Content

Chapter 1 Commands for QoS

1.1 accounting

Command: accounting

        no accounting

Function: Set statistic function for the classified traffic.

Parameter: None.

Command mode: Policy map configuration mode

Default: Do not set statistic function.

Usage Guide:　After enable this function, add statistic function to the traffic of the policy class map, the messages can only red or green when passing policy. When print statistic information, in packets means classify packets numbers and not support the classify of color.

Example: Count the packets which satisfy c1 rule.

Switch(config)#policy-map p1

Switch(Config-PolicyMap-p1)#class c1

Switch(Config-PolicyMap-p1-Class-c1)#accounting

Switch(Config-PolicyMap-p1-Class-c1)#exit

Switch(Config-PolicyMap-p1)#exit

1.2 class

Command: class *<class-map-name>* [insert-before *<class-map-name>*]

        no class *<class-map-name>*

Function: Associates a class to a policy map and enters the policy class map mode; the no command deletes the specified class.

Parameters: *<class-map-name>* is the class map name used by the class.

        insert-before *<class-map-name>* insert a new configured class to the front of a existent class to improve the priority of the new class.

Default: No policy class is configured by default.

Command mode: Policy map configuration mode

Usage Guide: Before setting up a policy class, a policy map should be created and the policy map mode entered. In the policy map mode, classification and nexthop

configuration can be performed on packet traffic classified by class map.

Example: After add a policy class map c1 to the policy map, add a policy class map c2 and insert it to the front of c1.

Switch(config)#policy-map p1

Switch(Config-PolicyMap-p1)#class c1

Switch(Config-PolicyMap-p1-Class-c1)#exit

Switch(Config-PolicyMap-p1)#class c2 insert-before c1

Switch(Config-PolicyMap-p1-Class-c2)#exit

1.3 class-map

Command: class-map *<class-map-name>*

      no class-map *<class-map-name>*

Function: Creates a class map and enters class map mode; the no command deletes the specified class map.

Parameters: *<class-map-name>* is the class map name.

Default: No class map is configured by default.

Command mode: Global Mode

Usage Guide:

Example: Creating and then deleting a class map named "c1".

Switch(config)#class-map c1

Switch(Config-ClassMap-c1)#exit

Switch(config)#no class-map c1

1.4 clear mls qos statistics

Command: clear mls qos statistics [interface *<interface-name>* | vlan *<vlan-id>*]

Function: Clear accounting data of the specified ports or VLAN Policy Map. If there are no parameters, clear accounting data of all policy map.

Parameters: *<vlan-id>*: VLAN ID

      <*interface-name*>: The interface name

Default: Do not set action.

Command mode: Admin Mode

Usage Guide: Clear accounting data of the specified ports or VLAN Policy Map. If there are no parameters, clear accounting data of all policy map.

Example: Clear the Policy Map statistic of VLAN 100.

Switch#Clear mls qos statistics vlan 100

1.5 drop

Command: drop

        no drop

Function: Drop data package that match the class, the no command cancels the assigned action.

Parameters: None.

Default: Do not set the action.

Command mode: Policy class map configuration mode

Usage Guide: Drop the specified packet after configure this command.

Example: Drop the packet which satisfy c1.

Switch(config)#policy-map p1

Switch(Config-PolicyMap-p1)#class c1

Switch(Config-PolicyMap-p1-Class-c1)#drop

Switch(Config-PolicyMap-p1-Class-c1)#exit

Switch(Config-PolicyMap-p1)#exit

1.6 match

Command: match {access-group *<acl-index-or-name>* | ip dscp *<dscp-list>* | ip precedence *<ip-precedence-list>* | ipv6 access-group *<acl-index-or-name>* | ipv6 dscp *<dscp-list>* | ipv6 flowlabel *<flowlabel-list>* | vlan *<vlan-list>* | cos *<cos-list>* }

        no match {access-group | ip dscp | ip precedence| ipv6 access-group| ipv6 dscp | ipv6 flowlabel | vlan | cos }

Function: Configure the match standard of the class map; the no form of this command deletes the specified match standard.

Parameter: access-group *<acl-index-or-name>* match specified IP ACL, MAC ACL or IPv6 standard ACL or MAC-IP ACL, the parameters are the number or name of the ACL;

        ip dscp *<dscp-list>* and **ipv6 dscp *<dscp-list>*** match specified DSCP value, the parameter is a list of DSCP consisting of maximum 8 DSCP values, the range is 0~63;

        ip precedence *<ip-precedence-list>* match specified IP Precedence, the parameter is a IP Precedence list consisting of maximum 8 IP Precedence values with a valid range of 0~7;

        ipv6 access-group *<acl-index-or-name>* match specified IPv6 ACL, the parameter is the number or name of the IPv6 ACL;

        ipv6 flowlabel *<flowlabel-list>* match specified IPv6 flow label, the

parameter is IPv6 flow label value, the range is 0~1048575;

vlan *<vlan-list>* match specified VLAN ID, the parameter is a VLAN ID list consisting of maximum 8 VLAN IDs, the range is 1~4094;

cos *<cos-list>* match specified CoS value, the parameter is a CoS list consisting of maximum 8 CoS, the range is 0~7;

Default: No match standard by default

Command Mode: Class-map Mode

Usage Guide: Only one match standard can be configured in a class map. When configuring the match ACL, permit rule as the match option, apply Policy Map action. Deny rule as the excluding option, do not apply Policy Map action. If configure another match rule after one was configured, the operation fails, but configure the same match rule will cover the previous.

