Cisco 2-Port Channelized T3/E3 Circuit Emulation Over Packet and Channelized ATM Shared Port Adapter

The Cisco® I-Flex design combines shared port adapters (SPAs) and SPA interface processors (SIPs), using an extensible design that enables service prioritization for voice, video, and data services. Enterprise and service provider customers can use the 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, which 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 2-Port Channelized T3/E3 Circuit Emulation over Packet (CEoP) and ATM SPA (Figure 1).

Figure 1. Cisco 2-Port Channelized T3/E3 CEoP and ATM SPA

Product Overview

The Cisco 2-Port Channelized T3/E3 circuit emulation over packet and ATM SPA is available on high-end Cisco routing platforms, offering the benefits of network scalability with lower initial costs and easy upgrades. The Cisco SPA/SIP portfolio continues Cisco's focus on investment protection along with consistent feature support, broad interface availability, and the latest technology. The Cisco SPA/SIP portfolio allows different interfaces (Packet over SONET/SDH [POS], ATM, Ethernet, etc.) to be deployed on the same interface processor.

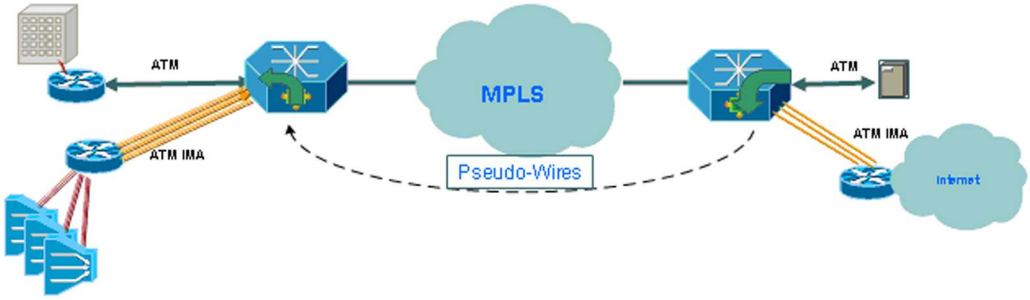
Applications

The SPA can be deployed for ATM service that delivers high-performance interconnectivity, metro, and intra-POP applications between service provider points of presence (POPs) for IP/Multiprotocol Label Switching (IP/MPLS) transport. It can also be deployed as customer premises equipment (CPE) to provide the data component to the service provider networks.

The ATM service allows service providers to effectively manage the bandwidth at the edges of the network while implementing value-added Layer 3 services. Advanced traffic management features (such as per-VC and per-VP traffic shaping) can also be leveraged to ensure that traffic from one customer does not impact traffic from another.

With advanced traffic shaping features and support for many ATM service classes, the SPA can be widely deployed in many parts of the service provider network. Figure 2 shows a sample scenario where the SPA is used to transport ATM traffic over IP/MPLS network using pseudowires.

Figure 2. Transport of ATM Traffic with ATM PWE over MPLS Network



Features at a Glance

- 2 T3 ATM ports per SPA
- Support for ATM traffic classes: UBR, UBR+, VBR-nrt, VBR-rt, CBR
- Support for ATM QoS: VC & VP shaping
- Support for Inverse Multiplexing over ATM (IMA)
- Support for ATM PWE (VC and VP mode cell-relay)
- Support for ATM UNI (3.0, 3.1)
- Online insertion and removal (OIR)
- Overall SPA status LEDs
- Per-port status LEDs

Feature Details

Some of the ATM features supported on the SPA include:

- Per-virtual-circuit and per-virtual-path traffic shaping: Traffic shaping is a function typically provided on ATM edge devices to ensure that bursty traffic conforms to a predetermined "contract." To implement traffic shaping, the Cisco ATM SPAs support per-virtual-circuit and per-virtual-path shaping, allowing flexibility and control over every virtual circuit and virtual path configured.

- IP/MPLS-to-ATM QoS mapping: Also supported is IP-to-ATM QoS setting through cell-loss priority (CLP) bit support, which allows customers to divide traffic on different virtual circuits, depending on the desired CoS.
- PWE: MPLS is the primary technology for ATM/IP convergence, and all the Cisco ATM SPAs allow the transport of Layer 2 traffic across an MPLS network. ATM PWE allows a migration path toward the consolidation of IP and ATM networks while protecting existing equipment investment, and it accommodates the scaling of existing services using MPLS. All ATM operations, administration, and maintenance (OAM) functions are transported.

Additional Features

The Cisco SPA/SIP portfolio offers these additional advantages:

- Highly modular, flexible, intelligent interface processors
  - Superior flexibility, providing 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 enables 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 lists specifications of the Cisco 2-Port Channelized T3/E3 CEoP and ATM SPA.

Table 1. Product Specifications

Features	Descriptions
Product compatibility	• Cisco ASR 1000 Series Routers • Cisco 7600 Series Routers • Cisco XR 12000 Series Routers
Port density per SPA	• 2-ports of channelized T3/E3

Physical interface	• 2-port T3/E3 cable
	• Visual status indicators (LEDs):
	  ◦ SPA status LED
	  ◦ Per-port LEDs
	  ◦ Carrier and alarm
	  ◦ Active and loopback

ATM Protocols	• IETF RFC 2684 (updated RFC 1483) support for multiple protocol encapsulations over ATM • IETF RFC 2364 and 2516 for Point-to-Point Protocol (PPP) over ATM • IETF RFC 1577 support for classical IP and Address Resolution Protocol (ARP) over ATM • ATM Forum UNI 3.0, 3.1, and 4.0
ATM Features and functions	• Constant bit rate (CBR) • Variable bit rate non-real-time (VBR-nrt) • Variable bit rate real-time (VBR-rt) • Unspecified bit rate (UBR and UBR+) • Maximum virtual circuits: 2,000 (subject to overall configuration limitations) • ATM and IP class of service (CoS) • Per-virtual circuit and per-virtual path traffic shaping • Per-virtual circuit and per-virtual path statistics • PWE3 support • ATM permanent virtual circuits (PVCs) and switched virtual circuits (SVCs) • F4 and F5 OAM cell support • Interim Local Management Interface (ILMI) 1.0 • Layer 2 transport and Layer 3 termination on the same port • ATM over MPLS
Network management	Simple Network Management Protocol (SNMP)
Reliability and availability	• Online insertion and removal (OIR) • Single SPA software reset
Physical specifications	• 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	• 20W
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

Compliance and agency approvals	Telecom (T3) • ITU G-703 • ANSI T1.102 • GR-499-CORE Safety • UL/CSA 60950-1 • IEC/EN 60950-1 • AS/NZS 60950.1 EMC • FCC Part 15 (CFR 47) • ICES 003 • CISPR 22 • AS/NZS CISPR22 • VCCI • EN55022 • EN55024 • EN300 386 • EN50082-1 • EN61000-6-1 Network Equipment Building System (NEBS) This product is designed to meet the following requirements (official qualification may be in progress): • SR-3580—NEBS: Criteria levels (Level 3 compliant) • GR-63-CORE—NEBS: Physical Protection • GR-1089-CORE—NEBS: EMC and Safety

Power and Environmental Requirements

These SPAs, when installed in Cisco routers, do not change the power or environmental requirements and standards of the router platform itself. Refer to the platform-specific data sheets for more information.

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 2-Port T3/E3 Circuit Emulation and ATM SPA	SPA-2CHT3-CE-ATM
Cable for 2-Port T3/E3 Circuit Emulation and ATM SPA	CAB-T3E3-RF-BNC-F CAB-T3E3-RF-BNC-M

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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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