

Cisco 8-Port Clear Channel T3/E3 Shared Port Adapters

The Cisco® I-Flex approach combines shared port adapters (SPAs) and SPA interface processors (SIPs) to provide an extensible design that enables service prioritization for data, voice, and video services. 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 Clear Channel T3/E3 SPA (Cisco Clear Channel T3/E3 SPA; refer to Figure 1).

Figure 1. Cisco 8-Port Clear Channel T3/E3 SPA



Product Overview

Demand for high-capacity corporate backbones, high-speed access to the global Internet, and trunking connections for service provider internetworking has led to a growth in Clear Channel T3/E3 connections that has outpaced all other types and speeds of leased lines. This growth places tremendous strain on service providers and network managers who must provision and manage new T3/E3 connections. The Cisco Clear Channel T3/E3 SPA for the Cisco ASR 1000 Series Aggregation Services Routers offers high-density, highly manageable T3/E3 line connectivity and termination. With integrated line-interface data service units (DSUs) that allow T3/E3 lines to be directly terminated on a Cisco router, the Cisco Clear Channel T3/E3 SPA simplifies T3/E3 line management, replaces provisioning costs, and makes valuable rack space available.

The Cisco Clear Channel T3/E3 SPA is designed to provide direct connectivity to T3/E3 lines for full-duplex communications at the T3 rate of 44.736 MHz or E3 rate of 34.368 MHz. The Cisco 8-Port Clear Channel T3/E3 SPA offers 8 ports and the ports are configurable as T3 or E3 on the same SPA. To support the widest range of operational environments and to offer the greatest flexibility in provisioning Clear Channel T3/E3 connections, the Cisco Clear Channel T3/E3 SPA takes a groundbreaking step and brings together proprietary subrate and scrambling features of T3/E3 Data Service Unit (DSU) vendors Quick Eagle Networks (formerly Digital Link), Larscom, ADC Kentrox, Adtran, and Verilink. Subrate support in the Cisco Clear Channel T3/E3 SPA maximizes the application of these products in service provider environments for tiered T3 services. By simultaneously supporting interoperability with a wide range of third-party DSU vendors, the Cisco Clear Channel T3/E3 SPA offers the flexibility to support installed equipment without committing customers to a proprietary solution.

The Cisco Clear Channel T3/E3 SPA is hot-swappable and supports service-transparent online insertion and removal (OIR), allowing removal of the SPA without affecting the interface processor and other SPAs.

Applications

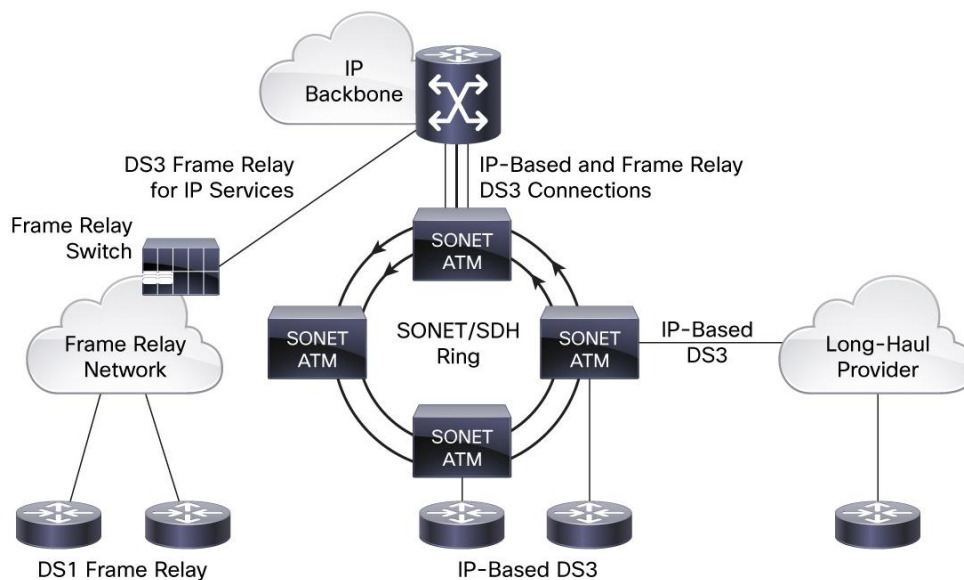
You can use the Cisco Clear Channel T3/E3 SPA to provide direct customer access or network-to-network connections. In some cases, T3/E3 offers the only high-speed service to remote points of presence (POPs) or customer installations that cannot obtain optical channelized service.

The Cisco Clear Channel T3/E3 SPA supports three different Layer 2 encapsulations of packets:

- Point-to-Point Protocol (PPP)
- High-Level Data Link Control (HDLC)
- Frame Relay

By supporting these three encapsulations, the Cisco Clear Channel T3/E3 SPA enables the Cisco ASR 1000 Series Routers to offer high-speed, IP-based direct access, or IP-over-Frame Relay deployments (Figure 2).

Figure 2. IP-Based Direct Access or IP-over-Frame Relay Deployments



Features and Benefits

The Cisco 8-Port Clear Channel T3/E3 SPA offers many advantages, including:

- Eight-port Clear Channel T3 or E3 options.
- Integrated DSU functions.
- Interoperability with all Cisco T3/E3-capable products and products from other leading T3/E3 DSU and Frame Relay equipment vendors.
- Full-duplex, full-rate, and subrate support.

