

QoS Statistics Overview

Statistics profiles enable you to gather statistics for the rate at which packets are forwarded out of a queue and for the rate at which committed, conformed, or exceeded packets are dropped. Statistics profiles also enable you to use events to monitor the rate statistics. You can then use **show** commands to view the results of the statistics gathering.

You can create up to 250 statistics profiles on the E Series Broadband Services Routers. The profiles are referenced by a queue rule within a QoS profile.

Statistics cannot be collected on failover queues.

When you create a statistics profile, you specify the time period over which statistics are gathered. To gather event statistics, you configure the thresholds for triggering rate-event reporting.

- Rate period—Time period, in seconds, over which statistics are gathered. For example, a 30-second rate period results in rate statistics being gathered over 30-second time segments.
- Forwarding rate threshold—Threshold for forwarding rate events. A forwarding-rate event is counted whenever the forwarding rate exceeds the specified threshold.
- Committed drop threshold—Threshold above which committed drop rate events are counted.
- Conformed drop threshold—Threshold above which conformed drop rate events are counted.
- Exceeded drop threshold—Threshold above which exceeded drop rate events are counted.

Rate Statistics

You can configure the E Series router to gather statistics for the rate at which queues forward and drop packets.

Queue rate statistics measure the forwarding and drop rates of each queue in bits per second. All bytes in the Layer 2 encapsulation are included in the rate calculation. For example, rates for a queue on Ethernet include the Ethernet and VLAN encapsulations.

For ATM modules, you can optionally configure queue statistics and queue rates to include the cell encapsulation and padding. Cell encapsulation and padding are referred to as the *cell tax*. The QoS shaping mode that you set on ATM line modules determines whether queue rate statistics include cell tax.

- If the interface is configured with frame-based QoS shaping mode, the egress queue measures frame rate statistics; an ATM cell tax is not included.

- If the interface is configured with cell-based QoS shaping mode, the egress queue measures cell rate statistics; cell rates include ATM Adaptation Layer 5 (AAL5) encapsulation and cell padding.
- If the interface is configured with byte adjustment, the egress queue measures rate statistics that are adjusted to the byte adjustment value.



NOTE: If you change the QoS shaping mode value in the middle of a rate period, the gathered rates are a mixture of cell- and frame-based rates for that one rate period. The next rate period uses a rate based on the new QoS shaping mode setting.

Event Statistics

You can configure the E Series router to count the number of times that forwarding or drop rates exceed a specific threshold. Events can be useful when you are monitoring service level agreements. For example, you might count the number of times that the drop rate of a queue is nonzero.

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