

## CISCO MGX 8800 SERIES 16-PORT T1/E1 MULTIPROTOCOL SERVICE MODULE

The Cisco® MGX® 8800 Series 16-Port T1/E1 Multiprotocol Service Module (MPSM) is a 16-port T1 or E1, single-height service module for use in the Cisco MGX 8800 Series of multiservice switches. The MPSM delivers connectivity from DS0 to T1/E1 speeds and provides Any Service, Any Port (ASAP) capability.

**Figure 1.** Cisco MGX 8800 Series 16-Port T1/E1 MPSM (far left) with associated back cards: Cisco MGX 16-Port T1/E1 Backcard with RBBN Connector, Cisco MGX 16-Port T1/E1 Redundancy Backcard, and Cisco MGX 16-Port E1 Backcard with MCC Connector



ASAP allows customers to provision both Frame Relay and ATM services on a single MPSM. The MPSM also supports additional features as described in this data sheet.

### KEY FEATURES

- ASAP functionality reduces operation and deployment costs because one MPSM card can act as both a Frame Relay and an ATM service module
- Built-in BERT testing
- IMA 1.0 and IMA 1.1 along with IMA Restart Capability
- Support for multiple ATM frame sizes from 32 to 256 bytes
- ITC and CTC clocking modes
- Support for FRF 8.1 Frame Relay/ATM service interworking
- Support for 1:N redundancy
- Support for Multilink Point-to-Point Protocol (MLPPP) and PPP multiplexing (PPPMUX)

To order your Cisco MGX 8800 Series 16-Port T1/E1 Multiprotocol Service Module and appropriate license, use the part numbers shown in Table 1 when you visit: (Cisco.com login is required to view this content)

<https://tools.cisco.com/qtc/config/jsp/configureHome.jsp>

**Table 1.** Product Part Numbers for Ordering

Product Part Number	Description
MPSM-16-T1E1(=)	Cisco 8800 Series 16-Port T1/E1 Multiprotocol Service Module
RBBN-16-T1E1-1N(=)	Cisco MGX 16-Port T1/E1 Backcard with RBBN Connector, 1:N redundancy
MCC-16-E1-1N(=)	Cisco MGX 16-Port E1 Backcard with MCC Connector, 1:N redundancy
RED-16-T1E1(=)	Cisco MGX 16-Port T1/E1 Redundancy Backcard, for use with the MPSM and backcards with RBBN and MCC connectors in 1:N configurations
RBBN-16-T1E1(=)	Cisco MGX 16-Port T1/E1 Backcard with RBBN Connector, 1:1 or Y-cable redundancy
MCC-16-E1(=)	Cisco MGX 16-Port E1 Backcard with MCC Connector, 1:1 or Y-cable redundancy
MPSM-MS-16-LIC(=)	Multiservice License allowing the use of ASAP functionality on the MPSM-16-T1E1 module
MPSM-RC-16-LIC(=)	Foresight/Standard ABR License for Frame Relay services on the MPSM-16-T1E1 module
MPSM-ML-16-LIC(=)	Multilink (including MLFR) and IMA License on the MPSM-16-T1E1 module
MPSM-PPP-16-LIC(=)	PPPMux and MLPPP License on the MPSM-16-T1E1 module
MPSM-SR-16-LIC(=)	1:N Standby Redundancy License on the MPSM-16-T1E1 module

**USER DOCUMENTATION**

As of August 2004, user documentation for MPSM licensing is in Appendix F of the “Cisco MGX 8850 (PXM1E/PXM45), MGX 8950, MGX 8830, and MGX 8880 Configuration Guide, Release 5” at

[http://www.cisco.com/en/US/docs/switches/wan/mgx/software/mgx\\_r5.0/data/configuration/guide/mgx5scg.pdf](http://www.cisco.com/en/US/docs/switches/wan/mgx/software/mgx_r5.0/data/configuration/guide/mgx5scg.pdf).

Additional information about MPSM cards is under the Cisco MGX product listings, starting with Release 5, at

<http://www.cisco.com/univercd/cc/td/doc/product/wanbu/index.htm>.

