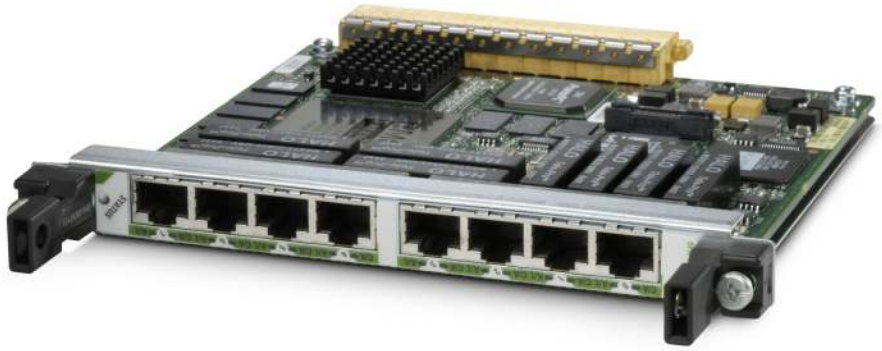
Cisco 8-Port Channelized T1/E1 Shared Port Adapter

The Cisco® I-Flex approach combines shared port adapters (SPAs) and SPA interface processors (SIPs), providing an extensible design that helps prioritize data, voice, and video services. Enterprise and service provider customers can take advantage of improved slot economics resulting from modular port adapters that are interchangeable across Cisco routing platforms. The I-Flex design maximizes connectivity options and offers superior service intelligence through programmable interface processors that deliver line-rate performance. I-Flex enhances speed-to-service revenue and provides a rich set of quality of service (QoS) features for premium service delivery while effectively reducing the overall cost of ownership. This data sheet contains the specifications for the Cisco 8-Port Channelized T1/E1 Shared Port Adapter (SPA; refer to Figure 1).

Figure 1. Cisco 8-Port Channelized T1/E1 Shared Port Adapter



Product Overview

Today's global enterprise and service provider networks require diverse networking solutions to meet both economic and evolving connectivity needs. The demand for high-density, cost-effective solutions increases as corporate intranets expand to include more regional offices and increased numbers of remote and mobile users.

The Cisco 8-Port Channelized T1/E1 SPA provides one of the greatest densities currently offered in the industry at 8 ports per SPA and up to 32 ports per SIP. At a cost per T1/E1 port less than that of a standard serial port with external channel service unit/data service unit (CSU/DSU), the Cisco 8-Port Channelized T1/E1 SPA is cost-effective for all WAN connectivity.

The SPA is designed to provide a full 8-port channelized solution for the Cisco 6500,7600 and the 12000 Series Routers. The interfaces can be channelized, fractional, or unframed (E1) with up to 256 independent High-Level Data Link Control (HDLC) channels definable for T1 and E1 applications. With these capabilities, the SPA eliminates the need for separate interface types for separate connection requirements.

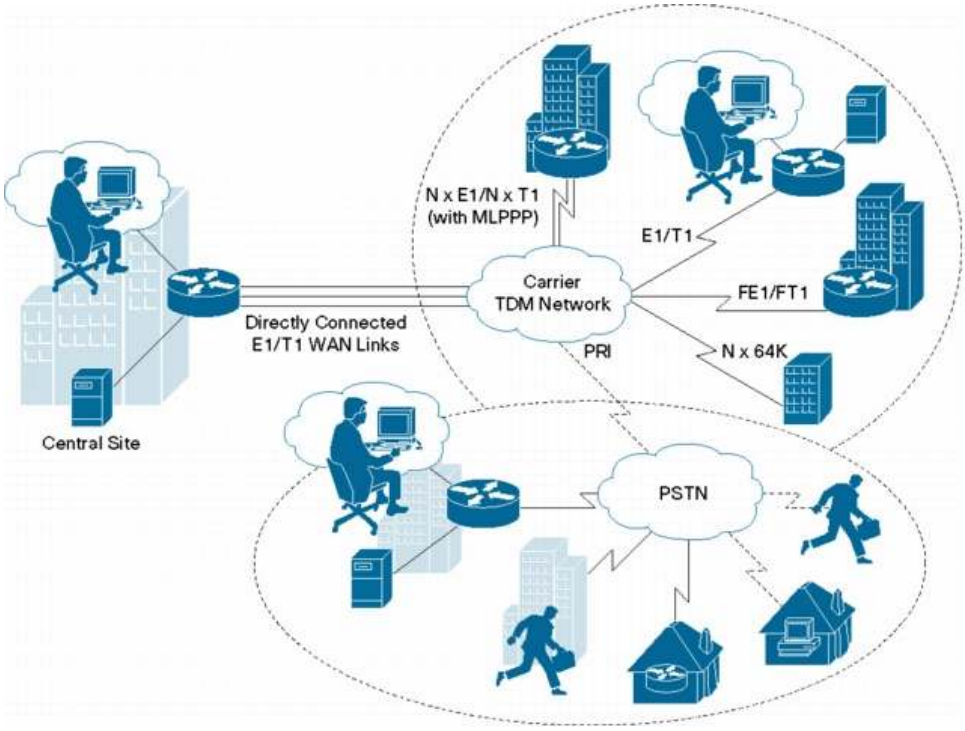
Multilink Point-to-Point Protocol (MLPPP) is supported (in hardware) to enable link aggregation greater than T1 capacity. Up to eight individual T1s can be combined within a multilink bundle that appears to be a single IP link. This enables service providers to provision greater-than-T1 bandwidth incrementally, without requiring migration of the circuit and customer premises equipment (CPE) infrastructure to T3 facilities.

