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/configHomeController.jsp
Table 1. Product Part Numbers for Ordering

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

USER DOCUMENTATION


TECHNICAL SPECIFICATIONS

Physical-Layer Interface

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

<table>
<thead>
<tr>
<th>Type of Back Card</th>
<th>T1</th>
<th>E1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port Speed</td>
<td>1.544 Mbps</td>
<td>2.048 Mbps</td>
</tr>
<tr>
<td>Cell Transfer Delay</td>
<td>3623 cells/sec</td>
<td>4528 cells/sec (G.704), 4830 cells/sec (clear channel)</td>
</tr>
<tr>
<td>Number of Physical Ports Per MPSM Card</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Number of Ports Per Backcard</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Line Coding</td>
<td>B8ZS or AMI</td>
<td>HDB3 or AMI</td>
</tr>
<tr>
<td>Line Framing</td>
<td>ANSI T1.408 extended Super Frame format line framing</td>
<td>ITU-T G.704 16 frame multiframe line framing and clear channel</td>
</tr>
<tr>
<td>Type of Back Card</td>
<td>T1</td>
<td>E1</td>
</tr>
<tr>
<td>------------------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Port Media</td>
<td>100-ohm twisted pair</td>
<td>120-ohm twisted pair</td>
</tr>
<tr>
<td>Port Connector</td>
<td>RBBN</td>
<td>RBBN, MCC</td>
</tr>
<tr>
<td>Cell Mapping</td>
<td>Direct</td>
<td>Direct</td>
</tr>
<tr>
<td>Redundancy</td>
<td>1:1, Y-cable, 1:N</td>
<td>1:1, Y-cable, 1:N</td>
</tr>
</tbody>
</table>

**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 T.1617 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 T.1618 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 T.1.618, 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)