Data Sheet

Cisco ONS 15454 SONET 48-Port DS-3/EC-1 Interface Card

The Cisco® ONS 15454 SONET 48-Port DS-3/EC-1 Interface Card provides a cost-effective, high-density DS-3/EC-1 interface solution for hand-offs and aggregation of large numbers of DS-3 and EC-1 circuits between networks. The card's high-density design frees up shelf-assembly slots for additional service-interface types.

Product Overview

The Cisco ONS 15454 SONET 48-Port DS-3/EC-1 Interface Card (Figure 1) provides 48 Telcordia-compliant, GR-499-CORE DS-3 C-Bit or M2/3 framed or unframed interfaces operating at 44.736 Mbps or GR-253-CORE EC-1 interfaces operating at 51.840 Mbps received over 75-ohm coaxial cable. The Cisco Transport Controller craft manager supports manual-mode or automode DS-3 frame-format provisioning, simplifying the activation of services. DS-3/EC-1 signals are terminated on one of the Cisco ONS 15454 shelf assembly's high-density electrical interface adapter (EIA) panels. The DS-3 interface is used for terminating 44.736 Mbps plesiosynchronous transport signals within a central office or customer premises. Each DS-3 signal is mapped and transported over a single SONET STS-1 in asynchronous DS-3 mapping mode according to GR-253-CORE encapsulation requirements. The output STS-1 is connected to the Cisco ONS 15454 system's cross-connect matrix, allowing the signal to be groomed with other services for transport over a higher-order optical (OC-n) signal. The EC-1 interface is used for terminating 51.840 Mbps SONET signals, typically from a voice switch found in a central office. Each EC-1 signal is mapped per GR-253-CORE and transported over a single SONET STS-1. The output STS-1 is connected to the Cisco ONS 15454 system's cross-connect matrix, allowing the signal to be multiplexed with other VT1.5- or STS-1-based signals for transport over a higher-order optical (OC-n) signal.

Figure 1

Cisco ONS 15454 48-Port DS-3/EC-1 Electrical Interface Card

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The 48-port DS-3/EC-1 card supports multiple card-protection options, including 1:0 (unprotected) and 1:N, N•2. It can be provisioned to operate as a working or protection card, reducing spares inventories and their associated cost. The 48-port DS-3/EC-1 card supports circuit-level interoperability with the existing Cisco ONS 15454 12-port DS-3 and 12-port EC-1 cards. The system supports in-service upgrades, with compatible configurations, from the 12-port DS-3 or EC-1 cards to the 48-port card, allowing the user to increase the number of interfaces supported on a shelf assembly or reduce the number of shelf slots required to terminate a given quantity of DS-3/EC-1 interfaces.

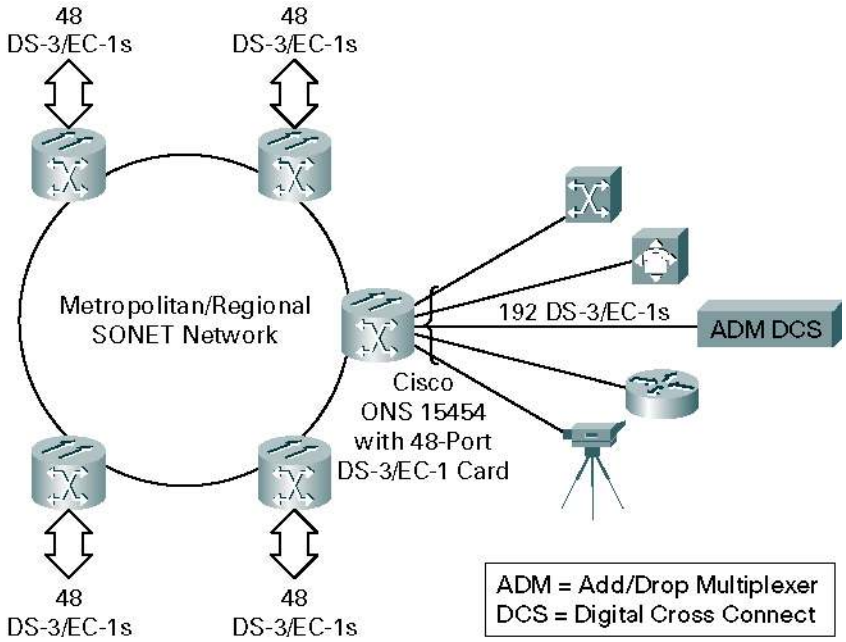
To aid with system troubleshooting and fault isolation, the 48-port DS-3/EC-1 card supports near-end and far-end performance-monitoring capabilities at the SONET, DS-3, and EC-1 levels. Loopback support, including near-end and far-end facility (line) and terminal configurations along with far-end activation code (FEAC) support, further simplifies fault-isolation procedures. The card provides three faceplate-mounted status indicators: a red FAIL LED for hardware-level problems; dual color, green/yellow ACTIVE/STANDBY LED to indicate when the card is being used as the active card or a protection card, and a yellow SIGNAL FAIL LED for problems being received on incoming ports. The condition of the card's individual interface ports can be queried using the shelf's liquid crystal display (LCD) panel as well as the browser-based Cisco Transport Controller craft interface.

