

Chapter 31

Monitoring QoS on E-series Routers

This chapter provides information for monitoring specific QoS configurations.

QoS topics are discussed in the following sections:

- Monitoring Service Levels with Traffic Classes on page 310
- Monitoring Service Levels with Traffic-Class Groups on page 311
- Monitoring Queue Thresholds on page 312
- Monitoring Queue Profiles on page 316
- Monitoring Drop Profiles for RED and WRED on page 317
- Monitoring the QoS Scheduler Hierarchy on page 318
- Monitoring the Configuration of Scheduler Profiles on page 321
- Monitoring Shared Shapers on page 323
- Monitoring Shared Shaper Algorithm Variables on page 324
- Monitoring Forwarding and Drop Events on the Egress Queue on page 325
- Monitoring Forwarding and Drop Rates on the Egress Queue on page 326
- Monitoring Queue Statistics for the Fabric on page 330
- Monitoring the Configuration of Statistics Profiles on page 331
- Monitoring the QoS Profiles Attached to an Interface on page 331
- Monitoring the Configuration of QoS Port-Type Profiles on page 333
- Monitoring the Configuration of QoS Profiles on page 333
- Monitoring the QoS Configuration of ATM Interfaces on page 335
- Monitoring the QoS Configuration of IP Interfaces on page 337
- Monitoring the QoS Configuration of Fast Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet Interfaces on page 338

- Monitoring the QoS Configuration of IEEE 802.3ad Link Aggregation Group Bundles on page 340
- Monitoring the AAA Downstream Rate for QoS on page 341
- Monitoring QoS Parameter Instances on page 341
- Monitoring QoS Parameter Definitions on page 344



NOTE: The E120 router and E320 router output for **monitor** and **show** commands is identical to output from other E-series routers, except that the E120 and E320 router output also includes information about the adapter identifier in the interface specifier (*slot/adapter/port*).

Monitoring Service Levels with Traffic Classes

Purpose Display information about traffic classes.

Action To display information about all traffic classes:

```
host1#show traffic-class
```

| traffic class | fabric weight | fabric strict priority |
|------------------|------------------|------------------------------|
| ----- | ----- | ----- |
| best-effort | 8 | no |
| best-effort | 8 | no |
| tc1 | 8 | no |
| tc2 | 8 | no |
| tc3 | 8 | no |
| tcs4 | 8 | yes |
| tcs5 | 8 | yes |

To display the number of times that a QoS profile references the traffic class:

```
host1#show traffic-class brief
traffic-class best-effort referenced 17 times in qos-profiles
```

To display a list of QoS profiles and traffic-class groups that reference the traffic class:

```
host1#show traffic-class references
traffic-class best-effort
  Referenced by QoS profiles:
    atm-default
    serial-default
    ethernet-default
    server-default
  Referenced by traffic class groups:
    None
```

Meaning Table 32 lists the **show traffic-class-group** command output fields.

Table 32: show traffic-class-group Output Fields

| Field Name | Field Description |
|------------------------------------|--|
| traffic class | Name of the traffic class |
| fabric weight | Weight of the queue in the fabric |
| fabric strict priority | Setting strict-priority queues in the fabric |
| Referenced by QoS profiles | QoS profiles that reference this traffic class |
| Referenced by traffic class groups | Traffic-class groups that reference this traffic class |

Related Topics

- Configuring Traffic Classes That Define Service Levels on page 15
- **show traffic-class** command

Monitoring Service Levels with Traffic-Class Groups

Purpose Display the name of a traffic-class group and the classes in the group.

Action To display the traffic classes in a traffic-class group:

```
host1#show traffic-class-group
traffic-class-group assured-fwd
  traffic-class video

traffic-class-group assured-fwd slot 11
  traffic-class video
  traffic-class voice
```

To display the number of times each traffic-class group is referenced by a profile:

```
host1#show traffic-class-group brief
traffic-class-group g2 referenced 1 time in qos-profiles
traffic-class-group g3 referenced 1 time in qos-profiles
traffic-class-group g4 referenced 0 times in qos-profiles
traffic-class-group g1 referenced 0 times in qos-profiles
```

To display a list of profiles and QoS profiles that reference the traffic-class group:

```
host1#show traffic-class-group references
traffic-class-group g2
  Referenced by QoS profiles:
  profile1

traffic-class-group g3
  Referenced by QoS profiles:
  None
```

Meaning Table 33 lists the **show traffic-class-group** command output fields.

Table 33: show traffic-class-group Output Fields

| Field Name | Field Description |
|----------------------------|---|
| traffic-class group | Name of the traffic-class group |
| traffic-class | Name of the traffic class |
| Referenced in qos-profiles | Number of times group is referenced by QoS profiles |
| Referenced by QoS profiles | QoS profiles that reference this traffic class |

Related Topics

- Configuring Traffic-Class Groups That Define Service Levels on page 15
- **show traffic-class-group** command

Monitoring Queue Thresholds

Purpose Display the color-based thresholds for queues on each egress slot.

Showing queue thresholds by queue profile shows buffer memory information for each queue profile and, within that profile, shows the thresholds for each region.

In addition, showing queue thresholds by region organizes the buffer memory information by queue region and, within each region, shows the buffer allocations for each queue profile.

Action To display the color-based queue thresholds for each of the 2000 video queues when 8000 total queues are configured:

```
host1#show qos queue-thresholds egress-slot 9 queue-profile video
```

```
queue-profile video 2000 queues
```

| region | egress memory | exceeded length | conformed length | committed length | total committed memory |
|--------|------------------|--------------------|---------------------|---------------------|------------------------------|
| 0 | 0MB - 4MB | 34944 | 69888 | 139648 | 279296000 |
| 1 | 4MB - 8MB | 24448 | 48896 | 97792 | 195584000 |
| 2 | 8MB - 12MB | 14080 | 28032 | 55936 | 111872000 |
| 3 | 12MB - 16MB | 7040 | 14080 | 28032 | 56064000 |
| 4 | 16MB - 20MB | 5248 | 10496 | 20992 | 41984000 |
| 5 | 20MB - 24MB | 1280 | 2560 | 5120 | 10240000 |
| 6 | 24MB - 28MB | 1152 | 2176 | 4224 | 8448000 |
| 7 | 28MB - 32MB | 896 | 1792 | 3456 | 6912000 |

As shown, when all of the egress memory in use is between 0 MB and 4 MB, each video queue can queue 139,648 bytes of committed traffic. Because the default conformed fraction is 50 percent and the default exceeded fraction is 25 percent, half of the committed length, or 69,888 bytes, can be queued before conformed traffic is dropped, and one quarter of the committed length, or 34,944 bytes, can be queued before exceeded traffic is dropped. While memory fills, the video queues are given progressively smaller amounts of memory. For example, when 28 to 32 MB of buffer memory is in use, each video queue is limited to 3456 bytes. While memory fills beyond the last region, all frames are dropped except control traffic, until the queues are drained and memory usage falls back into one of the regions.

To display the router's memory management:

```
host1#show qos queue-thresholds egress-slot 9 region 0
region 0 (0MB - 4MB) oversubscription 3330%
```

| queue-profile | exceeded length | conformed length | committed length | queue count | total committed memory |
|---------------|--------------------|---------------------|---------------------|----------------|------------------------------|
| default | 34944 | 69888 | 139648 | 2000 | 279296000 |
| video | 34944 | 69888 | 139648 | 2000 | 279296000 |
| multicast | 34944 | 69888 | 139648 | 2000 | 279296000 |
| internet | 34944 | 69888 | 139648 | 2000 | 279296000 |

Static and dynamic oversubscription determines that when 8000 queues are configured and 0–4 MB of egress buffer memory is in use, memory is oversubscribed by 3330 percent. If significantly fewer queues are configured, there is less oversubscription. This example illustrates static oversubscription.

Because all of the queues in Example 2 use default queue profiles, all queues have the same lengths. Each queue is allocated 139,648 bytes of committed buffer memory when operating within this region. This allocation allows active queues to burst traffic by using memory that is unused by quiescent queues. This example illustrates dynamic oversubscription, which is based on the assumption that when a large number of queues is configured, only a fraction of the queues is active at a given time. While more queues become active, memory fills and spills into another region. When this occurs, queues are given progressively smaller queue limits.

In memory regions 1 through 5, queue limits are progressively reduced. In region 6, memory is strictly partitioned among queues.

