

MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module

Product Overview

The Cisco MGX[®] 8950 Multiservice Switch allows service provider networks to scale by providing 180 Gbps of redundant switching with up to 10-Gbps ATM interfaces. The Cisco[®] MGX 8950 offers service providers outstanding choice and control over extensions of existing infrastructure and provides a transparent path to future services.

The MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module is a line card for use in the Cisco MGX 8950 in combination with the Cisco MGX 8850 PXM-45/C Processor Switch Module and the Cisco MGX 8950 XM-60 Switching Module. This ATM switch service module has four physical 2.5-Gbps interfaces that can be used to deliver high-density OC-48 or STM-16 trunking and User-Network Interface (UNI) or aggregation of sub-OC-48 traffic through port channelization.

Up to 12 MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module can reside in the Cisco MGX 8950 to provide support for up to 48 OC-48/STM-16 interfaces for service providers that require both high bandwidth and high network availability.

The MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module meets service providers' demand for carrier-class availability by offering hot-standby 1+1 card redundancy as well as port redundancy with SONET/SDH automatic protection switching (APS). (See Figure 1)

Figure 1. MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module



Key Features

The main features of the MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module are listed here.

- Full nonblocking, full-duplex line-rate throughput on all 4 ports
- Individual port channelization down to OC-12c/STM-4, OC-3c/STM-1, and DS-3
- User-Network Interface (UNI) and Private Network-to-Network Interface (PNNI) support on the same physical port
- Per-virtual-path and per-virtual-circuit traffic shaping and available bit rate (ABR) with virtual source and virtual destination
- APS (1:1 and 1+1) port redundancy, plus APS 1+1 card redundancy
- Up to 4 million cell buffers
- Up to 16 classes of service (CoS) that can be used to support IP or ATM services
- Support for standards-based PNNI, switched virtual circuit (SVC) and switched virtual path (SVP), soft permanent virtual connection (SPVC) and soft permanent virtual path (SPVP), and Multiprotocol Label Switching (MPLS) services

Technical Specifications

Table 1 lists the specifications for the MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module.

Table 1. Product Specifications

Description	Specification
Chassis Compatibility	Cisco MGX 8950
Software Compatibility	Cisco MGX 8950 Software Release 4.0.15 and above
Protocols	ATM and SONET/SDH
Port Density	4 ports
Layer 1 (Physical Layer) Feature Summary	• Support for ports and trunks on the same Cisco 2.5-Gbps 4-port ATM switch service module • Support for ports and trunks on the same physical port • UNI 3.0, 3.1, and 4.0 physical layer specifications • Compliance with the following SONET standards: ◦ Bellcore GR-253-CORE ◦ ANSI T1.105 • Compliance with the following SDH standards: ◦ ITU-T G.707, G.708, G.709, and G.783 ◦ ITU-T G.957 and G.958

Description	Specification		
Layer 1 (Physical Layer) Feature Summary (continued)	Additional Physical Layer Specifications for Ports and Optics		
	Connection Options	SMF-SR¹	SMF-LR²
	Port speed	2.5 Gbps	2.5 Gbps
	Number of ports per MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module	4	4
	Port media	SMF	SMF
	Port connector	LC	LC
	Optics (nanometers –[nm])	Laser 1310 nm	Laser 1310 nm
	Transmit power level (decibels per milliwatt [dBm])	–10 minimum and –3 maximum	–2 minimum and 3 maximum
	Receive power level (dBm)	–18 minimum and –3 maximum	–27 minimum and –9 maximum
	Typical reach (kilometers)	2 km	12 and 40 km
	Redundancy	• 1+1 and 1:1 APS port • 1+1 APS card	• 1+1 and 1:1 APS port • 1+1 APS card
	¹ Single-mode fiber, short reach		
	² Single-mode fiber, long reach		
Layer 2 (ATM) Feature Summary	• Configurable for trunk, Network-Network Interface (NNI), or UNI application • Conformance to ATM Forum UNI 3.0, 3.1, and 4.0 and ITU-T I.361 and I.432 specifications • Supports up to 16 CoS queues for IP and ATM traffic and includes all ATM Forum traffic-type services: ABR, unspecified bit rate (UBR), non-real-time variable bit rate (VBR-nrt), real-time variable bit rate (VBR-rt), constant bit rate (CBR); ABR supported with explicit forward congestion indicator (EFCI), RM marking, and explicit-rate stamping; supports ABR virtual source and destination • Supports Integrated Local Management Interface (ILMI) 4.0 • Complies with standard usage parameter control (UPC) as specified by ATM Forum UNI 3.0 and 4.0, TM 4.1, and ITU-T I.371 • Supports early packet discard (EPD), Weighted Random Early Detection (WRED), and partial packet discard (PPD) • Supports virtual circuit connections (VCCs) and virtual path connections (VPCs) • Supports up to 128,000 connections per 4-port ATM switch service module controlled by PNNI • Supports virtual path identifier (VPI) and virtual circuit identifier (VCI) range for VCCs and VPCs per UNI 3.1 • Supports per-virtual-circuit and per-virtual-path shaping and multipoint connections Virtual trunks • Supports a maximum of 128 virtual interfaces per module; the interfaces can be ports, trunks, or virtual trunks; each virtual interface supports 16 CoS queues Cell buffering • Supports 4 million cells of buffering to accommodate large traffic bursts and avoid network congestion and cell discard; suitable for TCP/IP traffic Support for dynamic routing using PNNI 1.0 • Offers an automatic end-to-end connection management mechanism • Deterministically allocates bandwidth and reroutes connections autonomously over optimum network paths • Preserves service integrity during network failure • Offers E.164 and network-service-access-point (NSAP) addressing • Offers support for SVC and SVP and for SPVC and SPVP • Offers quality-of-service (QoS) based routing Enhanced call admission control • A user-programmable Enhanced Call Admission Control (E-CAC) feature determines whether to admit or deny connections based on the requested QoS.		