Example: Create a class-map named c1, and configure the class rule of this class-map to match packets with IP Precedence of 0.

Switch(config)#class-map c1

Switch(Config-ClassMap-c1)#match ip precedence 0

Switch(Config-ClassMap-c1)#exit

1.7 mls qos aggregate-policy

Command: mls qos aggregate-policy <policer_name> <bits_per_second> burst-group <normal_burst_bytes>

 [no] mls qos aggregate-policy <policer_name>

Function: Define a aggregate policy command. The no command delete mode configuration.

Parameters:

policer_name: it is the aggregate policy name.

bits_per_second: it define the information rate, namely CIR, the unit is kbit per second, and it ranges from 1 to 10000000;

normal_burst_bytes: it define the committed burst size, namely CBS, the unit is kilobyte, and it ranges from 1 to 8192, when the CBS more than the maximum of chips , it uses the biggest value that chip support to set hardware, CLI have not notice information;

Command Mode: Global Mode.

Default: The default is no policy action.

Usage Guide: It only supports single cylinder configuration, when configuring, if configured CBS, not support configure color, green packets only supports transmit, red packets only supports drop.

Example: Set 10000 as CIR, CBS is 512.

Switch (config)#policy burst 1 512

Switch(config)# mls qos aggregate-policy 1 1000 burst-group 1

1.8 mls qos cos

Command: mls qos cos {<*default-cos*>}

          no mls qos cos

Function: Configures the default CoS value of the port; the "**no mls qos cos**" command restores the default setting.

Parameters: *<default-cos>* is the default CoS value for the port, the valid range is 0 to 7.

Default: The default CoS value is 0.

Command mode: Port Configuration Mode.

Usage Guide: Configure the default CoS value for switch port. In default configuration, the message ingress cos from this port are default value whether the message with tag. If the message without tag, the message cos value for tag is enactmented.

Example: Setting the default CoS value of ethernet port 1/0/1 to 7, i.e., packets coming in through this port will be assigned a default CoS value of 7 if no CoS value present .

Switch(config)#interface ethernet 1/0/1

Switch(Config-If-Ethernet1/0/1)#mls qos cos 7

1.9 mls qos internal-priority

This command is not supported *by the* switch.

1.10 mls qos map

Command: mls qos map {cos-intp <intp1…intp8> | cos-dp<dp1…dp8> | dscp-intp <in-dscp list> to <intp> | dscp-dp <in-dscp list> to <dp> | dscp-dscp <in-dscp list> to <out-dscp>}

          no mls qos map {cos-intp | cos-dp | dscp-intp | dscp-dp | dscp-dscp}

Function: Set the priority mapping of QoS, the no command restores the default mapping.

Parameters: cos-intp <intp1…intp8> defines the mapping from CoS to intp (queue) value, <intp1..intp8> are 8 intp value corresponding to the 0 to 7 CoS value, each intp value is delimited with space, ranging from 0 to 3;

          cos-dp<dp1…dp8> defines the mapping from cos to intp (queue),

<dp1…dp8> is 8 drop priority and it corresponding to the Cos value from 0 to 7, every drop priority is separated by space, and it ranges from 0 to 2;

      dscp-intp defines the mapping from DSCP to intp (queue).

      dscp-dp defines the mapping from dscp to drop priority.

      dscp-dscp defines the mapping from entrance dscp to export dscp, <in-dscp list> is the input dscp value, the most is 8 and it separated by space from each other, and it ranges from 0 to 63, <out-dscp> is output dscp value and it ranges from 0 to 63.

Default: Default mapping values are:

Default CoS-TO-INTP Map

CoS Value	0	1	2	3	4	5	6	7
INTP Value	0	0	1	1	2	2	3	3

Default CoS-TO-DP Map

CoS Value	0	1	2	3	4	5	6	7
DP Value	0	0	0	0	0	0	0	0

Default DSCP-TO-INTP Map

In-DSCP Value	0-7	8-15	16-23	24-31	32-39	40-47	48-55	56-63
INTP Value	0	0	1	1	2	2	3	3

Default DSCP-TO-DP *Map*

In-DSCP Value	0-7	8-15	16-23	24-31	32-39	40-47	48-55	56-63
DP Value	0	0	0	0	0	0	0	0

Default DSCP-TO-DSCP Map

In-DSCP Value	0-7	8-15	16-23	24-31	32-39	40-47	48-55	56-63
Out-DSCP Value	0	8	16	24	32	40	48	56

Command mode: Global Mode

Usage Guide: INTP means the chip internal priority setting. Because of the internal DSCP value have 64 and the chip internal priority (queue) only 8, the dscp-intp mapping need 8 continuum internal dscp mapping to the same INTP.