Applications

The Cisco ONS 15454 Multiservice Provisioning Platform (MSPP), using both low-density and high-density DS-3 and EC-1 cards, supports service provider hub applications requiring the aggregation of large quantities of DS-3 or EC-1 services, and transports them to a large central office for hand-off to core-network switches, voice switches, add/drop multiplexers (ADMs), routers, digital cross-connect systems (DCSs), or other networking equipment (Figure 2).

Figure 2

Service Provider DS-3/EC-1 Hub Application



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The 48-port DS-3/EC-1 card reduces the number of systems required and their associated footprint, power, and cabling to terminate the DS-3/EC-1 services.

The 48-port DS-3/EC-1 card also helps reduce the number of service cards, opening up shelf slots for other services. Figure 3 depicts a Cisco ONS 15454 OC-192-based network element delivering 96 DS-3 services, using the 12-port DS-3 card. Figure 4 depicts the additional services that can be delivered over the same footprint when using the 48-port DS-3/EC-1 card.

Figure 3

Cisco ONS 15454 Configuration with 12-Port DS-3/EC-1 Card

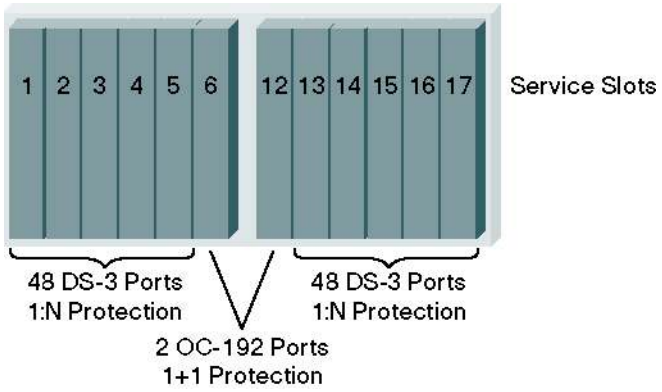
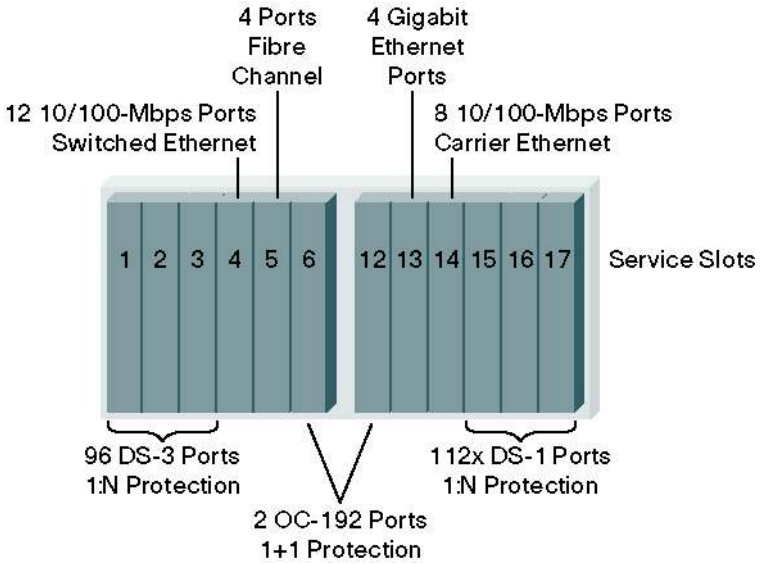


Figure 4

Cisco ONS 15454 Configuration with 48-Port DS-3/EC-1 Card



The high-density DS-3/EC-1 card dramatically increases the overall system flexibility to support the many service types found in the metro networks.

