

## Example: QoS Parameter Configuration for QoS Downstream Rate

This example illustrates how to use parameters to control the downstream rate obtained from ANCP.

In this example, the subscribers on the 0.1 access loop are configured on VLAN1. They subscribe to voice, video, and data traffic with a bandwidth of 10 Mbps. Subscribers on the 1.1 access loop are configured on VLAN2, and subscribe to 1 Mbps of data traffic.

Table 1 on page 1 lists the shaping mode and shaping rate information received by the QoS downstream rate application upon access loop synchronization. The parameter instances are created with these values.

**Table 1: Shaping Rate and Shaping Mode**

	VLAN1	VLAN2
<b>Shaping mode</b>	Cell	Cell
<b>Shaping rate</b>	10000000 bps	100000 bps

### Configuring Traffic Classes

The QoS administrator configures the traffic classes for voice and video services.

1. Configure the traffic class named voice.

```
host1(config)#traffic-class voice
host1(config-traffic-class)#exit
```

2. Configure the traffic class named video.

```
host1(config)#traffic-class video
host1(config-traffic-class)#exit
```

### Configuring the QoS Parameter Definition for QoS Downstream Rate

The QoS administrator configures a parameter definition for the QoS downstream rate application. Using subscriber-interface types, the QoS administrator then enables ANCP to create parameter instances of the QoS downstream rate application.

1. Configure a parameter definition named ancpVlan.

```
host1(config)#qos-parameter-define ancpVlan application qos-downstream-rate
```

2. Define the controlled-interface types for vlan and ip to adjust the shaping rate for the VLAN and IP queues.

- a. Configure the controlled-interface type for VLAN.
- b. Configure the controlled-interface type for IP.

```
host1(config-qos-parameter-define)#controlled-interface-type vlan
host1(config-qos-parameter-define)#controlled-interface-type ip
```

3. Define the subscriber-interface types for vlan and ethernet.

```
host1(config-qos-parameter-define)#subscriber-interface-type vlan
host1(config-qos-parameter-define)#subscriber-interface-type ethernet
host1(config-qos-parameter-define)#exit
```

### Configuring the QoS Parameter Definition for QoS Cell Mode

The QoS administrator then configures the QoS shaping mode using the QoS cell mode application. Using subscriber-interface types, the QoS administrator then enables ANCP to create parameter instances using the QoS cell mode application.

1. Configure a parameter definition named cellmodeVlan.

```
host1(config)#qos-parameter-define cellmodeVlan application qos-cell-mode
```

2. Define the controlled-interface types for vlan and ip for the shaping mode.

```
host1(config-qos-parameter-define)#controlled-interface-type vlan
host1(config-qos-parameter-define)#controlled-interface-type ip
host1(config-qos-parameter-define)#exit
```

3. Define the subscriber-interface types for vlan and ethernet.

```
host1(config-qos-parameter-define)#subscriber-interface-type vlan
host1(config-qos-parameter-define)#subscriber-interface-type ethernet
host1(config-qos-parameter-define)#exit
```

### Enabling QoS Adaptive Mode

The QoS administrator enables QoS adaptive mode for ANCP.

1. Enter Layer 2 Control Configuration mode.

```
host1(config)#l2c
```

2. Enable QoS adaptive mode for the system.

```
host1(config-l2c)#qos-adaptive-mode
```

### Reference the Parameter Definition Within a Scheduler Profile

The QoS administrator configures the shaping rate and the shared-shaping rate within scheduler profiles for the VLAN1 and VLAN2 subscribers.

1. Configure the scheduler profile for the subscriber vlan1.
  - a. Configure the scheduler profile named vlan1.
  - b. Configure the shared-shaping rate by referencing the ancpVlan parameter with a burst of 10 milliseconds.

```
host1(config)#scheduler-profile vlan1
host1(config-scheduler-profile)#shared-shaping-rate ancpVlan burst 10
milliseconds auto
host1(config-scheduler-profile)#exit
```

2. Configure the scheduler profile for the voice service.
  - a. Configure the scheduler profile named voice.

- b. Configure the shaping rate of 100000 with a burst of 10 milliseconds.

```
host1(config)#scheduler-profile voice
host1(config-scheduler-profile)#shaping-rate 100000 burst 10 milliseconds
host1(config-scheduler-profile)#exit
```

3. Configure the scheduler profile for the video service.
  - a. Configure the scheduler profile named video.
  - b. Configure the shaping rate of 8000000 with a burst of 10 milliseconds.

```
host1(config)#scheduler-profile video
host1(config-scheduler-profile)#shaping-rate 8000000 burst 10 milliseconds
host1(config-scheduler-profile)#exit
```

4. Configure the scheduler profile for the subscriber vlan2.
  - a. Configure the scheduler profile named vlan2.
  - b. Configure the shaping rate by referencing the ancpVlan parameter with a burst of 10 milliseconds.

```
host1(config)#scheduler-profile vlan2
host1(config-scheduler-profile)#shaping-rate ancpVlan burst 10 milliseconds
host1(config-scheduler-profile)#exit
```

#### **Adding the Scheduler Profiles to a QoS Profile**

After configuring the scheduler profiles, the QoS administrator then configures QoS profiles for the VLAN1 and VLAN2 subscribers.