The Cisco 8-Port Channelized T1/E1 SPA is hot-swappable and supports service-transparent online insertion and removal (OIR), allowing removal of the SPA without impacting the interface processor and other SPAs.

Applications

The Cisco 8-Port Channelized T1/E1 SPA is ideal for service providers and large enterprises looking to cost-effectively deploy high-density terminations of multiple remote sites (Figure 2). The SPA helps enable applications that require remote and branch-office locations to be terminated on a single router in a corporate enterprise network. For service provider applications where only DSU functions are required (for example, at sites colocated with a carrier), the Cisco 8-Port Channelized T1/E1 SPA provides high port density at a reduced cost per port. For E1 applications, the channelized E1/G.703 interface allows direct connectivity to 120-ohm G.703 lines.

Figure 2. High-Density Termination for Multiple Remote Sites



Features and Benefits

The Cisco 8-Port Channelized T1/E1 SPA offers many advantages, including:

- Eight software-configurable T1 or E1 ports
- Support for channelized and fractional T1/E1, and clear channel E1
- 256 independent HDLC channels
- Integrated CSUs/DSUs

- Support for all major encapsulations, including MLPPP and multilink Frame Relay (MLFR)
- Support for link fragmentation and interleaving (LFI) over Frame Relay and MLPPP

The Cisco SPA/SIP portfolio offers the following additional advantages:

- Modular, flexible, intelligent interface processors
  - Superior flexibility, supporting a combination of interface types on the same interface processor for consistent services, independent of access technology
  - Pioneering programmable interface processors that provide flexibility for the service diversity required in next-generation networks
  - Innovative design that supports intelligent service delivery without compromising on performance
- Increased speed-to-service revenue
  - The scalable, programmable Cisco architecture extended to 10 Gbps dramatically improves customer density, increasing potential revenue per platform.
  - Interface breadth (copper, channelized, POS, ATM, and Ethernet) on a modular interface processor allows service providers to roll out new services more quickly, helping ensure that all customers, large and small, receive consistent, secure, and guaranteed services.
  - High-density Small Form-Factor Pluggable (SFP) interfaces are featured for high-port-count applications with reach flexibility. Future optical technology improvements can be adopted using existing SPAs.
- Dramatically improved return on your routing investment
  - Improved slot economics and increased density reduce capital expenditures (CapEx).
  - The ability to easily add new interfaces as they are needed facilitates a "pay-as-you-grow" business model.
  - SPAs are shared across multiple platforms, and can be easily moved from one to another, providing consistent feature support, accelerated product delivery, and a significant reduction in operating expenses (OpEx) through common sparing as service needs change.

Product Specifications

Table 1 gives specifications of the Cisco 8-Port Channelized T1/E1 SPA.

Table 1. Product Specifications

Features	Descriptions
Product compatibility	Cisco Catalyst 6500 Series Switches Cisco 7600 Series Routers Cisco 12000 Series Routers Cisco XR 12000 Series Routers Cisco ASR 1000 Series Router Cisco ASR 9000 Series Router
Port density per SPA	8 ports
Physical interface	• RJ-45 connector • RJ-45 to BNC adapter cable option