Example: 1. Setting the CoS-to-INTP mapping value to the default 0 8 16 24 32 40 48 56 to 0 1 2 3 3 2 1 0.

Switch(config)#mls qos map cos-intp 0 *1* **2** 3 3 2 1 0

1.11 mls qos queue algorithm

Command: mls qos queue algorithm {sp | wrr | wdrr}
      no mls qos queue algorithm

Function: After configure this command, the queue management algorithm is set.

Parameters: sp: The strict priority, the queue number of bigger, then the priority is higher

        wrr: Select wrr algorithm

        wdrr: Select wdrr algorithm.

Default: The default queue algorithm is wrr.

Command mode: Global Mode.

Usage Guide: After configure this command, the queue management algorithm is set.

Example: Setting the queue management algorithm as sp.

Switch(config)#mls qos queue algorithm sp

1.12 mls qos queue drop-algorithm

This command is not supported by switch.

1.13 mls qos queue weight

Command: mls qos queue weight <weight0..weight3>

        no mls qos queue weight

Function: After configure this command, the queue weight is set.

Parameters: <weight0..weight3> defines the queue weight, for WRR algorithm, this configuration is valid, but SP algorithm is invalid. when the weight is 0, this queue adopts SP algorithm to manage, and WRR algorithm turns into SP+WRR algorithm. The absolute value of WRR is meaningless. WRR allocates bandwidth by using 4 weight values. The different chips support the different weight range, if the setting exceeds the chip range, it will prompt the right range.

Default: The queue weight is 1 2 3 4.

Command mode: Global Mode.

Usage Guide: The absolute value of WRR is meaningless. WRR allocates bandwidth by using 4 weight values. If it is set as 0, the priority of the queue is highest. If more queues are set as 0, the queue with the higher priority will be higher than before. Note: only one or two queues can be set as 0 and must be set at behind.

Example: Configure the queue weight as 1 2 3 4.

Switch(config)#mls qos queue weight 1 2 3 4

1.14 mls qos queue wred

This command is not supported by switch.

1.15 mls qos queue wdrr weight

Command: mls qos queue wdrr weight <weight0..weight7>

        no mls qos queue wdrr weight

Function: After configure this command, the queue weight is set.

Parameters: <weight0..weight7> defines the queue weight, in Kbytes. For WDRR algorithm, this configuration is valid, but for SP algorithm, it is invalid. When the weight is 0, this queue adopts SP algorithm to manage, and WDRR algorithm turns into SP+WDRR algorithm. WRR, in byte, allocates bandwidth by using 8 weight values. The different chips support the different weight range, if the setting exceeds the chip range will prompt the right range, when the chip supports 4 queues, it's parameter turns into <weight1..weight4>.

Default: The queue weight is 10 20 40 80 160 320 640 1280.

Command mode: Port Mode.

Usage Guide: If the queue weight is configured as 0, it uses SP algorithm to manage, while WRR turns into SWDRR. When removing the queue, the system will manage SP queue at first, then manage WDRR queue, SP queue executes the strict priority management mode, WDRR queue executes the weight rotation management mode.

Example: Configure the queue bandwidth as 10kbytes, 10kbytes, 20kbytes, 20kbytes, 30kbytes, 30kbytes, 40kbytes, 40kbytes.

Switch(interface-ethernet1/0/1)#mls qos queue wdrr weight 10 10 20 20 40 40 80 80

1.16 mls qos queue bandwidth

Command: mls qos queue <queue-id> bandwidth *<maximum-bandwidth>*

        no mls qos queue *<queue-id>* bandwidth

Function: After configure this command, the queue bandwidth guarantee is set.

Parameters: *<queue-id>* is the queue ID to configure the bandwidth guarantee, the different chip supports the different queue count, the range is different too, and the ranging from 1 to 8.

        <maximum-bandwidth > is the maximum-bandwidth, ranging from 0 to 128000, when input 0, it means the max-bandwidth function is not take effect. The minimum-bandwidth must not bigger than maximum-bandwidth.

Default: The queue bandwidth have no guarantee.

Command mode: Port Mode.

Usage Guide: The minimum-bandwidth guarantee and maximum-bandwidth limit can be configured at the different or same queue. The queue bandwidth pledge for egress is

relative to management mode, for example: one port is the strict priority-queue, the highest priority is queue 8 now, it will satisfy this queue traffic when block is happened. But if user want the lower priority of queue having bandwidth, it can remain bandwidth via this command, the lower priority queue's minimum-bandwidth will be satisfied at first, then the excess bandwidth is managed according to SP.

Example: Configure the maximum-bandwidth is 128kbps for ethernet1/0/2 queue1.

Switch(config)#interface ethernet 1/0/2

Switch(Config-If-Ethernet1/0/2)# mls qos queue 1 bandwidth 128

1.17 mls qos trust

Command: mls qos trust {cos | dscp }

        no mls qos trust {cos | dscp }

Function: Configures the current port trust; the no command disables the current trust status of the port.

Parameters: dscp configures the port to trust DSCP status. **cos** configures the COS port to trust status.

