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# 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.

**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 next-hop 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> | c-vlan <vlan-list> | c-cos <cos-list>}

**no match** {access-group | ip dscp | ip precedence| ipv6 access-group| ipv6 dscp | ipv6 flowlabel | vlan | cos | c-vlan | c-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 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 ranging 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 ranging is 0~1048575;

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

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

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

**c-cos <cos-list>** match specified Customer CoS value, the parameter is a CoS list consisting of maximum 8 CoS, the ranging 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

This command is not supported by the switch.

## 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 enacted.

**Example:** Setting the default CoS value of ethernet port 1/1 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 1/1
Switch(Config-If-Ethernet1/1)#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> | dscp-intp <in-dscp list> to <intp>}`

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

**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;

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

**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 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

**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 4, the dscp-intp mapping need 16 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 }`  
`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

**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 wdr weight

This command is not supported by switch.

## 1.16 mls qos queue bandwidth

This command is not supported by switch.

## 1.17 mls qos trust

**Command:** mls qos trust dscp

**no mls qos trust dscp**

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

**Parameters:** dscp configures the port to trust DSCP value.

**Default:** Trust CoS value.

**Command mode:** Port Configuration Mode.

**Usage Guide:**

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

**Example:** Set trust dscp of port.

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

```
Switch(config-if-ethernet1/1)#mls qos trust dscp
```

## 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

### Command:

**policy** <bits\_per\_second> <normal\_burst\_bytes> ({conform-action ACTION | exceed-action ACTION})

### ACTION definition:

**drop** | **transmit** / **set-dscp-transmit** <dscp\_value> | **set-prec-transmit** <ip\_precedence\_value> | **set-cos-transmit** <cos\_value> | **set-internal-priority** <inp\_value> | **set-Drop-Precedence** <dp\_value>

### no policy

**Function:** The non-aggregation policy command supporting two colors. Set the corresponding action to the different color packets. The no command will delete the mode configuration.

**Parameters:** **bits\_per\_second:** The committed information rate – CIR (Committed Information Rate), in Kbps, ranging from 1 to 10000000;

**normal\_burst\_bytes:** The committed burst size – CBS (Committed Burst Size), in byte, ranging from 1 to 1000000. 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;

**conform-action:** The action to take when the CIR is not exceeded, which means the messages are green, the default as transmit;

**exceed-action:** The actions to take when the CIR is exceeded but PIR isn't, which means the messages are yellow, the default as drop.

ACTION include:

**drop/transmit:** Drop/transmit the packets

set-dscp-transmit sets DSCP, it is valid to IPv4 and IPv6 packets, only set-dscp-transmit or set-prec-transmit can be selected.

set-prec-transmit sets TOS, only set-prec-transmit or set-dscp-transmit can be selected

set-internal-priority sets the internal priority of the packets

set-Drop-Precedence sets the drop precedence of the packets

set-cos-transmit sets the CoS value of the L2 packets

**Default:** No policy action; the default action of conform-action is transmit, while that of exceed-action is drop.

**Command mode:** Policy class map configuration Mode

**Usage Guide:**

“set” and “policy” (policy aggregate) are selected and have the same action in Policy Map, then the action selected by “policy” will cover the action of “set”.

**Example:** In the policy class table configuration mode, set the CIR as 1000, CBS as 2000, and the action triggered by exceeding CIR as transmit without changing the messages.

```
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 2000 exceed-action transmit
```

## 1.21 policy aggregate

This command is not supported by switch.

## 1.22 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 operation 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
```

## 1.23 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.

**Parameters:** `input <policy-map-name>` applies the specified policy map to the ingress

direction of switch port.

**Default:** No policy map is bound to port and VLAN interface 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
```

## 1.24 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.

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

**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
```

## 1.25 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
```

## 1.26 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.

## 1.27 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 p1, used by 0 port
```

```
Class Map name: c1
```

```
policy 20000 2000
```

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

## 1.28 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-profile means green and out-profile means red. Only when configuring ingress policies, there is statistic information.

**Example:**