1. Configure the vlan1 QoS profile with a shared-shaping rate that matches the downstream rate.
  - a. Configure the QoS profile named vlan1.
  - b. Configure the vlan node and reference the scheduler profile vlan1.
  - c. Configure the vlan queue and reference the voice traffic class and the voice scheduler profile.
  - d. Configure the vlan queue and reference the video traffic class and the video scheduler profile.

```
host1(config)#qos-profile vlan1
host1(config-qos-profile)#vlan node scheduler-profile vlan1
host1(config-qos-profile)#vlan queue traffic-class voice scheduler-profile
voice
host1(config-qos-profile)#vlan queue traffic-class video scheduler-profile
video
host1(config-qos-profile)#exit
```

2. Configure the vlan2 QoS profile with a shaping rate of 1 Mbps.
  - a. Configure the QoS profile named vlan2.
  - b. Configure the vlan node and reference the scheduler profile vlan2.

```

host1(config)#qos-profile vlan2
host1(config-qos-profile)#vlan node scheduler-profile vlan2
host1(config-qos-profile)#exit

```

### Attaching the QoS Profile to an Interface

The QoS administrator creates logical interfaces for VLAN1 and VLAN2 and attaches the QoS profiles to them. As the subscribers log in, ANCP creates the parameter instances for cellmodeVlan and ancpVlan using RADIUS VSAs.

1. Attach the vlan1 QoS profile to VLAN1.
  - a. Configure the Gigabit Ethernet interface in slot 6, adapter 0, port 0.
  - b. Configure the VLAN major interface.
  - c. Configure the Gigabit Ethernet interface in slot 6, adapter 0, port 0, subinterface 1.
  - d. Assign VLAN ID of 1.
  - e. Attach the QoS profile vc1 to the interface.

```

host1(config)#interface gigabitEthernet 6/0/0
host1(config-if)#encapsulation vlan
host1(config-if)#interface gigabitEthernet 6/0/0.1
host1(config-if)#vlan id 1
host1(config-if)#qos-profile vlan1
host1(config-if)#exit

```

2. Attach the vlan2 QoS profile to VLAN2.
  - a. Specify the Gigabit Ethernet interface in slot 6, adapter 0, port 1.
  - b. Assign a VLAN ID of 2.
  - c. Attach the QoS profile vlan2 to the interface.

```

host1(config-if)#interface gigabitEthernet 6/0/1.1
host1(config-if)#vlan id 2
host1(config-if)#qos-profile vlan2
host1(config-if)#exit

```

## Complete Configuration Example

You can use the complete configuration examples provided for each of the configurations in your own network. To customize the configuration example for your needs, copy the text into a text editor, and modify it.

To use the example for immediate use, copy it to the local console or Telnet session from which you access the router.

You can also save the example as a script (.scr) file that executes the commands as though they were entered at the terminal. For information about executing .scr files, see *JUNOS System Basics Configuration Guide*.

From Global Configuration mode:

! Configure the traffic-classes for video and voice.

**traffic-class voice**

**exit**

**traffic-class video**

**exit**

! Create the ancpVlan QoS parameter definition.

**qos-parameter-define ancpVlan application qos-downstream-rate**

**controlled-interface-type vlan**

**controlled-interface-type ip**

**instance-interface-type vlan**

**instance-interface-type ethernet**

**exit**

! Create the cellmodeVlan QoS parameter definition.

**qos-parameter-define cellmodeVlan application qos-cell-mode**

**controlled-interface-type vlan**

**controlled-interface-type ip**

**instance-interface-type vlan**

**instance-interface-type ethernet**

**exit**

! Enable QoS adaptive mode for ANCP.

**l2c**

**qos-adaptive-mode**

**exit**

! Configure the vlan1 and vlan2 scheduler profiles.

**scheduler-profile vlan1**

**shared-shaping-rate ancpVlan burst 10 milliseconds auto**

**exit**

**scheduler-profile voice**

**shaping-rate 100000 burst 10 milliseconds**

**exit**

**scheduler-profile video**

**shaping-rate 8000000 burst 10 milliseconds**

**exit**

**scheduler-profile vlan2**

**shaping-rate ancpVlan burst 10 milliseconds**

**exit**

! Add the scheduler profiles to the vlan1 and vlan2 QoS profiles.

**qos-profile vlan1**

**vlan node scheduler-profile vlan1**

**vlan queue traffic-class voice scheduler-profile voice**

**vlan queue traffic-class video scheduler-profile video**

**exit**

**qos-profile vlan2**

**vlan node scheduler-profile vlan2**

**exit**

! Configure the QoS downstream rate adjustment for VLAN1 and VLAN2.

**interface gigabitEthernet 6/0/0**

**encapsulation vlan**

**interface gigabitEthernet 6/0/1.1**

**vlan id 1**

**qos-profile vlan1**

**exit**

**interface gigabitEthernet 6/0/1.1**

**vlan id 2**

```
qos-profile vlan2
exit
```

**Related Topics** ■ QoS Downstream Rate Application Overview