**TECHNICAL SPECIFICATIONS**

**Physical-Layer Interface**

T1/E1

**Table 2.** Cisco 8800 Series 16-Port T1/E1 Multiprotocol Service Module

Type of Back Card	T1	E1
Port Speed	1.544 Mbps	2.048 Mbps
Cell Transfer Delay	3623 cells/sec	4528 cells/sec (G.704), 4830 cells/sec (clear channel)
Number of Physical Ports Per MPSM Card	16	16
Number of Ports Per Backcard	16	16
Line Coding	B8ZS or AMI	HDB3 or AMI
Line Framing	ANSI T1.408 extended Super Frame format line framing	ITU-T G.704 16 frame multiframe line framing and clear channel

Type of Back Card	T1	E1
Port Media	100-ohm twisted pair	120-ohm twisted pair
Port Connector	RBBN	RBBN, MCC
Cell Mapping	Direct	Direct
Redundancy	1:1, Y-cable, 1:N	1:1, Y-cable, 1:N

### ATM Layer

- Configurable for IMA trunk or User-Network Interface (UNI) application
- Conformant to ATM Forum UNI 3.0 and 3.1 as well as ITU-T I.361 and I.432 specifications
- Supports up to 16 classes of service (CoSs) and includes all ATM Forum traffic type services: available bit rate (ABR), UBR, variable bit rate non-round-trip (VBR-nrt), VBR-rt, [EXPAND] CBR; ABR supported for EFCI, RM marking, and ER stamping; support for IP quality of service (QoS)
- ABR with virtual source/virtual destination (VS/VD)
- Early packet discard (EPD) and partial packet discard (PPD)
- Support for Weighted Random Early Detection (WRED)
- Per-virtual circuit (VC) queuing for traffic scheduling
- Per-VC traffic shaping on egress
- Per-VC policing
- 32 virtual interfaces on egress
- Support for virtual path termination
- Support for ILMI 4.0
- Complies with standard usage parameter control (UPC) per ATM Forum UNI 3.x, TM 4.0, and ITU-T I.371
- Support for virtual circuit connections (VCCs) and virtual path connections (VPCs)
- Virtual path identifier (VPI) and virtual circuit identifier (VCI) range for VCCs and VPCs per UNI 3.1
- Support for VC merge for egress and multipoint connections
- Usage policing supported on all interfaces

### Frame Relay

- Supports ITU-T Q.933 Annex A, ANSI T1.617 Annex D, and LMI local management for semipermanent virtual circuits (both UNI and Network-to-Network Interface [NNI] portions); enhanced Local Management Interface (LMI) provides autoconfiguration of traffic management parameters for attached Cisco routers
- Frame Relay-to-ATM network interworking (FRF.5) and Frame Relay-to-ATM service interworking (FRF.8 and FRF.8.1), both transparent and translation modes, configured per PVC
- Standards-based committed information rate (CIR) policing and DE tagging/discarding
- End-to-end ForeSight rate-based flow-control option to improve trunk utilization and user goodput
- Capability to extend ForeSight closed-loop congestion management between two Cisco networks across Frame Relay-UNI or Frame Relay-NNI using ANSI T1.618 consolidated link-layer management (CLLM) messages
- Cisco IOS® Software enhancements to Frame Relay-to-ATM service interworking to allow interworking for a wider range of protocols
- Each logical port independently configurable as Frame Relay UNI or Frame Relay NNI
- Meets ANSI T1.618, using 2-octet headers

### ATM FUNI

- ATM Forum FUNI mode 1A supported

- Interpreted CCITT-16 CRC at end of the frame (frame discard if in error)
- ATM Adaptation Layer 5 (AAL5) mapping of user payload to ATM
- Supports 16 VPI values (15 plus the zero VPI); supports VPCs for all nonzero VPI values (up to 15 VPCs)
- Supports 64 VCI values
- Supports operation, administration, and maintenance (OAM) frame/cell flows
- Standards-based usage parameter control
- End-to-end ForeSight rate-based flow-control option (license option)

### Reliability

- Greater than 100,000 hours mean time before failure (MTBF)

### Physical Specifications

- Dimensions: (H x D) 7.25 x 15.83 in.

### Electrical Specifications

- Input power required: (48 VDC)
- Power consumption: 36W

### Electrical and Safety Standards Compliance

- EMI/ESD compliance
  - FCC Part 15
  - Bellcore GR1089-CORE
  - IEC 801-2
  - EN55022
- Safety compliance
  - EN 60950
  - UL 1950
- Bellcore NEBS: Level 3 compliant
- Optical safety: IEC 825-1 (Class 1)



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