To display oversubscription in region 6:

```
host1#show qos queue-thresholds egress-slot 9 region 6
region 6 (24MB - 28MB) oversubscription 100%
```

| queue-profile | exceeded length | conformed length | committed length | queue count | total committed memory |
|---------------|--------------------|---------------------|---------------------|----------------|------------------------------|
| default | 1152 | 2176 | 4224 | 2000 | 8448000 |
| video | 1152 | 2176 | 4224 | 2000 | 8448000 |
| multicast | 1152 | 2176 | 4224 | 2000 | 8448000 |
| internet | 1152 | 2176 | 4224 | 2000 | 8448000 |

Oversubscription is 100 percent. When 24–28 MB of the memory is in use, there is no oversubscription of egress buffer memory; 32 MB of the 32-MB memory is allocated. In Example 3, each of the 8000 egress queues is given a queue of 4224 bytes, for a total of 16 MB.

If memory continues to fill into region 7, egress buffer memory is undersubscribed, allowing control traffic to flow within the router. As shown in Example 4, when operating in region 7, only 80 percent of the 32-MB memory is allocated.

To display oversubscription in region 7:

```
host1#show qos queue-thresholds egress-slot 9 region 7
region 7 (28MB - 32MB) oversubscription 80%
```

| queue-profile | exceeded length | conformed length | committed length | queue count | total committed memory |
|---------------|--------------------|---------------------|---------------------|----------------|------------------------------|
| default | 896 | 1792 | 3456 | 2000 | 6912000 |
| video | 896 | 1792 | 3456 | 2000 | 6912000 |
| multicast | 896 | 1792 | 3456 | 2000 | 6912000 |
| internet | 896 | 1792 | 3456 | 2000 | 6912000 |

Region 7 has 2000 IP users, each with four queues. Each of the four queues use default queue profiles.

To display the queue thresholds in the multicast queue profile:

```
host1#show qos queue-thresholds egress-slot 9 queue-profile multicast
queue-profile multicast 2000 queues
```

| region | egress memory | exceeded length | conformed length | committed length | total committed memory |
|--------|------------------|--------------------|---------------------|---------------------|------------------------------|
| 0 | 0MB - 4MB | 5120 | 10112 | 20096 | 40192000 |
| 1 | 4MB - 8MB | 5120 | 10112 | 20096 | 40192000 |
| 2 | 8MB - 12MB | 5120 | 10112 | 20096 | 40192000 |
| 3 | 12MB - 16MB | 5120 | 10112 | 20096 | 40192000 |
| 4 | 16MB - 20MB | 5120 | 10112 | 20096 | 40192000 |
| 5 | 20MB - 24MB | 1280 | 2560 | 10112 | 20224000 |
| 6 | 24MB - 28MB | 1152 | 2176 | 4224 | 8448000 |
| 7 | 28MB - 32MB | 896 | 1792 | 3456 | 6912000 |

The multicast queue profile is configured with a committed length of 10,000 minimum and 20,000 maximum. When in regions 0–4, these queues would normally get more memory than the 20,000 byte maximum requested. In this case, the queue is limited to the maximum, and any excess memory is redistributed to other queues. Region 5 does not have enough memory to honor the 20,000-byte maximum requested.

Although a 20,000 byte maximum was requested, the router provisions memory in 128 byte blocks, rounded up or down per each request; 20,096 bytes is 157 blocks of 128 bytes.

In region 6, memory is strictly partitioned, and neither the minimum nor maximum request is honored. Instead, each multicast queue is given a fair share of the queue length so that aggressive bandwidth consumers cannot starve out moderate traffic consumers.

In region 7, memory is underprovisioned to allow queues to drain and to avoid starvation that occurs when egress buffer memory fills completely.

To display the queue thresholds for video queues:

```
host1#show qos queue-thresholds egress-slot 9 region 0
region 0 (OMB - 4MB) oversubscription 3330%

queue-profile    exceeded   conformed   committed   queue    total
                  length     length      length      count    committed
                  -----
default          33664      67328       134656      2000     269312000
video            67328      134656       269184      2000     538368000
multicast        5120       10112        20096      2000     40192000
internet         33664      67328       134656      2000     269312000
```

You can configure video queues with a buffer weight of 16 and Internet and multicast queues with a buffer weight of 8 to ensure that video queues get to queue twice as much traffic as Internet and multicast queues.

Meaning Table 34 lists the `show qos queue-thresholds` command output fields.

Table 34: show qos queue-thresholds Output Fields

| Field Name | Field Description |
|------------------------|--|
| queue profile | Name of the queue profile |
| region | Egress buffer memory region |
| egress memory | Amount of memory in each region |
| exceeded length | Amount of exceeded traffic that can be queued at this egress memory usage |
| conformed length | Amount of conformed traffic that can be queued at this egress memory usage |
| committed length | Amount of committed traffic that can be queued at this egress memory usage |
| total committed memory | Amount of committed memory allocated to the queue |

Related Topics

- [Configuring Queue Profiles to Manage Buffers and Thresholds on page 22](#)
- `show qos queue-thresholds` command

Monitoring Queue Profiles

Purpose Display information about queue profiles and references to queue profiles.

Action To display information about all queue profiles:

```
host1#show queue-profile
      committed  conformed  exceeded  fraction:
      length:    length:    length:    conformed,  buffer
      profile   min, max   min, max   min, max   exceeded    weight
      -----
      default   0, <none>  0, <none>  0, <none>  50, 25      8
```

To display the number of times that a QoS profile references a queue profile:

```
host1#show queue-profile brief
queue-profile default referenced 31 times in qos-profiles
```

To display a list of QoS profiles that reference the queue profile:

```
host1#show queue-profile references
queue-profile default
  Referenced by QoS profiles:
    atm-default
    serial-default
    ethernet-default
    server-default
```

Meaning Table 35 lists the **show queue-profile** command output fields.

Table 35: show queue-profile Output Fields

| Field Name | Field Description |
|--------------------|--|
| queue profile | Name of the queue profile |
| committed length | Greater queue length than the length of the conformed or exceeded length |
| conformed length | A queue length that is less than the committed length but greater than the exceeded length |
| exceeded length | A queue length less than the conformed length which is less than the committed length |
| conformed fraction | Percentage of the total queue that can be occupied before conformed packets are dropped |
| exceeded fraction | Percentage of the total queue that can be occupied before exceeded packets are dropped |
| buffer weight | Weight of the queue |

Related Topics

- [Configuring Queue Profiles to Manage Buffers and Thresholds on page 22](#)
- **show queue-profile** command

Monitoring Drop Profiles for RED and WRED

Purpose Display information about drop profiles and references to drop profiles.

Action To display information about all drop profiles:

```
host1#show drop-profile
```

| drop profile | Average length exponent | committed threshold: min, max, max drop prob | conformed threshold: min, max, max drop prob | exceeded threshold: min, max, max drop prob |
|-----------------|-------------------------------|--|--|---|
| default | 0 | 0, <none>, <none> | 0, <none>, <none> | 0, <none>, <none> |
| drop1 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop2 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop3 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop4 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop5 | 0 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop6 | 10 | 0, <none>, <none> | 0, <none>, <none> | 0, <none>, <none> |
| drop7 | 10 | 10%, 90%, 5% | 0, <none>, <none> | 0, <none>, <none> |
| drop8 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop9 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop10 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop11 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop12 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop13 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop14 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |
| drop15 | 10 | 0, 750000, 80% | 0, <none>, <none> | 0, <none>, <none> |

To display information about drop profiles in condensed format:

```
host1#show drop-profile brief
```

To display the QoS profiles that reference the drop profile:

```
host1#show drop-profile rates1 references
```

Meaning Table 36 lists the **show drop-profile** command output fields.

Table 36: show drop-profile Output Fields

| Field Name | Field Description |
|-------------------------|---|
| drop profile | Name of the drop profile |
| Average length exponent | Exponent used to weight the average queue length over time, controlling WRED responsiveness |
| committed threshold | Minimum and maximum committed queue thresholds and maximum drop probability |
| conformed threshold | Minimum and maximum conformed queue thresholds and maximum drop probability |
| exceeded threshold | Minimum and maximum exceeded queue thresholds and maximum drop probability |

Related Topics

- Configuring RED on page 27
- Configuring WRED on page 30
- `show drop-profile` command

Monitoring the QoS Scheduler Hierarchy

Purpose Display information about the QoS scheduler hierarchy, including interfaces, resources, and shaping rates on a particular interface. Phantom nodes are not displayed in the output for this command.

