Distributed Traffic Shaping for Engine 0 Line Cards in the Cisco 12000 Gigabit Switch Router

Feature Overview

Distributed Traffic Shaping (DTS) for Engine 0 Line Cards in the Cisco 12000 Gigabit Switch Router (GSR) is similar to the Generic Traffic Shaping feature implemented in Cisco IOS Release 11.2. Traffic shaping implemented for engine 0-type line cards provides different features from the distributed traffic shaping support in Cisco IOS Release 12.0(5)XE.

Table 1 lists the line card engine and the line cards that use DTS.

Table 1 Line Card Engines and Line Cards

Line Card Engine	Line Cards Using DTS
Engine 0	QOC-3 POS OC-12 POS

Distributed Traffic Shaping supports traffic shaping regardless of the encapsulation. The traffic shaping implementation is per interface on a line card. Currently the traffic shaping scheme assumes one queue per interface. DTS on GSR can shape the output traffic to the specified bit rate. Excessive packets are stored in a buffer in the traffic shaping queue and transmitted later.

Benefits

The DTS feature is one element used to manage the bandwidth of an interface to meet remote site requirements and to conform to a service rate that is provided on that interface.

Restrictions

DTS on GSR for engine 0 line cards is subject to the following restrictions:

- Subinterfaces are not supported.
- Implemented on the transmit side.

Platforms

This feature is supported on the following Cisco 12000 series routers:

- Cisco 12016 series
- Cisco 12012 series
- Cisco 12008 series

This feature is supported on the following Cisco 12000 line cards (see Table 1):

- Line cards using engine 0 architecture

Prerequisites

You must be running Cisco IOS Release 12.0(10)S or a later version of Cisco IOS Release 12.0 S.

Use the DTS for GSR feature with the weighted random early detection (WRED) feature. Otherwise, on a multiple-interface line card (for example, the QOC-12) one output interface can use all the output buffers and leave no output buffer for the other interfaces on that line card.

Supported MIBs and RFCs

No new or modified MIBs are supported by this feature.

Configuration Tasks

Perform the following tasks to configure DTS on GSR:

- Configure Distributed Traffic Shaping

Configure Distributed Traffic Shaping

To configure DTS on GSR for outbound traffic on an interface, use the following command in interface configuration mode:

Command	Purpose
traffic-shape rate *bit-rate* [*burst-size* [*excess-burst-size*]]	Configure traffic shaping for outbound traffic on an interface.

Note To obtain the best use of burst-size and excess-burst-size, specify only the required bit-rate value. The software will automatically tune the other values for optimum performance.

Monitor the DTS Configuration

To monitor the current traffic shaping configuration and statistics, use any of the following commands in EXEC mode:

Command	Purpose
show traffic-shape [*interface-name*]	Show the current traffic-shaping configuration.

Note The **show traffic-shape statistics** [*interface-name*] command is not supported on Engine 0 Line Cards in the Cisco 12000 Gigabit Switch Router .

Configuration Examples

This section provides the following configuration examples:

- DTS on GSR (OC-12 POS Line Card)

DTS on GSR (OC-12 POS Line Card)

The following configuration example shows how to enable DTS for an OC-12 POS line card in a GSR. The output on the interface is configured to limit all output to 5 Mbps.

```
router(config)# interface pos 4/0
router(config-if)# traffic-shape rate 5000000 625000 625000
```

Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command references.

traffic-shape rate

To configure line cards in a Cisco 12000 GSR to use Distributed Traffic Shaping (DTS), use the **traffic-shape rate** interface configuration command. Use the no form of this command to disable DTS.

[**no**] **traffic-shape rate** *bit-rate* [*burst-size* [*excess-burst-size*]]

Syntax Description

bit-rate	A value between 1 and 155520000 for QOC-3 POS line card and between 1 and 622080000 for the OC-12 POS line card.
burst-size	The number of bits in a measurement interval. The value can be between 1 and 155520000 for QOC-3 POS line card and between 1 and 622080000 for the OC-12 POS line card.
excess-burst-size	The number of bits permitted to exceed the burst size. The value can be between 0 and 155520000 for QOC-3 POS line card and between 0 and 622080000 for the OC-12 POS line card.

Defaults

No default behavior or values.

Command Modes

Interface

Command History

Release	Modification
12.0(10)S	This command was modified to accommodate engine 0 line rates.

Usage Guidelines

You must use this command to enable the DTS on the engine 0 line cards. Table 2 lists the line card engine and the line cards that use DTS. Using this command has no effect when non-supported line cards are installed in the GSR.

Table 2 Line Card Engines and Line Cards

Line Card Engine	Line Cards Using DTS
Engine 0	QOC-3 POS OC-12 POS

To obtain the best use of burst-size and excess-burst-size, specify only the required bit-rate value. The software will automatically tune the other values for optimum performance.

Examples

The following example limits interface transmission to 5 Mbps on the selected line card interface:

```
traffic-shape rate 5000000 625000 625000
```

Related Commands

None