

Configuring WRED

The main difference between RED and WRED is that WRED deals with different colored packets. The router assigns a color to each packet. Committed means green, conformed means yellow, and exceeded means red.

Each line module supports a default drop profile and 15 configurable drop profiles.

WRED is not supported on the ES2 10G Uplink LM. On the ES2 10G LM, you must configure WRED in one of the 15 configurable drop profiles; you cannot configure its default drop profile.

To enable support for 32,000 subscribers with 128,000 QoS queues on ES2 10G ADV LMs, scheduler memory enhancements have reduced the number of QoS rate counters that are supported per egress queue from 7 to 5:

- 1 is used for forwarding events
- 3 are used for tail dropping behavior
- 1 is used for WRED functionality (an aggregate of all colors)

Each line module supports a default drop profile and 15 configurable drop profiles. On the ES2 10G ADV LM, you must configure WRED in one of the 15 configurable drop profiles; you cannot configure its default drop profile. Queue rate statistics measure the forwarding and drop rates of each queue in bits per second. Queue event statistics configure the E Series router to count the number of times that forwarding or drop rates exceed a specific threshold. To display information about the number of committed packets and bytes dropped by WRED for ES2 10G ADV LMs, see the number displayed in the Dropped by WRED committed field in the output of the **show ip interface** command. The Dropped by WRED confirmed and Dropped by WRED exceeded fields always display a value of zero because of the single counter being used for WRED functionality being calculated and displayed in the Dropped by WRED committed field of the output.

To configure WRED:

1. Create a drop profile and enter Drop Profile Configuration mode.

```
host1(config)#drop-profile internetDropProfile  
host1(config-drop-profile)#
```

You can configure up to 16 drop profiles.

2. Set the average-length exponent, which specifies the exponent used to weight the average queue length over time, controlling WRED responsiveness.

```
host1(config-drop-profile)#average-length-exponent 9
```

- Specifying an average-length exponent enables the RED average queue length computation.
- A higher value smooths out the average and slows WRED reaction to congestion and decongestion, accommodating short bursts without dropping.

Too large a value can smooth the average to the point that WRED does not react at all.

- A lower value speeds up WRED reaction. Too low a value can cause overreaction to short bursts, dropping packets unnecessarily.

3. (Optional) Set the minimum and maximum threshold for committed traffic.

`host1(config-drop-profile)#committed-threshold percent 30 90 4`

4. (Optional) Set the minimum and maximum threshold for conformed traffic.

`host1(config-drop-profile)#conformed-threshold percent 25 90 5`

5. (Optional) Set the minimum and maximum threshold for exceeded traffic.

`host1(config-drop-profile)#exceeded-threshold percent 20 90 6`

The thresholds specify a linear relationship between average queue length and drop probability.

You can express thresholds as either percentages of maximum queue size by including the keyword **percent**, or as absolute byte values by omitting the keyword.

Related Topics

- Configuring RED
- Monitoring RED and WRED
- average-length-exponent
- committed-threshold
- conformed-threshold
- drop-profile
- exceeded-threshold

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