If you do not specify the **traffic-class-group** keyword, the output displays information for the default traffic-class group.

Action To display the scheduler hierarchy for a particular interface:

```
host1#show qos scheduler-hierarchy interface fastEthernet 9/0
```

Scheduler hierarchy for the default traffic-class group

| interface | resource | shaping rate | shared shaping rate | assured rate or weight |
|----------------------|------------------------|-----------------|---------------------------|---------------------------------|
| ethernet Eth9/0 | ethernet port | | | wgt 8 |
| ethernet Eth9/0 | ethernet queue | | | wgt 8 |
| svlan Eth9/0 svlan 2 | svlan node | | | wgt 8 |
| vlan Eth9/0.1 | vlan node | | | wgt 1 |
| vlan Eth9/0.1 | vlan queue best-effort | | 2000000 | wgt 8 |
| vlan Eth9/0.2 | vlan node | | | wgt 3 |
| vlan Eth9/0.2 | vlan queue video | 2000000 | | wgt 8 |
| vlan Eth9/0.2 | vlan queue best-effort | | 6000000 | wgt 8 |
| vlan Eth9/0.3 | vlan node | | | wgt 6 |
| vlan Eth9/0.3 | vlan queue video | 3000000 | | wgt 8 |
| vlan Eth9/0.3 | vlan queue best-effort | | 8000000 | wgt 8 |

Scheduler hierarchy for traffic-class group EF

| interface | resource | shaping rate | shared shaping rate | assured rate or weight |
|----------------------|------------------------|-----------------|---------------------------|---------------------------------|
| ethernet Eth9/0 | ethernet group node EF | | | wgt 8 |
| svlan Eth9/0 svlan 2 | svlan node EF | | | wgt 8 |
| vlan Eth9/0.2 | vlan queue EF voice | 100000 | | wgt 8 |
| vlan Eth9/0.3 | vlan queue EF voice | 300000 | | wgt 8 |

To display the scheduler hierarchy from the specified interface down to the port, then up from the specified interface:

```
host1#show qos scheduler-hierarchy interface fastEthernet 9/0.2 level 0
```

Scheduler hierarchy for the default traffic-class group

| interface | resource | shaping rate | shared shaping rate | assured rate or weight |
|----------------------|------------------------|-----------------|---------------------------|---------------------------------|
| ethernet Eth9/0 | ethernet port | | | wgt 8 |
| svlan Eth9/0 svlan 2 | svlan node | | | wgt 8 |
| vlan Eth9/0.2 | vlan node | | | wgt 3 |
| vlan Eth9/0.2 | vlan queue video | 2000000 | | wgt 8 |
| vlan Eth9/0.2 | vlan queue best-effort | | 6000000 | wgt 8 |

Scheduler hierarchy for the default traffic-class group

| interface | resource | shaping rate | shared shaping rate | assured rate or weight |
|----------------------|------------------------|-----------------|---------------------------|---------------------------------|
| ethernet Eth9/0 | ethernet port | | | wgt 8 |
| ethernet Eth9/0 | ethernet group node EF | | | wgt 8 |
| svlan Eth9/0 svlan 2 | svlan node EF | | | wgt 8 |
| vlan Eth9/0.2 | vlan queue EF voice | 100000 | | wgt 8 |

To display the QoS scheduler hierarchy for a specified interface rather than those stacked above the interface:

```
host1#show qos scheduler-hierarchy interface fastEthernet 9/0.2 explicit
```

Scheduler hierarchy for the default traffic-class group

| interface | resource | shaping rate | shared shaping rate | assured rate or weight |
|---------------|------------------------|-----------------|---------------------------|---------------------------------|
| vlan Eth9/0.2 | vlan node | | | wgt 3 |
| vlan Eth9/0.2 | vlan queue video | 2000000 | | wgt 8 |
| vlan Eth9/0.2 | vlan queue best-effort | | 6000000 | wgt 8 |

Scheduler hierarchy for traffic-class group EF

| interface | resource | shaping rate | shared shaping rate | assured rate or weight |
|---------------|---------------------|-----------------|---------------------------|---------------------------------|
| vlan Eth9/0.2 | vlan queue EF voice | 100000 | | wgt 8 |

To display the scheduler hierarchy of a specific traffic-class group or the default traffic-class group:

```
host1#show qos scheduler-hierarchy interface fastEthernet 9/0
traffic-class-group EF
```

Scheduler hierarchy for traffic-class group EF

| interface | resource | shaping rate | shared shaping rate | assured rate or weight |
|----------------------|------------------------|-----------------|---------------------------|---------------------------------|
| ethernet Eth9/0 | ethernet group node EF | | | wgt 8 |
| svlan Eth9/0 svlan 2 | svlan node EF | | | wgt 8 |
| vlan Eth9/0.2 | vlan queue EF voice | 100000 | | wgt 8 |
| vlan Eth9/0.3 | vlan queue EF voice | 300000 | | wgt 8 |

To display a summary of the scheduler profiles stacked above the specified interface:

```
host1#show qos scheduler-hierarchy interface fastEthernet 9/0 summary
```

```
Total number of nodes: 7
  Level 0 nodes:      1
  Level 1 nodes:      2
  Level 2 nodes:      4
  Level 3 nodes:      0
Total number of queues: 8
  Level 0 queues:     0
  Level 1 queues:     1
  Level 2 queues:     0
  Level 3 queues:     7
```

To display information about a specified interface in condensed format:

```
host1#show qos scheduler-hierarchy interface fastEthernet 9/0 brief
```

Scheduler hierarchy for the default traffic-class group

| interface | resource |
|----------------------|------------------------|
| ethernet Eth9/0 | ethernet port |
| ethernet Eth9/0 | ethernet queue |
| svlan Eth9/0 svlan 2 | svlan node |
| vlan Eth9/0.1 | vlan node |
| vlan Eth9/0.1 | vlan queue best-effort |
| vlan Eth9/0.2 | vlan node |
| vlan Eth9/0.2 | vlan queue video |
| vlan Eth9/0.2 | vlan queue best-effort |
| vlan Eth9/0.3 | vlan node |
| vlan Eth9/0.3 | vlan queue video |
| vlan Eth9/0.3 | vlan queue best-effort |

Scheduler hierarchy for traffic-class group EF

| interface | resource |
|----------------------|------------------------|
| ethernet Eth9/0 | ethernet group node EF |
| svlan Eth9/0 svlan 2 | svlan node EF |
| vlan Eth9/0.2 | vlan queue EF voice |
| vlan Eth9/0.3 | vlan queue EF voice |

To display the scheduler level, scheduler profile that controls QoS behavior of the scheduler nodes and queues, and the burst associated with shaping rates:

```
host1#show qos scheduler-hierarchy interface fastEthernet 9/0 full | include
subscriber-best-effort

vlan Eth9/0.1      subscriber-best-effort      2000000 default
vlan Eth9/0.2      subscriber-best-effort      6000000 default
vlan Eth9/0.3      subscriber-best-effort      8000000 default
```

To display the QoS scheduler hierarchy using a filter as an alternative to using the **level** keyword:

```
host1#show qos scheduler-hierarchy interface fastEthernet 9/0 full | include
level 2
vlan Eth9/0.1      vlan node                  level 2
vlan Eth9/0.2      vlan node                  level 2
vlan Eth9/0.3      vlan node                  level 2
svlan Eth9/0 svlan 2  svlan node EF          level 2
```

Meaning Table 37 lists the **show qos scheduler-hierarchy** command output fields.

Table 37: show qos scheduler-hierarchy Output Fields

| Field Name | Field Description |
|------------------------|--|
| interface | Type of interface |
| resource | Traffic resource associated with the logical interface |
| shaping rate | Individual shaping rate of a traffic resource in bits per second |
| shared shaping rate | Configured shared-shaping rate in bits per second |
| assured rate or weight | Configured assured rate in bits per second or configured weight |

Related Topics

- [Configuring a Scheduler Hierarchy on page 47](#)
- [Configuring Simple Shared Shaping on page 81](#)
- [Configuring Compound Shared Shaping on page 102](#)
- **show qos scheduler-hierarchy** command

Monitoring the Configuration of Scheduler Profiles

Purpose Display information about scheduler profiles. If you do not specify the scheduler profile name, data for all scheduler profiles is displayed.

You can display the values that you configured using a QoS parameter for assured rate, shaping rate, and shared-shaping rate.