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

- Highly 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, Packet over SONET [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 financials of your routing purchase
 - Improved slot economics and increased density reduce capital expenditures (CapEx).
 - The ability to easily add new interfaces as they are needed enables a “pay-as-you-grow” business model.

Product Specifications

Table 1 lists the specifications of the Cisco 8 -Port Clear Channel T3/E3 SPA.

Table 1. Product Specifications

Features	Descriptions
Product compatibility	<ul style="list-style-type: none"> • Cisco ASR 1000 Series Routers • Cisco IOS® XE Software Release 3.8 and later: Cisco ASR 1002-X, ASR1004, ASR 1006, and ASR 1013 • Cisco IOS XE Software Release 3.9 and later: Cisco ASR 1001 and ASR 1002 • Cisco IOS XE Software Release 3.8 and later: Cisco ASR 1000 Series SIP40 • Cisco IOS XE Software Release 3.9 and later: Cisco ASR 1000 Series SIP10
Port density per SPA	8-port options
Physical interface	<ul style="list-style-type: none"> • 1.0/2.3 RF connector (75-ohm impedance) • 1.0/2.3 RF-to-BNC adapter cable option

Features	Descriptions
Protocols	Serial encapsulations: <ul style="list-style-type: none"> • HDLC • PPP, RFC 1662 • Frame Relay, RFC 1490
Features and functions	<ul style="list-style-type: none"> • Up to 8 independent T3 or E3 ports configurable as either T3 or E3 • Full-duplex connectivity at T3 rate (44.736 MHz) or E3 rate (34.368 MHz) • Subrate and scrambling support of Quick Eagle Networks (formerly Digital Link), Larscom, ADC Kentrox, Adtran, and Verilink DSUs • Internal or network clock selectable per channel • Line and payload loopback capabilities: <ul style="list-style-type: none"> ◦ Local and remote loopback at the T3 level ◦ Response to embedded loopback commands ◦ Insertion of loopback commands into transmitted signal • Bit-error-rate-testing (BERT) pattern generation and detection per channel <ul style="list-style-type: none"> ◦ Selectable pseudorandom pattern up to 32 bits long, including all 0's, all 1's, 215, 220, 220 Quasi-Random Signal Sequence (QRSS), 223, and alternating 0's and 1's ◦ 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
T3-specific features	<ul style="list-style-type: none"> • C-bit or M23 framing • Binary 3-zero substitution (B3ZS) line coding • T3 far-end alarm and control (FEAC) channel support • Compliance with T3 pulse mask per ANSI T1.102-1993 • Maintenance data link (MDL) • Line build-out up to 450 feet (135 meters) • Alarm monitoring <ul style="list-style-type: none"> ◦ Alarm indication signal (AIS) ◦ Loss of signal (LOS) ◦ Out of frame (OOF) ◦ Far-end receive failure (FERF) • Performance data collection <ul style="list-style-type: none"> ◦ Line coding violation (LCV) ◦ Framing bit errors (F- or M-bit errors) ◦ P-bit error counts ◦ C-bit error counts ◦ Far-end block error (FEBE) counts
E3-specific features	<ul style="list-style-type: none"> • G.751, or G.832 and unframed • High-density bipolar with three zeroes (HDB3) line coding • Compliance with E3 pulse mask • Software-configurable E3 national service bits <ul style="list-style-type: none"> ◦ Alarm monitoring ◦ Alarm indication signal (AIS) ◦ Loss of signal (LOS) ◦ Out of frame (OOF) ◦ Far-end receive failure (FERF) ◦ Performance data collection ◦ Line coding violation (LCV) ◦ Framing-pattern errors ◦ FEBE counts
Reliability and availability	<ul style="list-style-type: none"> • OIR • Single SPA software reset
MIBs	RFC 2496 MIB (T3 MIB) and T1.231 MIB
Network management	Simple Network Management Protocol (SNMP)

Features	Descriptions
Physical specifications	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 2-port: 7.7W maximum 4-port: 8.4W maximum 8-port: 16W maximum
Compliance and agency approvals	<p>CE Marking</p> <p>Safety</p> <ul style="list-style-type: none"> UL 60950 CSA 22.2 No.60950 IEC 60950 EN 60950 AS/NZS 3260 TS001 <p>EMC</p> <ul style="list-style-type: none"> CFR47 Part 15 ICES 003 EN55022 CISPR 22 KN22 AS/NZ 3548 VCCI EN300386 EN55024 CISPR24 EN50082-1 EN61000-6-1 <p>Telecom (T3)</p> <ul style="list-style-type: none"> ANSI T1 107 T1 404 AT&T 54014 <p>Telecom (E3)</p> <ul style="list-style-type: none"> G.703 G.751 G.832
Environmental specifications	<ul style="list-style-type: none"> 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](#) and refer to Table 2.

Table 2. Ordering Information

Note: SPA-4XT3/E3 and SPA-2XT3/E3 cables are not supported with SPA-8XT3/E3.

Product Name	Part Number
Cisco 8-Port Clear Channel T3/E3 Shared Port Adapter	SPA-8XT3/E3
T3 or E3 Cable, DIN, BNC Female connector, 10 Feet	CAB-T3E3-DINBNC-F
T3 or E3 Cable with DIN, BNC male connector, 10 Feet	CAB-T3E3-DINBNC-M
T3 or E3 Cable with DIN, DIN, Female/Female connectors, 10 Feet	CAB-T3E3_DINDIN-F

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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