Default: Not trust CoS value, the default is trust COS value.

Command mode: Port Configuration Mode.

Usage Guide:

trust dscp mode: Set the intp field based dscp-to-intp mapping.

trust cos mode: Set the intp field based cos-to-intp mapping.

Example: Set trust dscp of port 1/0/1, not trust cos.

Switch(config)#interface ethernet 1/0/1

Switch(config-if-ehternet1/1)# mls qos trust dscp

Switch(config-if-ehternet1/1)#no mls qos trust cos

1.18 pass-through-cos

This command is not supported by the switch.

1.19 pass-through-dscp

This command is not supported by the switch.

1.20 Policy burst

ommand: policy   burst <burst_group> <normal_burst_bytes>

Function: Configure CBS and it support 2 CBS value.

Parameters: burst_group: burst_group id ranges from 1 to 2.

normal_burst_bytes: The committed burst size – CBS (Committed Burst Size), in byte, ranging from 0 to 8192. When the configured CBS value exceeds the max limit of the chip, configure the hardware with max number supported by the chip without any CLI prompt;

Default: The default of normal_burst_bytes is 1024.

Command mode: Global Mode.

Usage Guide: Configure burst-group in global mode and it supports 2 burst-group, then it can use burst-group in strategy classify table mode. It can return default configuration by set 1024 as default value.

Example: Set burst-group 1 to define CBS as 512 bits.

Switch (config)#policy burst 1 512

1.21 Policy

Command: policy <bits_per_second> burst-group <burst-group-id>

no policy

Function: Support non-aggregate policy command of double color, the no command delete mode configuration.

Parameters:bits_per_second: The committed information rate – CIR (Committed Information Rate), in Kbps, ranging from 1 to 10000000;

burst-group-id: It is CBS burst-group id and it ranges from 1 to 2.

Default: No policy action.

Command mode: Policy class map configuration Mode.

Usage Guide: Configure information rate in policy class map configuration mode. Not support the color configuration and the default green packets is transmit, red packets drop.

Example: Set information rate 1000 in policy class map configuration mode, the CBS is 512, the more than cir rate will send and do nothing for packets.

Switch (config)#policy burst 1 512

Switch(config)#class-map cm

Switch(config-classmap-cm)#match cos 0

Switch(config-classmap-cm)#exit

Switch(config)#policy-map 1

Switch(config-policymap-1)#class cm

Switch(config-policymap-1-class-cm)# policy 1000 burst-group 1

1.22 policy aggregate

Command: policy aggregate *<aggregate-policy-name>*

        no policy aggregate *<aggregate-policy-name>*

Function: Police Map reference aggregate policy, applies an aggregate policy to classified traffic; the no command deletes the specified aggregate policy.

Parameters: *<aggregate-policy-name>* is the policy set name.

Default: No policy is configured by default.

Command mode: Policy class map configuration Mode

Usage Guide: The same policy set can be referred to by different policy class maps.

Example: Create class-map, the match rule is the cos value is 0; policy-map is 1, enter the policy map mode, set the Policy and choose the color policy for the current list.

Switch(config)#class-map cm

Switch(config-classmap-cm)#match cos 0

Switch(config-classmap-cm)#exit

Switch(config)#policy-map 1

Switch(config-policymap-1)#class cm

Switch(config-policymap-1-class-cm)#policy aggregate color

1.23 policy-map

Command: policy-map *<policy-map-name>*

            no policy-map *<policy-map-name>*

Function: Creates a policy map and enters the policy map mode; the "**no policy-map *<policy-map-name>***" command deletes the specified policy map.

Parameters: *<policy-map-name>* is the policy map name.

Default: No policy map is configured by default.

Command mode: Global Mode

Usage Guide: Policy class map opertion can be done in policy map configuration mode.

Example: Creating and deleting a policy map named "p1".

Switch(config)#policy-map p1

Switch(Config-PolicyMap-p1)#exit

Switch(config)#no policy-map p1

1.24 service-policy input

Command: service-policy input *<policy-map-name>*

            no service-policy input {*<policy-map-name>*}

Function: Applies a policy map to the specified port; the no command deletes the specified policy map applied to the port   or deletes all the policy maps applied on the ingress direction of the port .

Parameters: input *<policy-map-name>* applies the specified policy map to the ingress direction of switch port.

      no command will delete all the policy maps applied on the ingress direction of the port if there is not the specified policy map name.

Default: No policy map is bound to port by default.

Command mode: Port Configuration Mode.

Usage Guide: Only one policy map can be applied to each direction of each port or VLAN interface. It is not recommended to use policy map on VLAN and VLAN's port at the same time. Egress policy map is not supported yet.

Example:

Bind policy p1 to ingress Ethernet port1/1.

Switch(config)#interface ethernet 1/1

Switch(Config-If-Ethernet1/1)#service-policy input p1

Bind policy p1 to ingress redirection of v1 interface.