Action To display information about all scheduler profiles:

```
host1#show scheduler-profile
scheduler      shaping      strict
rate          burst      weight  priority  assured rate
-----
default        <none>    32767   8         no        <none>
wf100          128000   32767   20        no        75000
spSV25         5000000  32767   40        no        64000
videoHar      <none>    32767   8         no        hierarchical
```

To display the number of times that a QoS profile references the scheduler profile:

```
host1#show scheduler-profile brief
scheduler-profile default referenced 39 times in qos-profiles
scheduler-profile wf100 referenced 1 time in qos-profiles
scheduler-profile spSV25 referenced 2 times in qos-profiles
```

To display a list of QoS profiles that reference the scheduler profile:

```
host1#show scheduler-profile references
scheduler-profile default
  Referenced by QoS profiles:
    atm-default
    serial-default
    ethernet-default
    server-default

scheduler-profile wf100
  Referenced by QoS profiles:
    ipV610

scheduler-profile spSV25
  Referenced by QoS profiles:
    qospro25
```

Meaning Table 38 lists the **show scheduler-profile** command output fields.

Table 38: show scheduler-profile Output Fields

| Field Name | Field Description |
|----------------------------|--|
| scheduler | Name of the scheduler profile |
| shaping rate | Maximum bandwidth, in bits per second, provided to a node or queue |
| burst | Catch-up number associated with the shaper |
| weight | HRR weight of a node or queue |
| strict priority | Status of strict priority, yes or no |
| assured rate | Desired bandwidth, in bits per second, provided to a node or queue, or the keyword, hierarchical, to indicate that HAR is used |
| Referenced by QoS profiles | QoS profiles that reference this profile |

Related Topics

- [Configuring a Scheduler Hierarchy on page 47](#)
- [Configuring Simple Shared Shaping on page 81](#)
- [Configuring Compound Shared Shaping on page 102](#)
- `show scheduler-profile` command

Monitoring Shared Shapers

Purpose Display information about the configured shared shapers.

The best-effort queue is listed as the first resource for shared shapers that are queue controlled. The best-effort scheduler node is listed as the first resource for shared shapers that are node controlled.

Action To display information about configured shared shapers for a specific interface:

```
host1#show qos shared-shaper interface atm 11/0
```

| interface | resource | shared shaping rate | shaping rate | other |
|-------------------------|--------------------------|---------------------------|-----------------|-------------|
| atm-vc ATM11/0.10 | A atm-vc node | 500000 | | rate 500000 |
| | atm-vc queue best-effort | | | |
| | atm-vc node EF | | | |
| | A atm-vc queue EF voice | | 100000 | |
| | atm-vc node AF | | | |
| | A atm-vc queue AF video | | 200000 | |
| atm-vc ATM11/0.11 | A atm-vc node | 500000 | | rate 500000 |
| | atm-vc queue best-effort | | | |
| | atm-vc node EF | | | |
| A atm-vc queue EF voice | | | 100000 | |
| | atm-vc node AF | | | |
| | A atm-vc queue AF video | | 200000 | |

Total shared shapers: 2
Total constituents: 12
Total shared shaper failovers: 0
Compound shared shapers are not supported

To display information about configured shared shapers for a specific L2TP session:

```
host1#show qos shared-shaper l2tp-session session1
```

To display information about the interface at the root of the scheduler hierarchy located on the tunnel-service interface or at the same hierarchy for LNS GRE tunnel traffic:

```
host1#show qos shared-shaper tunnel-server 6/0
```

Meaning Table 39 lists the **show qos shared-shaper** command output fields.

Table 39: show qos shared-shaper Output Fields

| Field Name | Field Description |
|--|---|
| interface | Type of interface |
| resource | Traffic resource associated with the logical interface |
| shared shaping rate | Configured shared-shaping rate in bits per second |
| shaping rate | Individual shaping rate of a traffic resource in bits per second |
| other | Actual current shaping rate in bits per second |
| Total shared shapers | Total number of shared shapers |
| Total constituents | Total number of resource constituents for all shared shapers |
| Total number of shared shapers that are disabled (in failover mode) due to lack of resources | Total number of shared shapers that are disabled (in failover mode) due to lack of resources |
| Compound shared shapers are [not] supported | Indication of whether compound shared shapers are supported; determined by installed hardware |

Related Topics

- Configuring a Scheduler Hierarchy on page 47
- Configuring Simple Shared Shaping on page 81
- Configuring Compound Shared Shaping on page 102
- **show qos shared-shaper** command

Monitoring Shared Shaper Algorithm Variables

Purpose Display information about the user-configurable variables for controlling the simple shared shaper algorithm.

Action To display information about all variables:

```

host1#show qos-shared-shaper-control
      control
control name  control value  units
-----
maximum voql      400  milliseconds
reaction factor    75   percent
convergence factor  50   percent
minimum dynamic rate  0   percent

```


Meaning Table 40 lists the **show qos shared-shaper** command output fields.

Table 40: show qos shared-shaper Output Fields

| Field Name | Field Description |
|---------------|---|
| control name | Name of the simple shared shaper control |
| control value | Value of the simple shared shaper control; default values are displayed if none specified |
| units | Expressed units for the value of the simple shared shaper control |

Related Topics

- Configuring Simple Shared Shaper Algorithm Variables on page 96
- **show qos-shared-shaper-control** command

Monitoring Forwarding and Drop Events on the Egress Queue

Purpose Display information about forwarding and drop event counts on the egress queue.

Action To display events for a specific interface:

```
host1#show egress-queue events interface gigabitEthernet 1/0
```

| interface | traffic class | forwarded events | committed drop events | conformed drop events | exceeded drop events | rate period count |
|-----------------------|---------------|------------------|-----------------------|-----------------------|----------------------|-------------------|
| ip GigabitEthernet1/0 | tc1 | 132 | 0 | 0 | 0 | 132 |
| | tc2 | 132 | 132 | 0 | 0 | 132 |
| | tc3 | 6 | 0 | 132 | 0 | 132 |
| | tc4 | 0 | 0 | 0 | 132 | 132 |

To display events for an L2TP session:

```
host1#show egress-queue events l2tp-session session1
```

To display events for a tunnel interface, specify the interface at the root of the scheduler hierarchy located on the tunnel-service interface or at the same hierarchy for LNS GRE tunnel traffic:

```
host1#show egress-queue events tunnel-server 6/0
```

To display events for queues only on the specified interface and not stacked above the interface:

```
host1#show egress-queue events gigabitEthernet 1/0 explicit
```

To display the sum of events for the queues bound to interfaces that are stacked above the specified interface:

```
host1#show egress-queue events gigabitEthernet 1/0 summary
```

To display events for queues belonging to a specific traffic class:

```
host1#show egress-queue events gigabitEthernet 1/0 traffic-class voice
```

To filter output based on the number of events that exceed the specified value.

```
host1#show egress-queue events gigabitEthernet 1/0 event-exceeding committed
host1#show egress-queue events gigabitEthernet 1/0 event-exceeding conformed
host1#show egress-queue events gigabitEthernet 1/0 event-exceeding exceeded
host1#show egress-queue events gigabitEthernet 1/0 event-exceeding forwarded
```

Meaning Table 41 lists the **show egress-queue events** command output fields.

Table 41: show egress-queue events Output Fields

| Field Name | Field Description |
|-----------------------|---|
| interface | Name of the interface |
| traffic class | Name of the traffic class |
| forwarded events | Number of forwarded rate events |
| committed drop events | Number of committed drop events |
| conformed drop events | Number of conformed drop events |
| exceeded drop events | Number of exceeded drop events |
| rate period count | Time frame during which events are counted (in seconds) |

Related Topics

- Configuring Event Statistics on page 40
- **show egress-queue events** command

Monitoring Forwarding and Drop Rates on the Egress Queue

Purpose Display information about forwarding and drop rates on the egress queue. The **show egress-queue rates** command is useful even if no statistics profiles are configured. You can view information about all of the queues even if statistics gathering has not been enabled.

The minimum rate for the queue is the minimum rate at which a node or queue can transmit when all other nodes and queues compete for bandwidth. The system determines the minimum rates by the weight and assured rate configured in a scheduler profile, and are subject to shaping rate and shared-shaping rate configured.

The maximum rate is the maximum rate at which a node or queue can transmit when there are no other nodes or queues competing for bandwidth. The system calculates the maximum rate as the minimum of all shaping rates, shared-shaping rates, and the port rate from the node or queue down to the port.

