

16 常见 QoS 操作

关于本章

介绍QoS和MQC功能的常见操作，如接口限速等。

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16.1 配置接口限速（框式交换机）

配置入方向接口限速

配置名称为qoscar1的CAR模板指定限速带宽大小，并将该模板在接口GE1/0/1下应用。

```
<HUAWEI> system-view
[HUAWEI] qos car qoscar1 cir 10000 cbs 10240
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] qos car inbound qoscar1
```

配置出方向接口限速

在接口视图下执行命令**qos lr cir cir-value [cbs cbs-value] [outbound]**，对通过该接口的流量进行限速。

（可选）帧间隙和前导码配置

V200R005C00版本及后续版本开始，支持配置在计算接口限速速率时，是否包含报文的帧间隙和前导码。缺省情况下，计算接口限速的速率时包括帧间隙和前导码。用户

可以在系统视图下执行以下命令用来实现计算限速速率时不包括报文的帧间隙和前导码，从而提高限速的准确性。

- 入方向：**qos-car exclude-interframe**
- 出方向：**qos-shaping exclude-interframe**

相关信息

视频

[QoS限速配置之“接口限速”](#)

16.2 配置接口限速（盒式交换机）

配置入方向接口限速

在接口视图下执行命令**qos lr inbound cir cir-value [cbs cbs-value]**，对通过该接口的流量进行限速。

配置出方向接口限速

在接口视图下执行命令**qos lr outbound cir cir-value [cbs cbs-value]**，对通过该接口的流量进行限速。

（可选）帧间隙和前导码配置

V200R005C00版本及后续版本开始，设备支持配置在计算接口限速速率时，是否包含报文的帧间隙和前导码。缺省情况下，计算接口限速的速率时包括帧间隙和前导码。用户可以在系统视图下执行以下命令用来实现计算限速速率时不包括报文的帧间隙和前导码，从而提高限速的准确性。

- 入方向：**qos-car exclude-interframe**
- 出方向：**qos-shaping exclude-interframe**

相关信息

视频

[QoS限速配置之“接口限速”](#)

16.3 删除接口限速配置（框式交换机）

删除入方向接口限速配置

取消名称为qoscar1的CAR模板在接口GE1/0/1下的应用，并将该模板删除。

```
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] undo qos car inbound
[HUAWEI-GigabitEthernet1/0/1] quit
[HUAWEI] undo qos car qoscar1
```

删除出方向接口限速配置

在接口视图下执行命令**undo qos lr [outbound]**，删除该接口的限速配置。

16.4 删除接口限速配置（盒式交换机）

删除入方向接口限速配置

在接口视图下执行命令**undo qos lr inbound**，删除该接口的限速配置。

删除出方向接口限速配置

在接口视图下执行命令**undo qos lr outbound**，删除该接口的限速配置。

16.5 使用流策略进行限速

根据 IP 地址进行限速

对IP地址为192.168.1.10的PC限速，带宽限制为4M。

```
<HUAWEI> system-view
[HUAWEI] acl 2000
[HUAWEI-acl-basic-2000] rule permit source 192.168.1.10 0.0.0.0
[HUAWEI-acl-basic-2000] quit
[HUAWEI] traffic classifier c1
[HUAWEI-classifier-c1] if-match acl 2000
[HUAWEI-classifier-c1] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] car cir 4096
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy p1
[HUAWEI-trafficpolicy-p1] classifier c1 behavior b1
[HUAWEI-trafficpolicy-p1] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 inbound
```

对某网段设备进行限速

对IP地址为192.168.1.0网段设备进行限速，带宽限制为50M。

```
<HUAWEI> system-view
[HUAWEI] acl 2000
[HUAWEI-acl-basic-2000] rule permit source 192.168.1.0 0.0.0.255
[HUAWEI-acl-basic-2000] quit
[HUAWEI] traffic classifier c1
[HUAWEI-classifier-c1] if-match acl 2000
[HUAWEI-classifier-c1] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] car cir 51200
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy p1
[HUAWEI-trafficpolicy-p1] classifier c1 behavior b1
[HUAWEI-trafficpolicy-p1] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 inbound
```

根据 IP 地址和协议进行限速

限制192.168.1.0网段设备访问Internet的HTTP（端口号为80）流量不超过10Mbps。

```
<HUAWEI> system-view
[HUAWEI] acl 3000
[HUAWEI-acl-adv-3000] rule permit tcp destination-port eq 80 source 192.168.1.0 0.0.0.255
[HUAWEI-acl-adv-3000] quit
[HUAWEI] traffic classifier c1
[HUAWEI-classifier-c1] if-match acl 3000
[HUAWEI-classifier-c1] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] car cir 10240
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy p1
[HUAWEI-trafficpolicy-p1] classifier c1 behavior b1
[HUAWEI-trafficpolicy-p1] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 inbound
```

16.6 使用流策略对报文进行过滤

禁止指定主机访问网络

禁止IP地址为192.168.1.10的PC访问网络。

```
<HUAWEI> system-view
[HUAWEI] acl 2000
[HUAWEI-acl-basic-2000] rule deny source 192.168.1.10 0.0.0.0
[HUAWEI-acl-basic-2000] quit
[HUAWEI] traffic classifier c1
[HUAWEI-classifier-c1] if-match acl 2000
[HUAWEI-classifier-c1] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] deny
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy p1
[HUAWEI-trafficpolicy-p1] classifier c1 behavior b1
[HUAWEI-trafficpolicy-p1] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 inbound
```