Switch(config)#interface vlan 1

Switch(Config-If-vlan1)#service-policy input p1

1.25 service-policy input vlan

Command: service-policy input *<policy-map-name>* vlan *<vlan-list>*

            no service-policy input {*<policy-map-name>*} vlan *< vlan-list>*

Function: Applies a policy map to the specified VLAN interface; the no command deletes the specified policy map applied to the VLAN interface   or deletes all the policy maps applied in the ingress direction of the vlan interface .

Parameters: input *<policy-map-name>* applies the specified policy map to the ingress direction of switch VLAN interface.

    vlan <vlan-list> the vlan list of binding policy map.

      no command will deletes all the policy maps applied in the ingress direction of the

vlan interface if there is not the specified policy map name.

Default: No policy map is bound to VLAN interface by default.

Command mode: Global Configuration Mode.

Usage Guide: Only one policy map can be applied to each direction of each port or VLAN interface. It is not recommended to use policy map on VLAN and VLAN's port at the same time. Egress policy map is not supported yet.

Example:

Bind policy p1 to ingress of VLAN interface v2, v3, v4, v6.

Switch(config)# service-policy input p1 vlan 2-4;6

1.26 set

Command: set {ip dscp <new-dscp> | ip precedence <new-precedence> | internal priority <new-inp> | drop precedence <new-dp> | cos <new-cos>}

          no set {ip dscp | ip precedence | internal priority | drop precedence | cos}

Function: Assign a new DSCP, IP Precedence for the classified traffic; the no form of this command delete assigning the new values.

Parameter: ip dscp <new-dscp> new DSCP value, do not distinguish v4 and *v6.*

        ip precedence *<new-precedence>* new IP Precedence.

        cos <new cos> new COS value.

Default: Not assigning by default.

Command Mode: Policy Class-map Mode

Usage Guide: Only the classified traffic which matches the matching standard will be assigned with the new values.

Example: Set the IP Precedence of the packets matching c1 class rule to 3.

Switch(config)#policy-map p1

Switch(Config-PolicyMap-p1)#class c1

Switch(Config-PolicyMap-p1-Class-c1)#set ip precedence 3

Switch(Config-PolicyMap-p1-Class-c1)#exit

Switch(Config-PolicyMap-p1)#exit

1.27 show class-map

Command: show class-map [<*class-map-name*>]

Function: Displays class map of QoS.

Parameters: <*class-map-name*> is the class map name.

Default: N/A.

Command mode: Admin Mode.

Usage Guide: Displays all configured class-map or specified class-map information.

Example:

Switch # show class-map

Class map name:c1, used by 1 times

   match acl name:1

Displayed information	Explanation
Class map name:c1	Name of the Class map
used by 1 times	Used times
match acl name:1	Classifying rule for the class map.

1.28 show policy-map

Command: show policy-map [<*policy-map-name*>]

Function: Displays policy map of QoS.

Parameters: <*policy-map-name*> is the policy map name.

Default: N/A.

Command mode: Admin Mode.

Usage Guide: Displays all configured policy-map or specified policy-map information.

Example:

   Switch#show policy-map

   Policy Map c1, used by 0 time(s)

   Policy Map p1, used by 0 time(s)

     Class Map name: c1

         policy CIR: 20000 CBS: 2000

      conform-action:

       transmit

      exceed-action:

       drop

Displayed information	Explanation
Policy Map p1	Name of policy map
Class map name:c1	Name of the class map referred to
policy 20000 2000	Policy implemented
used by 0 port	Number of port that use the policy

1.29 show mls qos interface

Command: show mls qos {interface [<interface-id>] [policy | queuing] | vlan <vlan-id>} | [begin | include | exclude <regular-expression>]

Function: Displays QoS configuration information on a port.

Parameters: <interface-id> is the port ID; **<**vlan-id**>**: VLAN ID; policy is the policy setting on the port; queuing is the queue setting for the port.

Default: N/A.

Command mode: Admin Mode.

Usage Guide: There is only red or green when packets passing police. In the print information, in packets means classify packets numbers and not supports the statistic information of color.

Example:

Switch#show mls qos interface ethernet 1/0/1

Ethernet1/0/1:

Default COS: 0

Trust: COS

Attached Policy Map for Ingress: p1

Classmap   classified(in packets)

c1   0

Rule   ID   classified(in packets)

（If there is no Accounting for Class Map, show NA）

Egress Internal-Priority-TO-Queue map:

INTP: 0   1   2   3   4   5   6   7

Queue: 0   1   2   3   4   5   6   7

Queue Algorithm: WRR

Queue weights:

Queue   1   2   3   4   5   6   7   8

WrrWeight   1   2   3   4   5   6   7   8

WdrrWeight 1   2   4   8   16   32   64   64

Bandwidth Guarantee Configuration:

Queue   1   2   3   4   5   6   7   8

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-------------------------------------------------------------------
MinBW(K) 0          0         0         0         0         0         0         0
MaxBW(K) 0          0         0         0         0         0         0         0
```

Display Information	Explanation
Ethernet1/0/2	Port name
default cos:0	Default CoS value of the port
Trust: COS	The trust state of the port
Attached Policy Map for Ingress: p1	Policy name bound to port
ClassMap	ClassMap name
classified	Total data packets match this ClassMap. If there is no Accounting for Class Map, show NA
in-profile	Total in-profile data packets match this ClassMap. If there is no Accounting for Class Map, show NA
out-profile	Total out-profile data packets match this ClassMap. If there is no Accounting for Class Map, show NA
Internal-Priority-TO-Queue map::	Internal-Priority to queue mapping
Queue Algorithm:	WRR , WDDR or PQ queue out method
Queue weights	Queue weights configuration
Bandwidth Guarantee Configuration	Bandwidth guarantee configuration

Switch(config)#show mls qos interface ethernet1/0/2 queuing
Ethernet1/0/2:

Egress Internal-Priority-TO-Queue map:
  INTP: 0   1   2   3   4   5   6   7

  Queue: 0   1   2   3   4   5   6   7

  Queue Algorithm: WRR

Queue weights:

Queue	0	1	2	3	4	5	6	7
WrrWeight	1	2	3	4	5	6	7	8
WdrrWeight	10	20	40	80	160	320	640	1280

Bandwidth Guarantee Configuration:

Queue	1	2	3	4	5	6	7	8
MinBW(K)	0	0	0	0	0	0	0	0
MaxBW(K)	0	0	0	0	0	0	0	0

Display Information	Explanation
Internal-Priority-TO-Queue map::	Internal-Priority to queue mapping
Queue Algorithm:	WRR, WDDR or PQ queue out method
Queue weights	Queue weights configuration
Bandwidth Guarantee Configuration	bandwidth ensure configuration

Switch # show mls qos interface ethernet 1/0/2 policy

Ethernet1/0/2:

Attached Policy Map for Ingress: p1

  Accounting: ON

  Classmap   classified   in-profile   out-profile (in packets)

        c1   0   0   0

Display Information	Explanation
Ethernet1/0/2	Port name
Attached Policy Map for Ingress: p1	Policy name bound to port
ClassMap	ClassMap name
classified	Total data packets match this ClassMap.
in-profile	Total in-profile data packets match this ClassMap.
out-profile	Total out-profile data packets match this ClassMap.

Switch# show mls qos vlan 100

Vlan 100:

Attached Policy Map for Ingress: p1

Classmap   classified(in packets)

c1   0

Rule   ID   classified(in packets)

1.30 show mls qos in {interface <interface-name> policy | vlan <vlan-id>

Command: show mls qos in {interface <interface-name> policy | vlan <vlan-id>

Function: Show the policy configuration information of the in direction of port or vlan.

Parameters: <interface-name>: port name.

Command Mode: Admin and configuration mode

Default: None.

Usage Guide: Show the policy configuration information of the in direction.

Example: Show the policy configuration information of the in direction.

Switch#show mls qos in interface ethernet1/0/1 policy

Ethernet1/0/1:

Attached Policy Map for Ingress: p

1.31 show mls qos interface wred

This command is not supported by switch.

1.32 show mls qos maps

Command: show mls qos maps [cos-intp | cos-dp | dscp-intp | dscp-dp | dscp-dscp] | [begin | include | exclude <regular-expression>]

Function**:** Display the configuration of QoS mapping.

Parameters: cos-intp: The mapping from ingress L2 CoS to internal priority

            cos-intp: The mapping from ingress L2 CoS to drop priority

            dscp-intp: The mapping from ingress DSCP to internal priority

            dscp-intp: The mapping from ingress DSCP to drop priority

            intp-dscp: The mapping from outgress internal to DSCP priority

Default: None.

Command mode: Admin and Configuration Mode.

Usage Guide: Display the map configuration information of QoS.

Example: Display configuration information of the mapping table.

Ingress COS-TO-Internal-Priority map:

COS: 0   1   2   3   4   5   6   7

INTP: 0   1   2   3   4   5   6   7

Ingress DSCP-TO-Internal-Priority map:

d1 : d2	0	1	2	3	4	5	6	7	8	9
0:	0	0	0	0	0	0	0	0	1	1
1:	1	1	1	1	1	1	2	2	2	2
2:	2	2	2	2	3	3	3	3	3	3
3:	3	3	4	4	4	4	4	4	4	4
4:	5	5	5	5	5	5	5	5	6	6
5:	6	6	6	6	6	6	7	7	7	7
6:	7	7	7	7						

Ingress COS-TO-Drop-Precedence map:

COS: 0   1   2   3   4   5   6   7

DP: 0   0   0   0   0   0   0   0

Ingress DSCP-TO-DSCP map:

d1 : d2	0	1	2	3	4	5	6	7	8	9
0:	0	1	2	3	4	5	6	7	8	9
1:	10	11	12	13	14	15	16	17	18	19
2:	20	21	22	23	24	25	26	27	28	29
3:	30	31	32	33	34	35	36	37	38	39
4:	40	41	42	43	44	45	46	47	48	49
5:	50	51	52	53	54	55	56	57	58	59
6:	60	61	62	63						

Ingress DSCP-TO-Drop-Precedence map:

d1 : d2	0	1	2	3	4	5	6	7	8	9
0:	0	0	0	0	0	0	0	0	0	0
1:	0	0	0	0	0	0	0	0	0	0
2:	0	0	0	0	0	0	0	0	0	0
3:	0	0	0	0	0	0	0	0	0	0
4:	0	0	0	0	0	0	0	0	0	0