For example, if a scheduler column configured over a Fast Ethernet port consists of a VLAN queue that has been shaped to 5 Mbps over a VLAN node that has been shaped to 8 Mbps, over an S-VLAN node which is not shaped, then:

- The VLAN queue that is shared-shaped to 5 Mbps has a maximum rate of 5 Mbps.
- The VLAN node that is shaped to 8 Mbps has a maximum rate of 8 Mbps.
- The S-VLAN node which is not shaped has a maximum rate of 100 Mbps.
- The Fast Ethernet port with a bandwidth of 100 Mbps has a maximum rate of 100 Mbps.

Action To display rate statistics only for queues that have queue rate statistics enabled:

```
host1#show egress-queue rates brief interface fastEthernet 9/0.2
```

| interface | traffic class | forwarded rate | aggregate drop rate | minimum rate | maximum rate |
|------------------------------------|-----------------------|-------------------|------------------------|-----------------|-----------------|
| ip FastEthernet9/0.2 | best-effort | 0 | 0 | 25000 | 1000000 |
| | videoTrafficClass | 0 | 0 | 375000 | 1000000 |
| | multicastTrafficClass | 0 | 0 | 925000 | 1000000 |
| | internetTrafficClass | 0 | 0 | 50000 | 1000000 |
| Total: | | 0 | 0 | | |
| Queues reported: | | 4 | | | |
| Queues filtered (under threshold): | | 0 | | | |
| Queues disabled (no rate period): | | 0 | | | |
| Queues disabled (no resources): | | 0 | | | |
| Total queues: | | 4 | | | |

To display rate statistics by color rather than as an aggregate of all colors:

```
host1#show egress-queue rates color interface gigabitEthernet 1/0
```

| interface | traffic class | forwarded rate | committed drop rate | conformed drop rate | exceeded drop rate |
|------------------------------------|------------------|-------------------|------------------------|------------------------|-----------------------|
| ip GigabitEthernet1/0 | tc1 | 14645184 | 0 | 0 | 0 |
| | tc2 | 11950400 | 2706400 | 0 | 0 |
| | tc3 | 9960792 | 0 | 4707200 | 0 |
| | tc4 | 7967200 | 0 | 0 | 6705600 |
| Queues reported: | | 4 | | | |
| Queues filtered (under threshold): | | 0 | | | |
| Queues disabled (no rate period): | | 1 | | | |
| Queues disabled (no resources): | | 0 | | | |
| Total queues: | | 5 | | | |

To display rate statistics all of the configured queues, along with the minimum and maximum rates for the queues, even when statistics gathering has not been enabled:

```
host1#show egress-queue rates full interface atm 11/0
```

| interface | traffic class | forwarded rate | aggregate drop rate | minimum rate | maximum rate |
|--------------|------------------|-------------------|------------------------|-----------------|-----------------|
| ip ATM11/0.1 | best-effort | * | * | 24979 | 30000000 |
| | tc1 | 0 | 0 | 14987510 | 30000000 |
| | tc2 | 0 | 0 | 9991673 | 30000000 |
| | tc3 | 0 | 0 | 4995836 | 30000000 |
| ip ATM11/0.2 | best-effort | * | * | 19980 | 20000000 |
| | tc1 | 0 | 0 | 11988011 | 20000000 |

```

          tc2                0          0  7992007  20000000

Queues reported:                5
Queues filtered (under threshold): 0
* Queues disabled (no rate period): 2
**Queues disabled (no resources): 0
Total queues:                    7

```

To display rate statistics based on an S-VLAN:

```

host1#show egress-queue rates interface gigabitEthernet 11/0 vspan 0

interface                traffic    forwarded    aggregate    minimum
-----                class      rate        drop rate      rate
-----                -----
svlan GigabitEthernet 11/0 vspan 0 tc1      0          0          0          166666666
vlan GigabitEthernet 11/0.1 tc1            0          0          0          166666666
ip GigabitEthernet 11/0.1 best-effort 0          0          0          0
vlan GigabitEthernet 11/0.2 tc2            0          0          0          0
ip GigabitEthernet 11/0.2 best-effort 0          0          0          0

maximum
rate
-----
svlan GigabitEthernet 11/0 vspan 0 1000000000
vlan GigabitEthernet 11/0.1 1000000000
ip GigabitEthernet 11/0.1 1000000000
vlan GigabitEthernet 11/0.2 1000000000
ip GigabitEthernet 11/0.2 1000000000

Queues reported:                5
Queues filtered (under threshold): 0
* Queues disabled (no rate period): 0
**Queues disabled (no resources): 0
Total queues: 5

```

To display rate statistics for the previous or current rate period:

```

host1#show egress-queue rates previous interface gigabitEthernet 11/0 vspan
0

host1#show egress-queue rates current interface gigabitEthernet 11/0 vspan
0

```

To display rate statistics for an L2TP session:

```

host1#show egress-queue rates l2tp session session1

```

To display rate statistics for a tunnel interface, specify the interface at the root of the scheduler hierarchy located on the tunnel-service interface or at the same hierarchy for LNS GRE tunnel traffic:

```

host1#show egress-queue rates tunnel-server 6/0

```

To display rate statistics for queues bound to the specified interface:

```

host1#show egress-queue rates interface gigabitEthernet 11/0 vspan 0
explicit

```

To display the sum of all rates of queues bound to interfaces that are stacked above the specified interface.

```
host1#show egress-queue rates interface gigabitEthernet 11/0 svlan 0
summary
```

To display rate statistics for queues belonging to a specific traffic class:

```
host1#show egress-queue rates interface gigabitEthernet 11/0 svlan 0
traffic-class voice
```

To filter output based on the number of queues with rates that exceed the specified value.

```
host1#show egress-queue rates gigabitEthernet 1/0 rate-exceeding committed
host1#show egress-queue rates gigabitEthernet 1/0 rate-exceeding conformed
host1#show egress-queue rates gigabitEthernet 1/0 rate-exceeding exceeded
host1#show egress-queue rates gigabitEthernet 1/0 rate-exceeding forwarded
```

Meaning Table 42 lists the **show egress-queue rates** command output fields.

Table 42: show egress-queue rates Output Fields

| Field Name | Field Description |
|-----------------------------------|--|
| interface | Name of the interface |
| traffic class | Name of the traffic class |
| forwarded rate | Statistics for the rate at which packets are enqueued. In some time periods, the enqueue rate might exceed the dequeue rate. This can occur when a burst of traffic arrives at a queue which might be dequeuing at a slower rate because of a shaper or congestion. In other time periods, the enqueue rate might be less than the dequeue rate. This can occur when a buffered burst of packets are being dequeued, and no new packets are arriving at the queue. |
| aggregate drop rate | Total number of all drop rates |
| committed drop rate | Drop rate for green packets |
| conformed drop rate | Drop rate for yellow packets |
| exceeded drop rate | Drop rate for red packets |
| minimum rate | Minimum rate for queue |
| maximum rate | Maximum rate for queue |
| Queues reported | Number of queues reported |
| Queues filtered (under threshold) | Number of queues not reported because they are under the threshold |
| Queues disabled (no rate period) | Number of queues not displayed because statistics gathering is disabled (that is, the referenced statistics profile does not have a rate period set) |
| Queues disabled (no resources) | Number of queues not displayed because no resources were available |
| Total queues | Total number of queues within the hierarchical scope of the command |

Related Topics

- Configuring Rate Statistics on page 39
- For more information about the assured rate, see *Configuring an Assured Rate for a Scheduler Node or Queue* on page 55
- **show egress-queue rates** command

Monitoring Queue Statistics for the Fabric

Purpose Display forwarded and dropped statistics for the fabric.

Action To display general information about the fabric queue:

```
host1#show fabric-queue
traffic      egress      forwarded   forwarded   dropped      dropped
class       slot        packets     bytes       packets      bytes
-----
best-effort  all         committed   0           0           0           0
best-effort  all         conformed   0           0           0           0
best-effort  all         exceeded    0           0           0           0
```

To display detailed information about the fabric queue in a specific traffic class:

```
host1#show fabric-queue traffic-class video detail
```

To display information about the fabric queue on the egress slot:

```
host1#show fabric-queue egress-slot 0
```

Meaning Table 43 lists the **show fabric-queue** command output fields.