Features	Descriptions
Protocols	Encapsulation protocols: • HDLC • Point-to-Point Protocol (PPP), RFC 1662 • Frame Relay, RFC 1490 Multilink support: • MLPPP, RFC 1990 • MLFR, FRF.16 • LFI over Frame Relay (FRF.12) and MLPPP
Features and functions	• Up to 8 independent T1 or E1 ports configurable as either all T1 or all E1 only • Full-duplex connectivity • Channelized and fractional T1/E1, clear channel E1 supported • Up to 256 usable n x 64K, where n is 1 to 24 for T1 and 1 to 32 for E1 • Line-rate performance for all ports channelized to DS-0 • Integrated CSUs/DSUs • Internal or network clocking selectable on each port • Per-port, dual-color status LED • Loopback capabilities: ◦ Local and remote loopback at the T1/E1 level ◦ Response to embedded loopback commands ◦ Insertion of loopback commands into transmitted signal ◦ N x DS-0 system-side loopback • Bit-error-rate-testing (BERT) pattern generation and detection per channel (maximum of 6 T1/E1 at a time) ◦ Programmable pseudorandom pattern up to 32 bits long, including all 0s, all 1s, 211, 215, 220, 220 Quasi-Random Signal Sequence (QRSS), 223, alternating 0s and 1s, 1-in-8, and 3-in-24 ◦ 32-bit error-count and bit-count registers ◦ Fully independent transmit and receive sections ◦ Detection of test patterns with bit error rates up to 10-2 • 24-hour history maintained for error statistics and failure counts, at 15-minute intervals • 16- and 32-bit cyclic redundancy check (CRC); 16-bit default
T1-specific features	• Data rate to 1.536 Mbps per port • Impedance: 100 ohms • D4 Super Frame (SF) or Extended Super Frame (ESF) framing • Alternate mark inversion (AMI) or binary 8-zero substitution (B8ZS) line encoding • ANSI T1.403 and AT&T TR 54016 Facility Data Link (FDL) • Selectable T1 cable length in increments from 0 to 655 feet • Selectable T1 CSU line build-out (LBO): 0, -7.5, -15, and -22.5 dB • Selectable T1 CSU receiver gain: 26 or 36 dB • Alarm monitoring: ◦ Alarm indication signal (AIS) ◦ Out of frame (OOF) ◦ Far-end alarm failure (yellow or distant alarm) • Performance data collection: ◦ CRC and bit errors ◦ Framing bit errors ◦ Line errored seconds ◦ Far-end errored seconds ◦ Far-end severely errored seconds ◦ Far-end unavailable seconds ◦ Line coding violation (LCV)

Features	Descriptions
E1-specific features	• Data rate to 2.048 Mbps (unframed mode) or 1.984 Mbps (framed mode) per port • Impedance: 120 ohms (RJ-45 to BNC adapter cable offers 75-ohm configuration option) • Unframed E1, CRC4, or non-CRC4 framing • High-density bipolar with three zeroes (HDB3) line encoding • Alarm monitoring: ◦ AIS ◦ OOF ◦ Remote alarm indication (RAI) ◦ Performance data collection: ◦ CRC and bit errors ◦ Framing bit errors ◦ Far-end block error (FEBE) ◦ LCV
Reliability and availability	• OIR • Single SPA software reset
MIBs	RFC 1406 MIB
Network management	Simple Network Management Protocol (SNMP)
Simple Network Management Protocol (SNMP)	• Weight: 0.75 lb (0.34 kg) • Height: 0.8 in. (2.03 cm) (single height) • Width: 6.75 in. (17.15 cm) • Depth: 7.28 in. (18.49 cm) • Power 9.4W maximum
Compliance and agency approvals	CE Marking Safety • UL 60950 • CSA 22.2 No.60950 • IEC 60950 • EN 60950 • AS/NZS 3260 • TS001 EMC • CFR47 • Part 15 • ICES 003 • EN55022 • CISPR 22 • AS/NZ 3548 • VCCI • EN55024 • EN50082-1 • EN61000-6-1 Telecom (T1) • ANSI T1.403 Telecom (E1) • ITU G.703 • G.704 • G.706
Environmental specifications	• Operating temperature: 41 to 104°F (5 to 40°C) • Storage temperature: –38 to 150°F (–40 to 70°C) • Operating humidity: 5 to 85% relative humidity • Storage humidity: 5 to 95% relative humidity

Ordering Information

To place an order, visit the Cisco Ordering Home Page or refer to Table 2.

Table 2. Ordering Information

Product Name	Part Number
Cisco 8-Port Channelized T1/E1 Shared Port Adapter	SPA-8XCHT1/E1
Adapter Cable – converts 75 ohms to 120 ohms	CAB-ADPT-75-120

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you protect your network investment, optimize network operations, and prepare your network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, refer to Cisco Technical Support Services or Cisco Advanced Services.

For More Information

For more information about the Cisco SPA/SIP portfolio, visit http://www.cisco.com/go/spa or contact your local Cisco account representative.

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