queue-list *list-number* **protocol** *protocol-type* *queue-number* [*keyword* *keyword-value*]

no queue-list *list-number* **protocol** [*protocol-type* *queue-number* *keyword* *keyword-value*]

Parameter

Parameter	Description
<i>list-number</i>	Number of user-defined list (1-16)
<i>protocol-type</i>	Protocol type (including ip,arp,compressed_tcp)
<i>queue-number</i>	Queue number
Keyword	Keyword type (gt,lt,fragment,access-list,tcp,udp)
<i>keyword-value</i>	The value of keyword (for gt and lt, it means the length of packet; For access-list, it means the name of access-list; For tcp and udp, it means interface number; fragment has no this item)

Default

none

Command mode

global communication mode

Explanation

The keyword type of arp and compressed_tcp is gt and lt.

If queue number is 0, it means that such kind of packet shall be put into default queue.

When “no” is used for deleting, the key “enter” shall be entered after protocol, which will delete all the items using **protocol** as match standards in the list. If not so, the item can be deleted only when the protocol type, queue number, keyword type and value of keyword match with each other.

Relevant command

queue-list default

queue-list interface

queue-list queue byte-count

queue-list queue limit

1.1.17 queue-list queue byte-count

The global configuration command “queue -list queue byte-count” can be used for designating the number of transmit byte of each queue of some user-defined list. The “no” format of the command can be used for restoring default value.

Syntas

queue-list *list-number* **queue** *queue-number* **byte-count** *byte-count-number*

no queue-list *list-number* **queue** *queue-number* **byte-count** *byte-count-number*

Parameter

Parameter	Description
<i>list-number</i>	Number of user-defined list
<i>queue-number</i>	Number of queue
<i>byte-count-number</i>	Number of transmit byte

Default

Default value is 1500

Command mode

global communication mode

Explanation

none

Relevant command

queue-list default

queue-list interface

queue-list protocol

queue-list queue limit

1.1.18 queue-list queue limit

The global configuration command “queue -list queue limit” is used for designating the queue limit of each queue of some user-defined list. The “no” format of the command can be used for restoring the default value.

Syntas

queue-list *list-number* **queue** *queue-number* **limit** *limit-number*

no queue-list *list-number* **queue** *queue-number* **limit** *limit-number*

Parameter

Parameter	Description
<i>list-number</i>	Number of user-defined list
<i>queue-number</i>	Number of queue
<i>limit-number</i>	The limit of queue (1-32767)

Default

Default value is 20

Command mode

global communication mode

Explanation

none

Relevant command

queue-list default

queue-list interface

queue-list protocol

queue-list queue byte-count

1.1.19 random-detect

The interface configuration command “random-detect” can be used for configuring weighting early random detect. The “no” format of the command can be used for restoring default value.

Syntas

random-detect

no random-detect

Parameter

none

Default

none

Command mode

Interface configuration mode

Explanation

The command has no effect on the interface configured with X25 and LAPB.

Relevant command

none

1.1.20 service-policy

The interface configuration command “service-policy” can be used for configuring some policy mapping on an interface. The “no” format of the command can be used for deleting policy mapping from the interface.

Syntas

service-policy *policy-name*

no service-policy

Parameter

Parameter	Description
<i>policy-name</i>	The name of policy mapping (the maximum length is 64 bytes)

Default

none

Command mode

Interface configuration mode

Explanation

The interface configured with WFQ is effective.

Relevant command

class-map

fair-queue

policy-map

1.1.21 show class-map

The authorization mode command “show class-map” can be used for showing the configuration of type mapping.

Syntas

show class-map [*class-name*]

Parameter

Parameter	Description
<i>class-name</i>	Name of type mapping (the maximum length is 64 bytes)

Default

none

Command mode

Authorization command mode

Explanation

If name is entered, only the configuration of the type mapping is shown, otherwise the configuration of all type mappings.

Relevant command

class-map

1.1.22 show policy-map

The authorization mode command “show policy-map” can be used for showing the configuration of policy mapping.

Syntas

show policy-map [*policy-name*]

Parameter

Parameter	Description
<i>policy-name</i>	The name of policy mapping (the maximum length is 64 bytes)

Default

none

Command mode

Authorization command mode

Explanation

If name is entered, the configuration of policy mapping is shown; otherwise the configuration of all the policy mapping is shown.

Relevant command

policy-map

1.1.23 show queue

The authorization mode command “show queue” can be used for showing the status of interface queue.

Syntas

show queue *interface-type interface-number*

Parameter

Parameter	Description
<i>interface-type</i>	Name of interface
<i>interface-number</i>	Number of interface

Default

none

Command mode

Authorization command mode

Explanation

none

Relevant command

none

1.1.24 show queueing

The authorization command mode can be used for the configuration of user-defined list or priority list

Syntas

show queueing { **custom** | **priority** }

Parameter

none

Default

none

Command mode

Authorization command mode

Explanation

none

Relevant command

None

Chapter 2 Rate-Limit Configuration Commands

2.1 Rate-Limit Configuration Commands

Rate-limit configuration commands are shown below:

- `rate-limit`
- `show rate-limit`

2.1.1 `rate-limit`

To configure rate limit, run the following first command:

`rate-limit [input | output] [all | access-group] precedence[net value] bps`

`no rate-limit [input | output] [all | access-group] precedence[net value]`

Parameter

Parameter	Description
<i>All</i>	Limits multiple flows.
access-group	Uses the flows that ACL matches to conduct rate limit.
precedence	Conducts rate limit according to the service's priority.
net	Conducts rate limit according to the IP address.
<i>bps</i>	Stands for the bits per second, which ranges between 8000 bits and 1000000000 bits.

Default value

None

Command mode

Port configuration mode

Instruction

This command is supported in these ports: synchronous serial port, Ethernet port and E1 port.

Up to 8 output/input rate limitations can be configured on each interface.

Related command

None

Example

```

Router_config#ip access-list extended aaa
Router_config_ext_nacl#permit tcp any any eq www
Router_config#interface fastethernet 0/0
Router_config_f0/0#ip address 10.0.0.1 255.255.255.0
Router_config_f0/0#rate-limit input access-group aaa 6000000

```

2.1.2 show rate-limit

To display the information about rate limitation, run the following command.

show rate-limit **interface-type** *interface-number*

Parameter

Parameter	Description
interface-type	Type
<i>interface-number</i>	Port number

Default value

If this command is run, the information about rate limit will be displayed.

Command mode

Global configuration mode

Instruction

This command is supported in these ports: synchronous serial port, Ethernet port and E1 port.

Related command

None

Example

```

Router_config#show rate-limit interface fastethernet 0/0

```