Table 43: show fabric-queue Output Fields

| Field Name | Field Description |
|-------------------|--|
| traffic class | Name of the traffic class |
| egress slot | Egress slot for which statistics are being displayed |
| type | Type of packet |
| forwarded packets | Number of forwarded packet |
| forwarded bytes | Number of forwarded bytes |
| dropped packets | Number of dropped packets |
| dropped bytes | Number of dropped bytes |

Related Topics

- Configuring Rate Statistics on page 39
- Configuring Event Statistics on page 40
- **show fabric-queue** command

Monitoring the Configuration of Statistics Profiles

Purpose Display information about statistics profiles.

Action To display information about all statistics profiles:

```
host1#show statistics-profile
statistics      forwarding  committed  conformed  exceeded
profile         rate       drop       drop       drop
threshold      threshold threshold threshold threshold
-----
default         <none>    <none>    <none>    <none>
statpro-1      10000000  2000000   4000000   6000000
rate period
-----
                        30
```

To display the number of times that a QoS profile references the statistics profile:

```
host1#show statistics-profile rates1 brief
```

To display a list of QoS profiles that reference the statistics profile:

```
host1#show statistics-profile rates1 references
```

Meaning Table 44 lists the **show statistics-profile** command output fields.

Table 44: show statistics-profile Output Fields

| Field Name | Field Description |
|---------------------------|--|
| statistics profile | Name of the statistics profile |
| forwarding rate threshold | Threshold above which forwarded-rate-exceeded events are counted |
| committed drop threshold | Threshold above which committed-drop-events are counted |
| conformed drop threshold | Threshold above which conformed-drop-events are counted |
| exceeded drop threshold | Threshold above which exceeded-drop-events are counted |
| rate period | Time frame during which statistics are gathered |

Related Topics

- Configuring Rate Statistics on page 39
- Configuring Event Statistics on page 40
- **show statistics-profile** command

Monitoring the QoS Profiles Attached to an Interface

Purpose Display the QoS profiles in effect for and stacked above the specified interface. If no QoS profiles are attached to the interface or above the interface, the router displays the QoS profile that is in effect down the interface stack toward the port interface.

Action To display the interface hierarchy for a specific interface:

```
host1#show qos interface-hierarchy interface atm 11/0.1
attachment@ atm-vc ATM11/0.1:
      qos profile      t-class interface rule      traffic      scheduler      queue
                        group      type      type      class      profile      profile
-----
qp2@ATM11/0.1          atm-vc      node          default      default
qp2@ATM11/0.1          atm-vp      node          default      default
qp2@ATM11/0.1          atm-vc      queue best-effort default      default
qp2@ATM11/0.1          atm-vc      queue tc5      default      default
qp2@ATM11/0.1          atm-vc      queue tc6      default      default
qp2@ATM11/0.1      g1      atm      group      strictShaper default
qp2@ATM11/0.1      g1      atm-vc      node          default      default
qp2@ATM11/0.1      g1      atm-vp      node          default      default
qp2@ATM11/0.1      g1      atm-vc      queue tc1      default      default
qp2@ATM11/0.1      g1      atm-vc      queue tc2      default      default
qp2@ATM11/0.1      g2      atm-vp      node          default      default
qp2@ATM11/0.1      g2      atm-vc      queue tc3      default      default
qp2@ATM11/0.1      g2      atm-vc      queue tc4      default      default
```

To display the interface hierarchy using an L2TP session:

```
host1#show qos interface-hierarchy l2tp-session session1
```

To display the interface hierarchy for a tunnel interface, specify the interface at the root of the scheduler hierarchy located on the tunnel-service interface or at the same hierarchy for LNS GRE tunnel traffic:

```
host1#show qos interface-hierarchy tunnel-server 6/0
```

Meaning Table 45 lists the **show qos interface-hierarchy** command output fields.

Table 45: show qos interface-hierarchy Output Fields

| Field Name | Field Description |
|-------------------|--|
| attachment@ | Interface for which the hierarchy is being displayed |
| qos profile | Name of the QoS profile and its attachment point |
| t-class group | Traffic-class groups associated with the interface |
| interface type | Type of interface to which the profile is attached |
| rule type | Queue, node, group, or shadow node |
| traffic class | Name of the traffic class associated with the queue |
| scheduler profile | Scheduler profiles associated with the interface |
| queue profile | Queue profiles associated with the interface |

Related Topics

- Configuring a QoS Profile on page 136
- Attaching a QoS Profile to an Interface on page 138
- Creating Parameter Instances on page 236
- **show qos interface-hierarchy** command

Monitoring the Configuration of QoS Port-Type Profiles

Purpose Display information about QoS port-type profiles.

Action To display information about all interface types:

```
host1#show qos-port-type-profile
default-port-profile ethernet qos-profile ethernet-default
default-port-profile atm qos-profile atm-default
default-port-profile serial qos-profile serial-default
default-port-profile server-port qos-profile server-default
default-port-profile lag qos-profile lag-default
```

Meaning Displays a list of all **qos-port-type-profile** commands as they have been entered.

Related Topics

- Configuring a QoS Profile on page 136
- Attaching a QoS Profile to an Interface on page 138
- Creating Parameter Instances on page 236
- Example: Port-Type QoS Profile Attachment on page 143
- **show qos-port-type-profile** command

Monitoring the Configuration of QoS Profiles

Purpose Display information about QoS profiles, including attachments to interfaces or port types.

This command displays groups, nodes, and queues, in that order, according to the following sequence:

- not members of a traffic-class group
- members of the strict-priority traffic-class group
- members of an extended traffic-class group in the order of configuration

Action To display information about a specific QoS profile:

```
host1#show qos-profile qpDiffServExample1
qos-profile qpDiffServExample1:
```

| t-class group | interface type | rule type | traffic class | scheduler profile | queue profile | drop profile | statistics profile |
|----------------------|----------------|-----------|---------------|-------------------|---------------|--------------|--------------------|
| | ip | queue | tc3 | best-effort | default | default | default |
| | ip | queue | tc4 | best-effort | default | default | default |
| | ip | queue | tc5 | best-effort | default | default | default |
| expedited-forwarding | ethernet | group | | expeditedGroup | | | |
| expedited-forwarding | ip | node | | default | | | |
| expedited-forwarding | ip | queue | voice | voice | default | default | default |
| best-effort | ethernet | group | | bestEffortGroup | | | |
| best-effort | ip | node | | default | | | |

| | | | | |
|--------------------|----------|-------------------|--------------|-------------------------|
| best-effort | ip | queue best-effort | best-effort | default default default |
| assured-forwarding | ethernet | group | assuredGroup | |
| assured-forwarding | ip | node | default | |
| assured-forwarding | ip | queue video | video | default default default |

To display information about the QoS profiles attached to an interface or port type:

```
host1#show qos-profile references interface fastEthernet 9/0 202
      qos profile                               attachment
```

```
-----
atm-default          (qos-port-type-profile)
serial-default       (qos-port-type-profile)
ethernet-default     (qos-port-type-profile)
server-default       (qos-port-type-profile)
lag-default          (qos-port-type-profile)
subscriber-data-service  vlan FastEthernet9/0.1
subscriber-triple-play  vlan FastEthernet9/0.2
subscriber-triple-play  vlan FastEthernet9/0.3
```

```
Port attachments:      4
Interface attachments: 3
DCM Profile attachments: 0
Not attached:          0
```

To display the number of times the QoS profile is referenced by an interface or protocol profile:

```
host1#show qos-profile brief
qos-profile atm-default referenced by 1 attachment
qos-profile serial-default referenced by 1 attachment
qos-profile ethernet-default referenced by 1 attachment
qos-profile server-default referenced by 1 attachment
qos-profile lag-default referenced by 1 attachment
```

To display information about the QoS profiles attached to a specific tunnel interface, specify the interface at the root of the scheduler hierarchy located on the tunnel-service interface or at the same hierarchy for LNS GRE tunnel traffic:

```
host1#show qos-profile references tunnel-server 6/0
```

To display information about the QoS profiles attached to a specific L2TP session:

```
host1#show qos-profile references l2tp-session session1
```

To display attachments for QoS profiles only on the specified interface and not QoS profiles stacked above the interface:

```
host1#show qos-profile references interface gigabitEthernet 6/0 explicit
```

Meaning Table 46 lists the **show qos-profile** command output fields.

