DATA SHEET

MULTICHANNEL STM-1 PORT ADAPTER (PA-MC-STM-1)

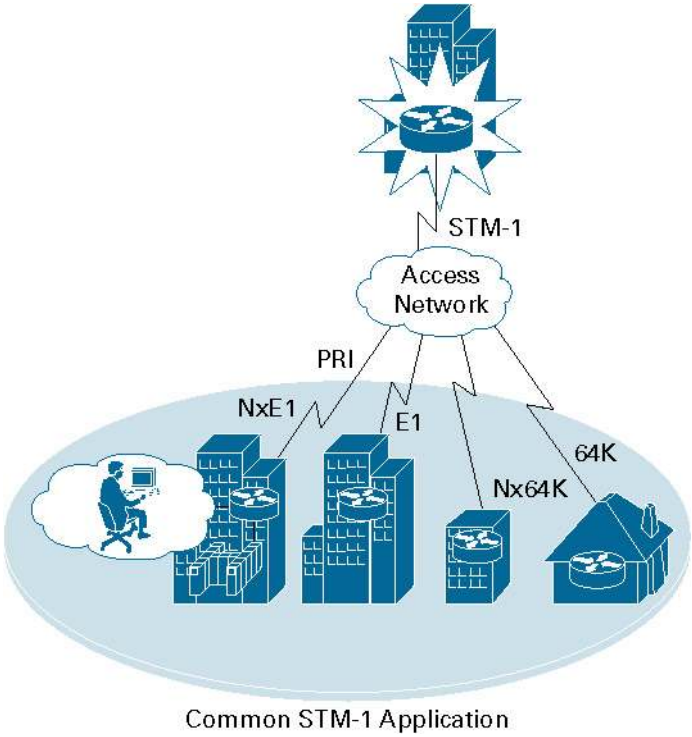
Today's successful businesses require more bandwidth and feature-rich services to maintain a competitive advantage. In order to serve these business customers better, service providers need scalable solutions that not only increase agility and flexibility, but also reduce overall network complexity, the time required to provision new services, and the total cost of ownership.

The Multichannel STM-1 (PA-MC-STM-1) on the Cisco 7600, FlexWAN module, and 7500 and 7200 Series routers provides the solution service providers and their customers need. It reduces network complexity and provisioning time and is part of the industry's most widely deployed and trusted network platforms today. It is also backed by a world-class customer support network.

The PA-MC-STM-1 enables service providers to use a single fiber-optic circuit to provision 63 E1s—E1s that normally require 63 separate copper pairs. The PA reduces wiring complexity, and, when spare capacity is available, it enables service providers to "turn up" new E1s without dispatching a technician to the router. For service providers with customers who require smaller circuits, the PA-MC-STM-1 supports as many as 256 channel groups and can provision circuits down to DS0—providing even more flexibility and density.

Figure 1
The Multichannel STM-1 Port Adapter

Figure 2
PA-MC-STM-1 Multiplexing Structure



PRODUCT DESCRIPTION

The PA-MC-STM-1 is a single-wide, channelized STM-1 port adapter designed to address the demand for SDH network connections on the Cisco 7600, 7500, 7200, and FlexWAN modules. The port adapter enables users to channelize an STM-1 down to 64 kbps using a variety of encapsulations on as many as 256 logical channels. The time slots in each E1 can be grouped into several individual logical channels, each of which can carry data with different data-link layer protocols.

PRODUCT APPLICATIONS

The PA-MC-STM-1 is ideal for today's rapidly expanding WAN environment. The port adapter meets a variety of service interconnect requirements, including concurrent support for leased line and Frame Relay. Enterprises and service providers can connect the adapters' STM-1 ports into these services for aggregation of a large number of remote sites.

As an integral part of a service node where customer bandwidth needs are uncertain, the single-port PA-MC-STM-1 allows service providers to avoid determining beforehand how ports will be allocated between DS0, NxDS0, and E1. For enterprises, the flexibility to support multiple remote-site connections with a variety of speeds and encapsulations reduces circuit and equipment expenditures by integrating the capabilities and services of numerous port adapters onto a single adapter.

FLEXIBILITY

An enterprise's need for applications and speed dictate flexible and scalable solutions. The PA-MC-STM-1 enables customers to scale services by upgrading bandwidth from DS0 to E1 connections—all without changing the port adapter in their Cisco 7000 series routers. The additional ability to support "convenience" DS0 connections is an important factor for some end users who are planning to increase capacity in the future, but require continued support for today's existing connections.