Description	Specification
Layer 2 (ATM) Feature Summary (continued)	Statistics - Statistics supported per connection - Diagnostic statistics available per interface and CoS queues Operation, administration, and management - F4 to F5 fault propagation - In-band diagnostics support using loopback cells - In-band continuity check and automatic fault reporting for PVCs - Loopback facility support for diagnostics and self-test purposes
Network Management	- Managed by Cisco WAN Manager software suite - Based on Simple Network Management Protocol (SNMP)
Power	- Input power required: –48 VDC - Power consumption: 187W
Physical Dimensions	H x D: 15.83 x 15.65 in. (40.20 x 39.75 cm)
Weight	6.5 lb (2.95 kg)
Environmental Conditions	- Storage temperature: –40 to 158°F (–40 to 70°C) - Operating temperature: - Normal: 41 to 104°F (5 to 40°C) - Short term: 23 to 122°F (–5 to 50°C) - Relative humidity: - Normal: 5 to 85% - Short term: 5 to 90% but not to exceed 0.024 kg (0.048 lb) of water per kg (lb) of dry air Short term refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year.

Approvals and Compliance

Table 2 lists regulatory information.

Table 2. Compliance and Agency Approvals

Compliance Type	Description
Safety standards	- UL/CSA/IEC/EN 60950-1 - IEC/EN 60825 Laser Safety - ACA TS001 - AS/NZS 60950 - FDA-Code of Federal Regulations Laser Safety
EMI	- FCC Class A - ICES 003 Class A - AS/NZS 3548 Class A - CISPR 22 (EN55022) Class A - VCCI Class A - BSMI Class A - IEC/EN 61000-3-2: Power Line Harmonics - IEC/EN 61000-3-3: Voltage Fluctuations and Flicker
Immunity (basic standards)	- IEC/EN-61000-4-2: Electrostatic Discharge Immunity (8 kV Contact, 15 kV Air) - IEC/EN-61000-4-3: Radiated Immunity (10 V/m) - IEC/EN-61000-4-4: Electrical Fast Transient Immunity (2 kV AC Power and 1 kV DC Power) - IEC/EN-61000-4-5: Surge AC Port (2 kV CM and 2 kV DM) - IEC/EN-61000-4-5: Signal Ports (1 kV) - IEC/EN-61000-4-5: Surge DC Port (1 kV) - IEC/EN-61000-4-6: Immunity to Conducted Disturbances (10 Vrms) - IEC/EN-61000-4-8: Power Frequency Magnetic Field Immunity (30 A/m) - IEC/EN-61000-4-11: Voltage DIPS, Short Interruptions, and Voltage Variations

Compliance Type	Description
Network Equipment Building Systems (NEBS)	This product is designed to meet the following requirements (qualification in progress): • SR-3580: NEBS Criteria Levels (Level 3) • GR-1089-CORE: NEBS EMC and Safety • GR-63-CORE: NEBS Physical Protection
Telcordia CLEI	• GR-485-CORE – CLEI coding • GR-383-CORE – CLEI code product label • GR-209-CORE – PCN process

Ordering Information

Table 3 lists ordering information for the MGX 8950 4-Port OC-48/STM-4 Channelized/Unchannelized ATM Service Module.

Table 3. Ordering Information

Part Number	Product Name
AXSM-4-2488-XG	Quad OC48/STM16, Chan/Unchan, Dble-height, ATM Service Module
SMF-4-2488-SFP	4-Port, Double-height, OC-48/STM-16 Back Card (No Optics)
SMFSR-1-2488-SFP	1 SMF Optical Xcvr, Short-Range, SFP Type
SMFLR-1-2488-SFP	1 SMF Optical Xcvr, Long-Range, SFP Type
OC48-CHANN-LIC	OC48/STM16 Chann. License (to OC12/STM4, OC3/STM1, DS3)
CAB-SMF-LC	SM Fiber Cable, IR or LR, with LC connector
CAB-SMF-LC-Y	Single Mode Fiber Y-Cable, LC connector, IR or LR
ADPT-LC/SC-SM+MM=	LC-To-SC Adapter Cable, SM and MM

For More Information

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<http://www.cisco.com/>.



Americas 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: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

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