Table 46: show qos-profile Output Fields

| Field Name | Field Description |
|----------------|---|
| qos-profile | Name of QoS profile |
| t-class group | Name of the traffic-class group associated with the interface |
| interface type | Type of interface |

Table 46: show qos-profile Output Fields (continued)

| Field Name | Field Description |
|-------------------------|---|
| rule type | Whether the rule is a group node, scheduler node, queue, or shadow node |
| traffic class | Name of the traffic class associated with the interface |
| scheduler profile | Name of the scheduler profile associated with the interface |
| queue profile | Name of the queue profile associated with the interface |
| drop profile | Name of the drop profile associated with the interface |
| statistics profile | Name of the statistics profile associated with the interface |
| attachment | Type of interface or port type to which the QoS profile is attached |
| Port attachments | Number of QoS profiles attached to port types |
| DCM Profile attachments | Number of QoS profiles attached to profiles for Service Manager |
| Interface attachments | Number of QoS profiles attached to interfaces |
| Not attached | Number of QoS profiles that are unattached |

Related Topics

- Configuring a QoS Profile on page 136
- Attaching a QoS Profile to an Interface on page 138
- Creating Parameter Instances on page 236
- `show qos-profile` command

Monitoring the QoS Configuration of ATM Interfaces

Purpose Display ATM port queuing mode and QoS shaping mode status for a specific ATM interface.

Action To display the QoS configuration on an ATM interface:

```
host1#show interfaces atm 2/0
ATM Interface 2/0 is up, line protocol is disabled

AAL5 operational status:      up
    time since last status change: 01:08:32
ATM operational status:      up
    time since last status change: 01:08:32
.
.
.
InPackets:      0
InBytes:        0
InCells:        0
OutPackets:     7803262
```

```

OutBytes:      7803262000
OutCells:      163868502
InErrors:      0
OutErrors:     0
InPacketDiscards: 0
InByteDiscards: 0
InCellErrors:  0

```

```

Administrative qos-shaping-mode: frame
Operational qos-shaping-mode: frame
Administrative qos-mode-port: none
Operational qos-mode-port: none

```

```
Attached QoS profile: shaping
```

Meaning Table 47 lists the related **show interfaces atm** command output fields.

Table 47: show interfaces atm Output Fields

| Field Name | Field Description |
|---------------------------------|---|
| Administrative qos-mode-port | Per-port queuing mode status: disabled, low-latency, low-cdv, none |
| Operational qos-mode-port | Per-port queuing mode status: disabled, low-latency, low-cdv, none |
| Administrative qos-shaping-mode | QoS shaping mode: <ul style="list-style-type: none"> ■ disabled ■ frame ■ cell ■ none |
| Operational qos-shaping-mode | QoS shaping mode: <ul style="list-style-type: none"> ■ disabled ■ frame ■ cell ■ none |
| Attached QoS profile | QoS profile attachment at or below the displayed interface. For example, if the interface being displayed is a VC, and the attachment is at the ATM AAL5 interface, the ATM AAL5 interface attachment is displayed. |

Related Topics

- Configuring the QoS Shaping Mode for ATM Interfaces on page 182
- Configuring a QoS Profile on page 136
- Attaching a QoS Profile to an Interface on page 138
- Creating Parameter Instances on page 236

- For more information about other fields displayed with this command, see *JUNOS Link Layer Configuration Guide, Chapter 1, Configuring ATM*
- **show atm interface** command
- **show interfaces atm** command

Monitoring the QoS Configuration of IP Interfaces

Purpose Display the QoS configuration on a particular IP interface.

A dynamic IP interface can have a QoS profile attached by RADIUS. For example, if configured by RADIUS, the **show ip interface** command might show the following:

Attached QoS profile: Strict-qos

However, if the profile is configured statically, the QoS profile is attached to the ATM subinterface, and the attachment is displayed by the **show atm subinterface** command rather than **show ip interface**.

Action To display the QoS configuration for an IP interface:

```
host1#show ip interface atm 2/0.1
ATM2/0.1 line protocol Atm1483 is up, ip is up

.....

Attached QoS profile: test @ ATM2/0

queue 0: traffic class best-effort, bound to ip ATM2/0.1
  Queue length 0 Bytes
  Forwarded packets 0, Bytes 0
  Dropped committed packets 0, Bytes 0
  Dropped conformed packets 0, Bytes 0
  Dropped exceeded packets 0, Bytes 0
  Dropped by WRED committed packets 0, bytes 0
  Dropped by WRED conformed packets 0, bytes 0
  Dropped by WRED exceeded packets 0, bytes 0
  Average queue length 150576 bytes
queue 1: traffic class tc1, bound to ip ATM2/0.1
  Queue length 0 Bytes
  Forwarded packets 0, Bytes 0
  Dropped committed packets 0, Bytes 0
  Dropped conformed packets 0, Bytes 0
  Dropped exceeded packets 0, Bytes 0
  Dropped by WRED committed packets 0, bytes 0
  Dropped by WRED conformed packets 0, bytes 0
  Dropped by WRED exceeded packets 0, bytes 0
  Average queue length 150576 bytes
```

Meaning Table 48 lists the related **show ip interface** command output fields.

Table 48: show ip interface Output Fields

| Field Name | Field Description |
|---------------------------|--|
| Attached QoS profile | QoS profile attachment at or below the displayed interface. For example, if the interface being displayed is an IP interface, and the attachment is at the VC, the VC interface attachment is displayed. |
| queue 0 | Number of the queue for which statistics are being displayed and whether the queue is under traffic class control |
| traffic class | Name of traffic class |
| bound to | Interface to which queue is bound |
| Queue length | Size of queue in length and bytes |
| Forwarded | Number of forwarded packets and bytes |
| Dropped committed | Number of committed packets and bytes dropped |
| Dropped conformed | Number of conformed packets and bytes dropped |
| Dropped exceeded | Number of exceeded packets and bytes dropped |
| Dropped by WRED committed | Number of committed packets and bytes dropped by WRED |
| Dropped by WRED conformed | Number of conformed packets and bytes dropped by WRED |
| Dropped by WRED exceeded | Number of exceeded packets and bytes dropped by WRED |
| Average queue length | Average length of queue in bytes |

Related Topics

- Configuring a QoS Profile on page 136
- Attaching a QoS Profile to an Interface on page 138
- Creating Parameter Instances on page 236
- **show ip interface** command

Monitoring the QoS Configuration of Fast Ethernet, Gigabit Ethernet, and 10-Gigabit Ethernet Interfaces

Purpose Display information about the QoS configuration for a specific Fast Ethernet, Gigabit Ethernet, or 10-Gigabit Ethernet interface.

Action To display the QoS configuration for a Fast Ethernet interface:

```
host1#show interfaces fastEthernet 6/0
GigEthernet6/0 is Up, Administrative status is Up
Hardware is Intel 21440, address is 0090.1a40.5508
MAU is 100BASE-TX
MTU: Operational 1522, Administrative 1522
Duplex Mode: Operational Full Duplex, Administrative Auto Negotiate
```

```
Speed: Operational 100 Mbps, Administrative Auto Negotiate
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
In: Bytes 0, Unicast 0
Multicast 0, Broadcast 0
Errors 0, Discards 0, Mac Errors 0, Alignment 0
CRC 0, Too Longs 0, Symbol Errors 0
Out: Bytes 64, Unicast 0
Multicast 0, Broadcast 1
Errors 0, Discards 0, Mac Errors 0, Deferred 0, No Carrier 0
Collisions: Single 0, Multiple 0, Late 0, Excessive 0
Administrative qos-shaping-mode: cell
Operational qos-shaping-mode: cell
Attached QoS profile: ss
```

To display the QoS configuration for a Gigabit Ethernet interface:

```
host1#show interfaces gigabitEthernet 2/0
```

To display the QoS configuration for a 10-Gigabit Ethernet interface:

```
host1#show interfaces tenGigabitEthernet 5/0/0
```

Meaning Table 49 lists the related **show interfaces** command output fields.

Table 49: show interfaces Output Fields

| Field Name | Field Description |
|---------------------------------|--|
| Administrative qos-shaping-mode | QoS shaping mode: <ul style="list-style-type: none">■ disabled■ frame■ cell■ none |
| Operational qos-shaping-mode | QoS shaping mode: <ul style="list-style-type: none">■ disabled■ frame■ cell■ none |
| Attached QoS profile | QoS profile attachment at or below the displayed interface. For example, if the interface being displayed is a VLAN subinterface, and the attachment is at the Gigabit Ethernet interface, the Gigabit Ethernet attachment is displayed. |

Related Topics

- [Configuring the QoS Shaping Mode for Ethernet Interfaces on the ES2 4G LM on page 187](#)
- [Creating Parameter Instances on page 236](#)

- For more information about other fields displayed with this command, see *JUNOS Physical Layer Configuration Guide, Chapter 5, Configuring Ethernet Interfaces*
- **show interfaces** command

Monitoring the QoS Configuration of IEEE 802.3ad Link Aggregation Group Bundles

Purpose Display information about the QoS configuration for Ethernet member links in all IEEE 802.3ad link aggregation group (LAG) bundles configured on the router, or about the member links in a specified IEEE 802.3ad LAG bundle.