KEY FEATURES

- One channelized STM-1 port
- Channelized E1, fractional E1, and full-rate E1 supported
  - Up to 256 usable channels can be allocated among the 63 E1 ports
  - Internal or network clocking selectable on each E1
  - 64 kbps DS0 time slots
- Line and payload loopback capabilities—local and network at the E1 and STM-1 level
- Full bit-error-rate testing capabilities on any E1
  - Programmable pseudo-random pattern up to 32 bits in length including 2 11-1; 2 15-1; and 2 20-1, 0153, and QRSS
  - 32-bit error count and bit-count registers
  - Detect test patterns conform to ITU-T 0.151 and 0.152 standards
- Alarm detection—Full SDH alarms and MIBs and E1 alarms and MIBs (AIS, Remote Alarm, FEBE, OOF, and so on)
- Online insertion and removal (OIR) of the VIP
- Supports CEF/distributed CEF switching
- Supports MLPPP and Distributed MLPPP
- Support for the following serial encapsulation protocols:
  - Frame Relay
  - PPP
  - HDLC
- Support for the following networking protocols:
  - IP
  - IPX
- 16-bit or 32-bit CRC4 supported
- Support for 1+1 SDH Multiplex Section Protection (MSP) as per G.783 Annex A

E1 SPECIFIC FEATURES

- Alarm detection—CRC errors, UAS, OOF, LOF, AIS, error seconds, and so on
- Alarm reporting—24-hour history maintained, 15-minute intervals on all errors
- Internal and loop (recovered from network) clocking
- E1 MIB (RFC-1406)

CISCO 7500 SYSTEM REQUIREMENTS

VIP4-80

RSP4, RSP4+, RSP8

12.0(14)S, 12.0(16)S and 12.1(5)E

CISCO 7200 SYSTEM REQUIREMENTS

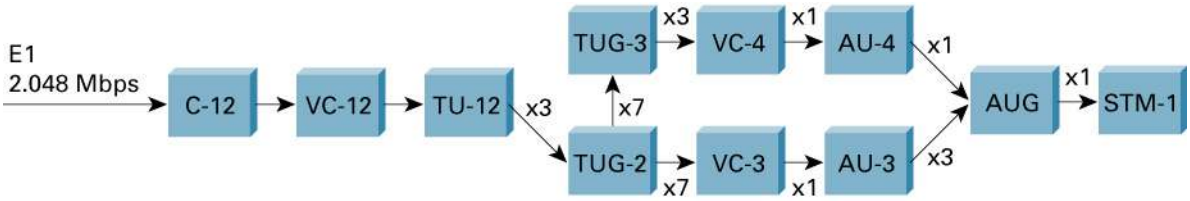
NPE-300, NSE-1, NPE-400, NPE-G1

12.1(7)E, 12.2(7)T, 12.2(14)S, 12.3(1), 12.3(2)T

CISCO 7600 AND CATALYST® 6500 SYSTEM SUPPORT

FlexWAN module

Figure 3
STM-1 Multiplexing Structure



PRODUCT ID

PA-MC-STM-1SMI

PA-MC-STM-1MM

COMPLIANCE

EN55022 Class B with FTP

VCCI Class B with FTP

CISPR 22 Class B with FTP

AS/NZ 3548 Class B with FTP

FCC Part 15 Class A with UTP

ICES 003 Class A with UTP

EN55022 Class A with UTP

VCCI Class A with UTP

CISPR 22 Class A with UTP

AS/NZ 3548 Class A with UTP

EN55024

EN50082-1

ETS 300 386-2

PA-MC-STM-1 MULTIPLEXING STRUCTURE

The following SDH muxing/alignment/mapping schemes are supported per G.707 mapping:

Where STM-1 is derived by muxing one AU-4 or three AU-3, each AU-4 has three TUG-3 transport slots. Each one of these TUG-3/AU-3s can be configured to carry 21 TU-12s, each capable of carrying a channelized E1 frame, each of which in turn can be channelized to N x 64 kbps time slots.

Each E1 can be configured as fractional E1 channels as specified by CCITT/ITU G.704 and G.706. A fractional E1 is a subset of full E1 bandwidth, which uses N x 64 kbps with N = 1 to 31. The unused E1 time slots are not accessible for other usage and will be filled with programmable idle pattern. The unchannelized E1 is a special case for fractional E1, which utilizes all E1 time slots.

The E1 can also be configured as unframed, which contains no framing overhead.

Clear channel STM-1, E3, and subrate E3 are not supported.

The card fault management and alarm detection and response is G.704, G.706, and G.707 compliant.

SNMP supports for performance monitoring and statistics reporting including 24-hour history maintained and 15-minute intervals on all errors. Supports RFC-1406 for E1 and RFC-1595 for SDH MIB agent.

PHYSICAL SPECIFICATIONS

- Dimensions (H x W x D): 1.0 x 6.5 x 6.0 in.
- Weight: 1 lb (.45 kg)

ENVIRONMENTAL SPECIFICATIONS

- Operating temperature: 32 to 104 °F (0 to 40 °C)
- Storage temperature: –4 to 149 °F (–20 to 65 °C)
- Relative humidity: 10 to 90 percent, noncondensing

MAXIMUM STATION-TO-STATION CABLING DISTANCE

- Single Mode, Intermediate Range, Span: 15 km

INTERNAL OSCILLATOR

- ±20ppm

NETWORK CONNECTORS (PER PORT/INTERFACE)

- Full Duplex, Single Mode

OPTICAL POWER PARAMETERS

SMI Interface

- Transmit output power: –15 to –8 dBm
- Receiver sensitivity: –28 to –8 dBm
- Optical source: Multilongitudinal Mode Lasers
- Maximum span: 15 km
- Wavelength: 1310 nanometers

MM Interface

- Transmit output power: –18 to –14 dBm
- Receiver sensitivity: –30 dBm
- Optical source: LED
- Maximum span: 2 km
- Wavelength: 1310 nanometers

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