5:	0	0	0	0	0	0	0	0	0	0
6:	0	0	0	0						

1.33 show mls qos vlan

Command: show mls qos vlan <v-id>

Parameters: v-id: the ranging from 1 to 4094.

Command Mode: Admin mode.

Default: None.

Example:

Switch# show mls qos vlan 1

Vlan 1:

Attached Policy Map for Ingress: 1

Classmap   classified(in packets)

c1   0

Rule   ID   classified(in packets)

Switch# show mls qos vlan 7

Vlan 7:

Attached Policy Map for Ingress: 7

Classmap   classified(in packets)

C7   0

Rule   ID   classified(in packets)

1.34 show mls qos aggregate-policy

Command: show mls qos aggregate-policy [<aggregate-policy-name>]

Function: Display the aggregate-policy configuration information of QoS.

Parameters: <aggregate-policy-name> is the aggregate policy name.

Default: None.

Command Mode: Admin mode and configuration mode.

Usage Guide: Display all configured **aggregate-policy** or appointed **aggregate-policy** information.

Example:

Switch(config)#show mls qos aggregate-policy a2

aggregate policy a2

CIR: 1000   CBS: 1024

  conform-action:

   transmit

     exceed-action:

      drop

  Not used by any policy map

Display Information	Explanation

aggregate policy a2
 	
CIR: 1000   CBS: 1024
 	
  conform-action:
 	
   transmit
 	
     exceed-action:
 	
      drop
	The configuration of aggregate policy.

Not used by any Policy Map	The referenced times of aggregate policy.

1.35 transmit

Command: transmit

                no transmit

Function: Transmit data package that match the class, the no command cancels the assigned action.

Parameters: None.

Default: Do not set the action.

Command mode: Policy class map configuration mode

Usage Guide: Send the packet directly after configure this command.

Example: Send the packet which satisfy c1.

Switch(config)#policy-map p1

Switch(Config-PolicyMap-p1)#class c1

Switch(Config-PolicyMap-p1-Class-c1)#transmit

Switch(Config-PolicyMap-p1-Class-c1)#exit

Switch(Config-PolicyMap-p1)#exit

Chapter 2 Commands for Flow-based Redirection

2.1 access-group redirect to interface ethernet

Command: access-group *<aclname>* redirect to interface [ethernet *<IFNAME>* | *<IFNAME>*]

          no access-group *<aclname>* redirect

Function: Specify flow-based redirection; "no access-group <aclname> redirect" command is used to delete flow-based redirection.

Parameters: *<aclname>* name of the flow , only supports digital standard IP ACL, digital extensive IP ACL, nomenclatural standard IP ACL, nomenclatural extensive IP ACL, digital standard MAC ACL, digital extensive MAC ACL, nomenclatural standard MAC ACL, nomenclatual extensive MAC, digital standard IPv6 ACL, and nomenclatural standard IPv6 ACL. Parameters of **Timerange** and **Portrange** cannot be set in ACL; the type of ACL should be Permit. *<IFNAME>* the destination port of redirection.

Command Mode: Physical Port Configuration Mode.

Usage Guide: "no access-group <aclname> redirect" command is used to delete flow-based redirection. Flow-based redirection function enables the switch to transmit the data frames meeting some special condition to another specified port.

Notice: Redirect does not support redirect flow to the port.

Examples: Redirecting the frames whose source IP is 192.168.1.111 received from port 1 to port 6,

Switch(config)#access-list 1 permit host 192.168.1.111

Switch(config)# interface ethernet 1/0/1

Switch(Config-If-Ethernet1/0/1)# access-group 1 redirect to interface ethernet 1/0/6

2.2 show flow-based-redirect

Command: show flow-based-redirect {interface [ethernet *<IFNAME>* | *<IFNAME>*]}

Function: Display the information of current flow-based redirection in the system/port.

Parameters: 1. No specified port, display the information of all the flow-based redirection in the system.

        2. Specify ports in *<IFNAME>*, display the information of the flow-based redirection configured in the ports listed in the interface-list.

Command Mode: Admin Mode and Configuration Mode.

Usage Guide: This command is used to display the information of current flow-based redirection in the system/port.

Examples:

Switch(config)# show flow-based-redirect

Flow-based-redirect config on interface ethernet 1/0/1:

        RX flow (access-list 1) is redirected to interface Ethernet1/0/6

Chapter 3 Commands for Flexible QinQ

3.1 add

Command: add s-vid <new-vid>

      no add s-vid

Function: Add specified tunnel tag for data packets of mapped classify table, the no command cancel configuration.

Parameters: s-vid <new-vid> appointed VID of tunnel VLAN Tag.

Default: The default is not add tag.

Command Mode: Policy classify table configuration mode.

Usage Guide: After configured the command, add appointed tunnel tag or inner tag for packets of mapping classify table. When use QinQ function, the data packets that sent only have inner VLAN Tag or no Tag, it needs add s-vid commands to add appointed tunnel VLAN Tag, otherwise data have not tunnel VLAN in switch.