Action To display the QoS configuration for a specific LAG bundle:

```
host1#show interfaces lag lg0 members
Lag lg0 is Up, Administrative status is Up
MAC Address is 0090.1a40.01be
MTU: Operational 1526
Duplex Mode: Operational Full Duplex
Speed: Operational 100 Mbps
System Priority 32768 System MAC Address is 0090.1a00.00e0 key 8
Partner System Priority 0 System MAC Address is 0000.0000.0000 key 0
QoS parameter: vlan 1500000
Attached QoS profile: eth1
Member-interface FastEthernet11/2 is Up
(LACP disabled, state collecting/distributing)
Member-interface FastEthernet11/3 is Down
(LACP disabled, state waiting)
Member-interface FastEthernet11/4 is Up
(LACP disabled, state collecting/distributing)
```

Meaning Table 50 lists the related **show interfaces** command output fields.

Table 50: show interfaces lag members Output Fields

| Field Name | Field Description |
|----------------------|---|
| Lag | Name of the LAG bundle |
| QoS parameter | QoS parameter instance at the displayed interface |
| Attached QoS profile | QoS profile attachment at the displayed interface |

Related Topics

- Configuring the Scheduler Hierarchy for Hashed Load Balancing in 802.3ad Link Aggregation Groups on page 201
- Configuring the Scheduler Hierarchy for Subscriber Load Balancing in 802.3ad Link Aggregation Groups on page 202
- Creating Parameter Instances on page 236

- For more information about other fields displayed with this command, see the *JUNOS Physical Layer Configuration Guide, Chapter 5, Configuring Ethernet Interfaces*
- `show interfaces lag members` command

Monitoring the AAA Downstream Rate for QoS

Purpose Display whether the QoS downstream rate application is enabled to use downstream rates from the Actual-Data-Rate-Downstream [26-130] DSL Forum VSA.

Action To display the status of the QoS downstream rate application:

```
host1#show aaa qos downstream-rate
Downstream-rate reporting is disabled
```

Meaning Table 51 lists the `show aaa qos downstream-rate` command output fields.

Table 51: show aaa qos downstream-rate Output Fields

| Field Name | Field Description |
|------------------------------|--|
| Downstream-rate reporting is | Status of the QoS downstream rate application: enabled or disabled |

Related Topics

- Configuring a Parameter Definition for QoS Downstream Rate on page 295
- `show aaa qos downstream-rate` command

Monitoring QoS Parameter Instances

Purpose Display the QoS parameter instances for QoS clients.

Action To display information about the QoS parameters attached to a specific interface or port type:

```
host1#show qos-parameter max-subscriber-bw references
interface parameter name value
-----
global max-subscriber-bw 5000000
ATM11/0.1 max-subscriber-bw 6000000

Global parameter instances: 1
Parameter instances reported: 2
```

To display a list of all QoS parameters attached to all interfaces:

```
host1#show qos-parameter references
interface parameter name value
-----
global max-subscriber-bandwidth 2000000
global subscriber-weight 1
global max-subscriber-video-bandwidth 2000000
```

```

global
FastEthernet9/0.2    max-100Kbps-voice-calls      1
                    max-subscriber-bandwidth      6000000
                    subscriber-weight              3
                    max-subscriber-video-bandwidth 2000000
FastEthernet9/0.3    max-100Kbps-voice-calls      1
                    max-subscriber-bandwidth      8000000
                    subscriber-weight              6
                    max-subscriber-video-bandwidth 3000000
FastEthernet9/0      max-100Kbps-voice-calls      3
FastEthernet9/0 svlan 1 max-subscriber-video-bandwidth 1000000

Global parameter instances: 4
Parameter instances reported: 13

```

To display the QoS profile name and attachment data for a specific interface:

```

host1#show qos-parameter references interface fastEthernet 9/0.3

```

| interface | parameter name | value | instance Type |
|-------------------|--------------------------------|---------|---------------|
| FastEthernet9/0.3 | max-subscriber-bandwidth | 8000000 | explicit |
| | subscriber-weight | 6 | explicit |
| | max-subscriber-video-bandwidth | 3000000 | explicit |
| | max-100Kbps-voice-calls | 3 | explicit |

```

Explicit parameter instances: 4
Hierarchical parameter instances: 0
IP multicast parameter instances: 0
Parameter instances reported: 4

```

To display information in expanded format, including Service Manager references:

```

host1#show qos-parameter video references full

```

| interface | parameter name | value | source | service manager refs | persistence |
|--------------------|----------------|-------|---------|----------------------|-------------|
| GigabitEthernet6/0 | video | 50 | default | none | persistent |

```

Global parameter instances: 0
Parameter instances reported: 1

```

To display information about global parameter instance attachments in condensed format:

```

host1#show qos-parameter references global brief

```

To display information about the parameter instances attached to a specific tunnel interface, specify the interface at the root of the scheduler hierarchy located on the tunnel-service interface or at the same hierarchy for LNS GRE tunnel traffic:

```

host1#show qos-parameter references tunnel-server 6/0

```

To display information about the parameter instances attached to a specific L2TP session:

```

host1#show qos-parameter references l2tp-session session1

```

To display parameter instances only on the specified interface and not QoS parameters stacked above the interface:

```
host1#show qos-parameter references gigabitEthernet 6/0 explicit
```

Meaning Table 52 lists the **show qos-parameter** command output fields.

Table 52: show qos-parameter Output Fields

| Field Name | Field Description |
|----------------------------------|---|
| interface | Location of the interface to which the parameter instance is assigned; global indicates that the parameter is assigned to the chassis |
| parameter name | Name of the parameter instance |
| value | Value assigned to the parameter instance |
| source | Source of the parameter instance: <ul style="list-style-type: none"> ■ dcm—Parameter instance was created in a profile ■ radius—Parameter instance was created through RADIUS ■ service manager—Parameter instance was created through Service Manager ■ default—Parameter instance was created through the CLI or SNMP |
| service manager refs | Number of references of this parameter instance created through Service Manager |
| persistence | Status of the persistence of a parameter instance in the system: <ul style="list-style-type: none"> ■ persistent—Parameter instance is stored in NVS and is restored after a chassis reset ■ non-persistent—Parameter instance is not stored in NVS and are deleted after a chassis reset |
| Global parameter instances | Number of parameter instances assigned to the chassis |
| Parameter instances reported | Total number of parameter instances assigned |
| Explicit parameter instances | Total number of explicit parameter instances assigned |
| Hierarchical parameter instances | Total number of hierarchical parameter instances assigned |
| IP multicast parameter instances | Total number of parameter instances associated with the IP multicast bandwidth adjustment application |

Related Topics

- Creating Parameter Instances on page 236
- **show qos-parameter** command

Monitoring QoS Parameter Definitions

Purpose Display the QoS parameter definition settings for QoS administrators.

Action To display the settings for a specific QoS parameter definition:

```

host1#show qos-parameter-define ip-multicast
               controlled instance subscriber
parameter      interface interface interface value
name           types      types      types      range
-----
ip-multicast ip           ip, ipv6 <none> <none>
parameter
name                               properties
-----
ip-multicast ip-multicast-adjustment, hierarchical

```

To display information about QoS parameter definitions in condensed format:

```
host1#show qos-parameter-define voicel brief
```

To display references to all QoS parameter definitions:

```
host1#show qos-parameter-define references
```

Meaning Table 53 lists the **show qos-parameter-define** command output fields.

Table 53: show qos-parameter-define Output Fields

| Field Name | Field Description |
|----------------------------|---|
| parameter name | Name of the parameter definition |
| controlled interface types | Types of controlled-interface types that are available for the parameter definition |
| instance interface types | Types of instance-interface types that are available for the parameter definition |
| subscriber interface types | Types of subscriber-interface types that are available for the parameter definition |
| value range | Range assigned to the parameter definition |
| properties | Applications and hierarchical settings assigned to the parameter definition |

Related Topics

- [Configuring a Basic Parameter Definition for QoS Administrators on page 232](#)
- **show qos-parameter-define** command