Data Sheet

High Density Aggregation with the PA-MC-8TE1+ Port Adapter

In order to quickly and cost-effectively deploy aggregation requirements, service providers need a high-density solution that offers attractive per port pricing in a system that has the flexibility to accommodate other access solutions.

The Cisco® PA-MC-8TE1+ port adapter offers many advantages, including:

- 248 independent High-Level Data Link Controls (HDLC) channels
- Eight software-configurable T1 or E1 ports
- High-density, cost-effective deployment

OVERVIEW

Today's global enterprise and service-provider networks require diverse networking solutions to meet both economic and evolving connectivity needs. As corporate intranets expand to include more regional offices and increased numbers of remote and mobile users, yet maintain network requirements for scalable solutions and improved price/performance, the demand for high-density, cost-effective solutions increases.

Table 1. Features at a Glance

Feature	Description
Physical	Single-wide port adapter with 8 T1 or E1 PRI RJ48c ports fully supporting 30 B-channels or in channelized mode, up to 31 channels per port
Platform Support	Cisco 7200 Series Router with NPE-225, NPE-400, NPE-G1, NPE-G2, Cisco 7301, Cisco 7304, Cisco 7500 Routers and Cisco 7600 Routers
Feature Support	• Integrated channel/data service unit (CSU/DSU) • Load sharing across B-channels using Multilink Point-to-point Protocol (MLPPP) • ISDN, HDLC, X.25, Frame Relay, Link Access Procedure, Balanced (LAPB), Switched Multimegabit Data Service Data Exchange Interface (SMDS DXI), and PPP encapsulation across different channels • On-line insertion/removal (OIR) support on Cisco 7200, and 7304 • DS0 Loopback support available in 12.2(4)B and 12.2(8)T
Minimum Cisco IOS® Release Supported	• Cisco 7200/7301-12.2(12), 12.2(12)T, 12.1(14), 12.1(12)E, 12.0(22)S, 12.2(14)S, and later IOS versions • Cisco 7304-12.2(20)S and later IOS versions • Cisco 7500-12.2(13)T, 12.2(11)S, 12.1M, 12.2M, 12.0(22)S, and 12.1 (13E IOS versions • Cisco 7600-FlexWAN 12.1(13)E9 and 12.2(14)SX; Enhanced FlexWAN 12.2(14)SX IOS version

PRODUCT DESCRIPTION

The PA-MC-8TE1+ is a single-wide port adapter with interfaces that can be channelized, fractional, ISDN-PRI, or unframed (E1) with up to 248 independent HDLC channels definable for T1 and E1 applications. The PA-MC-8TE1 is also designed to provide a full eight-port PRI multichannel solution for the Cisco 7200, Cisco 7301, and Cisco 7500.

For network administrators who require the higher performance provided by a PRI ISDN connection, the new Cisco 8TE1+ provides one of the greatest densities currently offered in the industry at 8 PRI ports per card, up to 48 ports per Cisco 7200 system, up to 672 ports per 7-foot rack, or up to 432 ports per rack using the Cisco 7200 Rack Density System (RDS) for front-to-back airflow. The Cisco 7513 and 7613 can support 192 ports per system.

The RJ-48c ports are software-configurable to support T1 or E1 (120 Ohm) interfaces. In T1 mode, each port can support up to 23

B-channels, for an aggregate data rate of 1.536 Mbps per port. When configured to operate in channelized mode, all 24 channels are an aggregate data rate of 1.984 Mbps per port. When configured to operate in channelized mode, up to 31 channels are available per port.

PRODUCT APPLICATIONS

The Cisco PA-MC-8TE1+ port adapter is ideal for service providers and large enterprises looking to cost-effectively deploy high-density ISDN terminations of multiple remote-sites. The port adapter enables applications that require remote and branch office locations to be terminated on a single router in a corporate enterprise network. The card supports eight physical RJ-48c ports on a single-wide port adapter and allows concurrent operation of all ports. Combining the Cisco 8TE1+ with the Cisco 7200, 7301, 7304, 7500, and 7600 also ensures investment protection for deploying other network access technologies, such as digital subscriber line (xDSL).