```
Switch#show mls qos interface ethernet 1/2
```

```
Ethernet 1/2
```

```
Default COS: 0
```

```
Trust: COS
```

Attached Policy Map for Ingress: p1

Classmap	classified	in-profile	out-profile (in packets)
c1	20	10	10
c2	NA	NA	NA

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

Egress Internal-Priority-TO-Queue map:

INTP: 0 1 2 3

-----

Queue: 0 1 2 3

Queue Algorithm: WRR

Queue weights:

Queue 0 1 2 3

-----

WrrWeight 1 2 3 4

Display Information	Explanation
Ethernet1/2	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 or PQ queue out method
Queue weights	Queue weights configuration

Bandwidth Guarantee Configuration	Bandwidth configuration	guarantee
-----------------------------------	-------------------------	-----------

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

Ethernet1/2:

Egress Internal-Priority-TO-Queue map:

INTP: 0 1 2 3

-----

Queue: 0 1 2 3

Queue Algorithm: WRR

Queue weights:

Queue 0 1 2 3

-----

WrrWeight 1 2 3 4

Display Information	Explanation
Internal-Priority-TO-Queue map::	Internal-Priority to queue mapping
Queue Algorithm:	WRR or PQ queue out method
Queue weights	Queue weights configuration

Switch # show mls qos interface ethernet 1/2 policy

Ethernet1/2:

Attached Policy Map for Ingress: p1

Accounting: ON

Classmap	classified	in-profile	out-profile (in packets)
c1	0	0	0

Display Information	Explanation
Ethernet1/2	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-profile	out-profile (in packets)
c1	20	10	10
c2	NA	NA	NA

## 1.29 show mls qos interface wred

This command is not supported by switch.

## 1.30 show mls qos maps

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

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

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

**dscp-intp:** The mapping from ingress DSCP to internal 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.

Switch#show mls qos maps

Ingress COS-TO-Internal-Priority map:

COS: 0 1 2 3 4 5 6 7

-----

INTP: 0 1 2 3 3 2 1 0

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	0	0
1:	0	0	0	0	0	0	1	1	1	1
2:	1	1	1	1	1	1	1	1	1	1
3:	1	1	2	2	2	2	2	2	2	2
4:	2	2	2	2	2	2	2	2	3	3
5:	3	3	3	3	3	3	3	3	3	3
6:	3	3	3	3						

## 1.31 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-profile	out-profile (in packets)
1	NA	NA	NA

```
Switch(config)#show mls qos vlan 7
```

```
Vlan 7:
```

```
Attached Policy Map for Ingress: 7
```

Classmap	classified	in-profile	out-profile (in packets)
7	0	0	0

## 1.32 show mls qos aggregate-policy

This command is not supported by the switch.

## 1.33 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 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.

**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 1/1
```

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

## 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 1/1:

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

## Chapter 3 Commands for Flexible QinQ

### 3.1 add

This command is not supported by switch.

### 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> | c-vlan <vlan-list> | c-cos <cos-list>`

`no match {access-group | ip dscp | ip precedence | ipv6 access-group | ipv6 dscp | ipv6 flowlabel | vlan | cos | c-vlan | c-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 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 range 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 range 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 range 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 range 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 range is 1 to 4094

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

**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. If s-vid needs to be modified, enable QinQ function on the corresponding port at first. At present, do not support the configuration with add command and delete command in policy.

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

```
Switch(Config-If-Ethernet1/1)#dot1q-tunnel enable
Switch(Config-If-Ethernet1/1)#service-policy p1 in
```

Apply policy-map p1 (p1 corresponds with the action that modify c-vid) to Ethernet port 1/1

for flexible QinQ.

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

## 3.5 set

**Command:** set {s-vid <new-vid> | c-vid <new-vid>}

**no set {s-vid | c-vid}**

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

**Parameters:** s-vid <new-vid> specifies VID of an external VLAN Tag

c-vid <new-vid> specifies VID of a inner VLAN Tag

**Default:** Do not assign the value.

**Command Mode:** Policy class-map configuration mode

**Usage Guide:** Only assign the new value again for the classified flow that correspond the match standard. When using flexible QinQ, the sent packets only with the inner VLAN Tag or without Tag, it needs to use **add s-vid** command to add the specified external VLAN Tag, otherwise the packets without the external VLAN Tag within the switch.

**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
```