

Traffic-Shaping Carrier Access Module for the Cisco Catalyst 8510 and LightStream 1010 Switches



Abstract

The Cisco Catalyst® 8510 Multiservice Switch Router (MSR) and LightStream® 1010 Multiservice ATM Switch now support the Traffic-Shaping Carrier Access Module (TSCAM), which provides enhanced traffic-shaping capabilities for T1/E1, DS3/E3, OC-3/STM-1, and OC-12/STM-4 port adapter modules (PAMs). Traffic shaping allows service providers to manage the bandwidth delivered to the customer premises, giving them the ability to efficiently plan and utilize the core network infrastructure. In addition, traffic shaping gives enterprise customers the ability to aggregate multiservice data from a wide range of interfaces and ensure that the data uplink stream is shaped to match the service-level agreement (SLA) from service providers.

Feature Support

The Catalyst 8510/LightStream 1010 Traffic Shaping CAM supports the following features and capabilities:

Table 1 Feature Summary

Feature	Description
Integrates IP+ATM and traffic-shaping solutions	Traffic shaping is tightly integrated with the ATM Router Module (ARM) to enhance the IP+ATM solution
Scalability	Supports 32,000 virtual circuits (VCs) with a 256K shared cell buffer
Flexibility in traffic definition	Services include Variable Bit Rate - real time (VBR-rt), VBR - nonreal time (VBR-nrt), Unspecified Bit Rate (UBR) and UBR+, and Available Bit Rate (ABR). Traffic is shaped to the following parameters: <ul style="list-style-type: none"> • MaxCTD: Maximum Cell Transfer Delay • PCR: Peak Cell Rate • SCR: Sustainable Cell Rate • CDV: Cell Delay Variation • MBS: Maximum Burst Size • CLR: Cell Loss Ratio
Supports wide range of uplink interfaces	Supports the following ATM port adapter modules: <ul style="list-style-type: none"> • 4-port OC-3 multimode (MM)/single-mode (SM) ATM • 1-port OC12 MM/SM ATM • 4-port T1/E1 ATM • 4-port DS3/ES3 ATM

Integrated Layer 3 and ATM Traffic Shaping

Traffic shaping is tightly integrated with ARM to enhance the IP+ATM solution. IP traffic entering the switch fabric through Layer 3 interfaces is first encapsulated in the ARM (RFC 1483/RFC 1577). Then the Catalyst 8510/LightStream 1010 traffic shaping CAM buffers and shapes the data stream to the SLA before the traffic is uplinked into the ATM core network.

Maximize Network Efficiency

The Traffic-Shaping CAM for the Catalyst 8510 and LightStream 1010 provides per-VC shaping for up to 32,000 VCs with an aggregate bandwidth near OC-12/STM-4. Traffic shaping protects networks and end systems from congestion to achieve better performance and efficient use of network resources.

Customer Satisfaction

Because the traffic is shaped rather than policed, customers experience better services. Also, service providers can differentiate the services offered to their customers by ensuring fair sharing of available bandwidth.

Specifications

Physical Specification

- Supports one slot in the Cisco Catalyst 8510 MSR or LightStream 1010 platform
- Supports one shaped port adapter module (PAM) per traffic-shaping CAM
- Physical Dimensions: 14.375" W x 16" D x 1.2" H
- Traffic shaping is supported on the following line cards:

Product Code	Product Description
WAI-OC12-1SSLR	1-port OC-12c/STM-4 SM LR PAM
WAI-OC12-1SS	1-port OC-12c/STM-4 SMF PAM
WAI-OC12-1MM	1-port OC-12c/STM-4 MMF PAM
WAI-OC3-4SSLR	4-port OC-3c/STM-1 SM LR PAM
WAI-OC3-4SS	4-port OC-3c/STM-1 SMF PAM
WAI-OC3-1S3M	4-port OC-3c/STM-1 Mixed PAM, 1-port SM IR, 3-port MM
WAI-OC3-4MM	4-port OC-3c/STM-1 MMF PAM
WAI-T3-4BNC	4-port DS3 PAM
WAI-E3-4BNC	4-port E3 PAM
WAI-T1-4RJ48	4-port T1 with RJ-48 PAM
WAI-E1-4RJ48	4-port E1 with RJ-48 PAM
WAI-E1-4BNC	4-port E1 with BNC PAM

Traffic Management

- Supports VBR-rt, VBR-nrt, UBR, UBR+, and ABR
- Traffic shaping is based on the following parameters:
 - MaxCTD: Maximum Cell Transfer Delay
 - PCR: Peak Cell Rate
 - SCR: Sustainable Cell Rate
 - CDV: Cell Delay Variation
 - MBS: Maximum Burst Size
 - CLR: Cell Loss Ratio

Cell Buffering

- 256,000 cells stored per card
 - Accommodates large traffic bursts
 - Avoids network congestion and cell discard
 - Suited for TCP/IP traffic

Electrical Specification

- Power consumption:
 - 81 W (TSCAM + 2 Port Adapter Modules)
 - 54 W (TSCAM + 1 Port Adapter Module)
 - 27 W (TSCAM only)



Electrical and Safety Standards Compliance

The Traffic-Shaping Carrier Access Module (CAM) for the Cisco Catalyst 8510 MSR and LightStream 1010 Switch complies with the following compliance and safety standards:

- FCC Part 15 (CFR 47) Class A
- VCCI Class B
- EN55022 Class B
- CISPR 22 Class B
- CE marking
- AS/NZS 3548 Class B
- UL 1950
- CSA C22.2 No.950
- EN 60825-1
- EN60950
- IEC 950
- IEC 60825-1
- TS 001
- CE marking
- AS/NZS 3260
- 21CFR1040
- Network Equipment Building Systems (NEBS) Level 3

Orderability Information

Table 2 Required Software

Platform	Minimum IOS Software Image	Software Product Number
Cisco Catalyst 8510 MSR	12.1(7a)EY or higher	S851R2-12107EY
Cisco LightStream 1010	12.1(7a)EY or higher	SL10R2-12107EY

Table 3 Product Code and Availability

Part Number	Description	Availability
C8510-TSCAM-2P	Cisco Catalyst 8510/ LightStream 1010 Traffic-Shaping CAM	Q3CY01

**Corporate Headquarters**

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA

www.cisco.com

Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems Europe
11, Rue Camille Desmoulins
92782 Issy-les-Moulineaux
Cedex 9
France

www-europe.cisco.com

Tel: 33 1 58 04 60 00
Fax: 33 1 58 04 61 00

Americas Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA

www.cisco.com

Tel: 408 526-7660
Fax: 408 527-0883

Asia Pacific Headquarters

Cisco Systems Australia, Pty., Ltd
Level 9, 80 Pacific Highway
P.O. Box 469
North Sydney
NSW 2060 Australia

www.cisco.com

Tel: +61 2 8448 7100
Fax: +61 2 9957 4350

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