Table 2. Features and Benefits

Feature	Benefit
High-Density ISDN[1] connectivity	Offers cost-effective per port ISDN deployment
248 Independent HDLC Channels	Offers channelization to DS0, full 8-port PRI support
Eight Independent T1 or E1 PRI ports	Offers flexible worldwide deployment with high-port density
Integrated CSU/DSU	Eliminates the need for any external CSU/DSUs or multiplexers
RJ-48c Physical Connectors	Offers optional 75-ohm configuration via the 120-75 cable adapter
DS0 Loopback for Cisco 7200 [available in 12.2(4) B and 12.2(8)T]	Allows low-level connectivity diagnostic tests to be run for any remote site without affecting the other sites sharing the same channelized T1 or E1 circuit
Load Sharing across B-channels Using Multilink Point-to-Point Protocol (MLPPP)	Allows dynamic bandwidth aggregation for demanding applications
ISDN Management Information Bases (MIBs)	Allows real-time monitoring of resources and bandwidth usages
HDLC, X.25, Frame Relay, LAPB, SMDS DXI, and PPP Encapsulation Across Different Channels	Allows flexible, per-DS0 independent configuration for connectivity to different systems
On-line Insertion/Removal (OIR) Support for Cisco 7200	Increases total network availability allowing replacement or upgrades to be done without interrupting service
Mechanically keying	Prevents incorrect slot-installation

PRODUCT ID

PA-MC-8TE1+; PA-MC-8TE1+=

[1] The Cisco 7600 and the 7304 platforms do not support ISDN

SYSTEM REQUIREMENTS

- Cisco 7200 Series Router with NPE-225, NPE-400, NPE-G1, NPE-G2
- Cisco 7301
- Cisco 7304
- Cisco 7500
- Cisco 7600

See Cisco IOS version support in Table 1

SPECIFICATIONS

- Electrical interfaces
  - Software configurable DSX-1 Line Interface (T1) or E1 ITU G.703 on per-PA basis
- Physical interface connectors
  - Eight RJ48c
- Channel density
  - T1: 24 per physical port, 192 per port-adapter
  - E1: 31 per physical port, 248 per port-adapter-Line Codes and framing supported
  - Line Codes
  - T1: AMI, binary 8-zero substitution (B8ZS) and Super Frame (SF) or Extended Super Frame (ESF)
  - E1: AMI, high-density bipolar with three zones (HDB3) and CRC4 on Non CRC4
- Indicator LEDs
  - 10 LEDs per port adapter
- Local Alarms: Asserted when local receive-signal indicates an error
- Remote Alarms: Asserted when remote source indicates an error
- Loopback: Asserted when line or local loopback is enabled
- Clock interface
  - Support for network or internal clocking on a per-port basis

REGULATORY COMPLIANCE

Products bear CE Marking indicating compliance with the 99/5/EEC directives, which includes the following safety and EMC standards.

- Safety
  - UL 1950
  - CAN/CSA-C22.2 No. 60950-00
  - EN 60950
  - IEC 60950
  - TS 001
  - AS/NZS 3260
  - IEC 60825-1

- IEC 60825-2
- EN 60825-1
- EN 60825-2
- 21 CFR 1040

- EMC
  - FCC Part 15 (CFR 47) Class B
  - ICES-003 Class B
  - EN55022 Class B
  - CISPR22 Class B
  - AS/NZS 3548 Class B
  - VCCI Class B
  - EN55024
  - ETS300 386-2
  - EN50082-1
  - EN61000-3-2
  - EN61000-3-3
- Telecom (E1)
  - CTR 12/13
  - ACA TS016
- Telecom (T1)
  - FCC Part 68
  - Canada CS-03
  - JATE Green Book

INDUSTRY EMC, SAFETY, AND ENVIRONMENTAL STANDARDS

- GR-63-Core Network Equipment Building Systems (NEBS) Level 3
- GR-1089-Core NEBS Level 3
- ETSI 300 019 Storage Class 1.1
- ETSI 300 019 Transportation Class 2.3
- ETSI 300 019 Stationary Use Class 3.1

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%, non-condensing

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 International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: 31 0 20 357 1000
Fax: 31 0 20 357 1100

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

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