禁止指定网段所有设备访问网络

禁止192.168.1.0网段所有设备访问网络。

```
<HUAWEI> system-view
[HUAWEI] acl 2000
[HUAWEI-acl-basic-2000] rule deny source 192.168.1.0 0.0.0.255
[HUAWEI-acl-basic-2000] quit
[HUAWEI] traffic classifier c1
[HUAWEI-classifier-c1] if-match acl 2000
[HUAWEI-classifier-c1] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] deny
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy p1
[HUAWEI-trafficpolicy-p1] classifier c1 behavior b1
[HUAWEI-trafficpolicy-p1] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 inbound
```

过滤指定应用协议报文

- 禁止TCP目的端口号为25的报文（SMTP）通过。
- 禁止TCP目的端口号为110的报文（POP3）通过。

- 禁止TCP目的端口号为80的报文（HTTP）通过。

```
<HUAWEI> system-view
[HUAWEI] acl 3000
[HUAWEI-acl-adv-3000] rule deny tcp destination-port eq 25
[HUAWEI-acl-adv-3000] rule deny tcp destination-port eq 110
[HUAWEI-acl-adv-3000] rule deny tcp destination-port eq 80
[HUAWEI-acl-adv-3000] quit
[HUAWEI] traffic classifier c1
[HUAWEI-classifier-c1] if-match acl 3000
[HUAWEI-classifier-c1] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] deny
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy p1
[HUAWEI-trafficpolicy-p1] classifier c1 behavior b1
[HUAWEI-trafficpolicy-p1] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 inbound
```

16.7 使用流策略配置流量统计

配置指定主机的统计信息

配置对源MAC为0000-0000-0003的报文进行流量统计。

```
<HUAWEI> system-view
[HUAWEI] acl 4000
[HUAWEI-acl-L2-4000] rule permit source-mac 0000-0000-0003 ffff-ffff-ffff
[HUAWEI-acl-L2-4000] quit
[HUAWEI] traffic classifier c1
[HUAWEI-classifier-c1] if-match acl 4000
[HUAWEI-classifier-c1] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] statistic enable
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy p1
[HUAWEI-trafficpolicy-p1] classifier c1 behavior b1
[HUAWEI-trafficpolicy-p1] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 inbound
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 outbound
```

配置对 ICMP 报文进行统计

```
<HUAWEI> system-view
[HUAWEI] acl 3000
[HUAWEI-acl-adv-3000] rule 0 permit icmp source 192.168.1.1 0 destination 192.168.2.1 0
[HUAWEI-acl-adv-3000] rule 5 permit icmp source 192.168.2.1 0 destination 192.168.1.1 0
[HUAWEI-acl-adv-3000] quit
[HUAWEI] traffic classifier c1
[HUAWEI-classifier-c1] if-match acl 3000
[HUAWEI-classifier-c1] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] statistic enable
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy p1
[HUAWEI-trafficpolicy-p1] classifier c1 behavior b1
[HUAWEI-trafficpolicy-p1] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 inbound
[HUAWEI-GigabitEthernet1/0/1] traffic-policy p1 outbound
```

配置对 ARP 报文进行统计

统计接口发送的ARP报文和回应的ARP报文。

```
<HUAWEI> system-view
[HUAWEI] traffic classifier arp-request
[HUAWEI-classifier-arp-request] if-match l2-protocol arp
[HUAWEI-classifier-arp-request] if-match source-mac 1111-1111-1111
[HUAWEI-classifier-arp-request] if-match destination-mac ffff-ffff-ffff
[HUAWEI-classifier-arp-request] quit
[HUAWEI] traffic classifier arp-reply
[HUAWEI-classifier-arp-reply] if-match l2-protocol arp
[HUAWEI-classifier-arp-reply] if-match source-mac 2222-2222-2222
[HUAWEI-classifier-arp-reply] if-match destination-mac 1111-1111-1111
[HUAWEI-classifier-arp-reply] quit
[HUAWEI] traffic behavior b1
[HUAWEI-behavior-b1] statistic enable
[HUAWEI-behavior-b1] quit
[HUAWEI] traffic policy arp-request
[HUAWEI-trafficpolicy-arp-request] classifier arp-request behavior b1
[HUAWEI-trafficpolicy-arp-request] quit
[HUAWEI] traffic policy arp-reply
[HUAWEI-trafficpolicy-arp-reply] classifier arp-reply behavior b1
[HUAWEI-trafficpolicy-arp-reply] quit
[HUAWEI] interface gigabitethernet 1/0/1
[HUAWEI-GigabitEthernet1/0/1] traffic-policy arp-request inbound
[HUAWEI-GigabitEthernet1/0/1] traffic-policy arp-reply outbound
```

查看报文统计信息

配置通过流策略对报文进行统计之后，可以使用如下命令查看报文统计信息。

显示全局入方向应用流策略后基于匹配规则的报文统计信息。

```
<HUAWEI> display traffic policy statistics interface gigabitethernet 1/0/1 inbound verbose rule-
base
```

```
Interface: GigabitEthernet1/0/1
Traffic policy inbound: arp-request
Rule number: 1
Current status: success
Statistics interval: 300
```

```
Classifier: arp-request operator and
Behavior: b1
if-match l2-protocol arp
if-match source-mac 1111-1111-1111
if-match destination-mac ffff-ffff-ffff
Board : 0
```

Passed	Packets:	0
	Bytes:	0
	Rate(pps):	0
	Rate(bps):	0
Dropped	Packets:	0
	Bytes:	0
	Rate(pps):	0
	Rate(bps):	0

说明

E3L系列单板和SA系列单板不支持基于字节的信息统计，Bytes和Rate(bps)统一显示为“-”。