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Key Features and Benefits

The Cisco ONS 15454 SONET 48-Port DS-3/EC-1 Electrical Interface Card offers the following features:

- ∑ High-density architecture: Ability to drop OC-192 worth of DS-3/EC-1 services from a single shelf
- ∑ Service flexibility: Per-port provisioning of DS-3 and EC-1
- ∑ Versatility: In-service upgrades from 12-port DS-3 or EC-1 cards to 48-port cards (slot dependent)
- ∑ Mixed protection groups: 48-port DS-3/EC-1 card in 1:N protection group can protect 12-port DS-3, 12-port EC-1, and 48-port DS-3 cards for greater flexibility (slot dependent)
- ∑ Reduced capital expenditures (CapEx): Lowers cost per port for delivering high-demand DS-3/EC-1 services
- ∑ Simplified service provisioning: Provisionable response to far-end activation code (FEAC) requests allows users the flexibility to manage the behavior of their network
- ∑ Robust troubleshooting and fault isolation: Full performance monitoring of DS-3, EC-1, and SONET facilities; near-end and far-end facility and line loopbacks; J0-byte section trace, and J1-byte path trace support

Product Specifications

Table 1 and Table 2 outline the specifications for the Cisco ONS 15454 SONET 48-Port DS-3/EC-1 Electrical Interface Card.

Table 1. Regulatory Compliance

Countries	
SONET Platform	Canada European Union Hong Kong Japan Korea Mexico United States
Electromagnetic Compliance – Class A	ETSI 300-386-TC Telcordia Technologies Network Equipment Building Standards (NEBS) GR-1089-CORE, Issue 3 (Level 3, Type 2 and Type 4) CISPR 22, CISPR 24 IC ICES-003 Issue 3, 1997 FCC 47CFR15 EN55022, EN55024
Product Safety	Telcordia Technologies NEBS GR-1089-CORE, Issue 3 (Level 3, Type 2 and Type 4) IEC 60950-1/EN 60950-1, 1st Edition UL and cUL/CSA 60950-1 1st Edition
Environmental	Telcordia Technologies NEBS GR-63-CORE, Level 3 ETS 300 019-2-1 (Storage, Class 1.1) ETS 300 019-2-2 (Class 2.3) ETS 300 019-2-3 (Class 3.1E)

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Countries	
Customer Requirements	AT&T Network Equipment Design Specification (NEDS) SBC (TP76200MP) Verizon TCG Checklist MCI/Worldcom ESD

Table 2. Product Specifications

Parameter	Value
Signal Interface	DS-3, 44.736 Mbps ±20ppm, Telcordia GR-499-CORE and ITU-T G.703 EC-1, 51.840 Mbps, Telcordia GR-253-Core
Payload Framing	DS-3: C-Bit, M23, unframed; automatic or manual provisioning EC-1: SONET framed
Card-Protection Capabilities	1:0 (unprotected) 1:N, N≤2 Working slots: 1, 2, or 16, 17 Protection slots: 3 (A-side slots) and 15 (B-side slots)
Card Upgrades **(Slot Dependent)**	12-port DS-3 card to 48-port DS-3/EC-1 card, 1:N, N≤2 protection group 12-port EC-1 card to 48-port DS-3/EC-1 card, 1:1 protection group to 1:N, N≤2
Line Build-Out	0 to 225 ft 226 to 450 ft
Performance Monitoring	DS-3, EC-1, and SONET
Loopback Modes	Near-end and far-end facility/line and terminal FEAC: ∑ Provisionable response modes ∑ Transmit support
Path Trace	J1-byte
Section Trace	J0-byte
Card-Level Indicators	Red “Fail” LED – hardware problem Green/amber “ACT/STBY” LED – identifies ACTIVE or STANDBY card state Yellow “SF” LED – signal failure on the line
Physical Dimensions	Single-slot width 12.65 x .716 x 9 in. (H x W x D)
Power Nominal Maximum	 42W 45W
Temperature and Humidity Operating Storage	 –40 to 149°F (–40 to 65°C), 5 to 95%, noncondensing humidity –40 to 185°F (–40 to 85°C), 5 to 95%, noncondensing humidity

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System Requirements

The Cisco ONS 15454 system requirements for operation of the 48-port DS-3/EC-1 card are outlined in Table 3.

Table 3. System Requirements

System Parameter	Value
Shelf Assembly	15454-SA-HD
Electrical Interface Assembly (EIA) Panels	Universal Backplane Interface Connector (UBIC) or 96-port mini-BNC
Processor	TCC2 and TCC2P
Cross-Connect	XC-10G
System Software	Release 5.0 (SONET) for DS-3 Release 6.0 or later (SONET) for DS-3 and EC-1
Slot Compatibility	Slots 1 to 3, 15 to 17

Ordering Information

To place an order, visit the Cisco Ordering Home Page. Table 4 outlines the ordering code for the Cisco ONS 15454 48-Port DS-3/EC-1 Interface Card.

Table 4. Ordering Information

Product Description	Part Number
Cisco ONS 15454 SONET 48-Port DS-3/EC-1 Interface Card, DS-3, 48 circuits, industrial temperature, SONET system	15454-DS3EC1-48

Service and Support

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For More Information

For more information about the Cisco ONS 15454, visit http://cisco.com/en/US/products/hw/optical/ps2006/ps2010/index.html or contact your local account representative.

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