Example: Add a VLAN Tag that VID is 2 to satisfied c1 classify rule packets.

Switch(config)#policy-map p1

Switch(Config-PolicyMap-p1)#class c1

Switch(Config-PolicyMap-p1-Class-c1)#add s-vid2

3.2 delete

This command is *not* supported by switch.

3.3 match

Command: match {access-group <acl-index-or-name> | ip *dscp* <dscp-list>| ip precedence *<ip-precedence-list>*| ipv6 access-group *<acl-index-or-name>* | ipv6 dscp *<dscp-list>* | ipv6 flowlabel *<flowlabel-list>* | vlan *<vlan-list>* | cos *<cos-list>* }

      no match {access-group | ip dscp | ip precedence | ipv6 access-group | ipv6 dscp no match {access-group | ip dscp | ip precedence | ipv6 access-group | ipv6 dscp | ipv6 flowlabel | vlan | cos }}

Function: Configure the match standard of the class map; the no command deletes the specified match standard.

Parameter: access-group *<acl-index-or-name>* match the specified IP ACL or MAC –IP

ACL or standard IPV6 ACL, the parameters are the number or name of ACL

ip dscp *<dscp-list>* and **ipv6 dscp *<dscp-list>*** match the specified DSCP value, the parameter is a list of DSCP consisting of maximum 8 DSCP values, the ranging is 0 to 63

ip precedence *<ip-precedence-list>* match the specified IP Precedence, the parameter is a IP Precedence list consisting of maximum 8 IP Precedence values with a valid range of 0 to 7

ipv6 access-group *<acl-index-or-name>* match the specified IPv6 ACL, the parameter is the number or name of IPv6 ACL

ipv6 flowlabel <flowlabel-list> match the specified IPv6 flow label, the parameter is IPv6 flow label value, the ranging is 0 to 1048575

vlan *<vlan-list>* match the specified VLAN ID of the external VLAN Tag, the parameter is a VLAN ID list consisting of maximum 8 VLAN IDs, the ranging is 1 to 4094

cos *<cost-list>* match the specified CoS value, the parameter is a CoS list consisting of maximum 8 CoS values, the ranging is 0 to 7

c-vlan *<vlan-list>* match the specified customer VLAN ID, the parameter is a VLAN ID list consisting of maximum 8 VLAN IDs, the ranging is 1 to 4094

Default: There is no match standard.

Command Mode: Class-map Mode

Usage Guide: Only one match standard can be configured in a class map. When configuring the ACL match, permit rule is the match option, it will apply Policy Map action. Deny rule is the excluding option, it does not apply Policy Map action. If it has been configured other match rule, the operation is failure, but configuring the same match rule will cover the previous.

Example: Create a class-map named c1, and configure the class rule of the class-map to match packets with IP Precedence of 0.

Switch(config)#class-map c1

Switch(config-classmap-c1)#match ip precedence 0

Switch(config-classmap-c1)#exit

3.4 service-policy

Command: service-policy *<policy-map-name>* in

        no service-policy *<policy-map-name>* in

Function: Bind the specified policy of flexible QinQ to the ingress of the port, the no command cancels the binding.

Parameters: service-policy *<policy-map-name>*: The specified policy-map name of flexible QinQ.

Default: No policy map is bound to port.

Command mode: Port Mode.

Usage Guide: Only one policy map can be bound to each port, the function takes effect after the policy map is bound to a port. At present, do not support the configuration with add commend and delete command in policy.

Example: Apply policy-map p1 (p1 corresponds with the action that modify s-vid) to Ethernet port 1/0/1 for flexible QinQ.

Switch(Config-If-Ethernet1/0/1)#dot1q-tunnel enable

Switch(Config-If-Ethernet1/0/1)#service-policy p1 in

3.5 set

**Command: set   {s-vid   <new-vid> | cos
<*cos-list*>|drop-precedence<dp-list>|internal-priority<inp-list>|ip{dscp<dscp-list>|p
recedence<pri-list>}|s-tpid<tpid-list> }**

no set{s-vid| cos |drop-precedence|internal-priority|ip{dscp|precedence}|s-tpid }

Function: Assign the new cos and vid value to the packets which match the class map, no command cancels the operation.

Parameters: s-vid: modify tunnel VID of VLAN Tag; **cos:** modify cos value of packets; **drop-precedence:** modify drop priority; **internal-priority:** modify inner priority; **ip:** modify ip dscp value or precedence value; **s-tpid:** modify tunnel tpid value of packets.

Default: Do not modify the value.

Command Mode: Policy class-map configuration mode

Usage Guide: Only modify the new value again for the classified flow that correspond the match standard.

Example: Set an external VLAN Tag' VID as 3 for the packet which satisfy c2 class rule.

Switch(config)#policy-map p1

Switch(Config-PolicyMap-p1)#class c2

Switch(Config-PolicyMap-p1-Class-c2)#set s-vid 3

Switch(Config-PolicyMap-p1-Class-c2)#exit