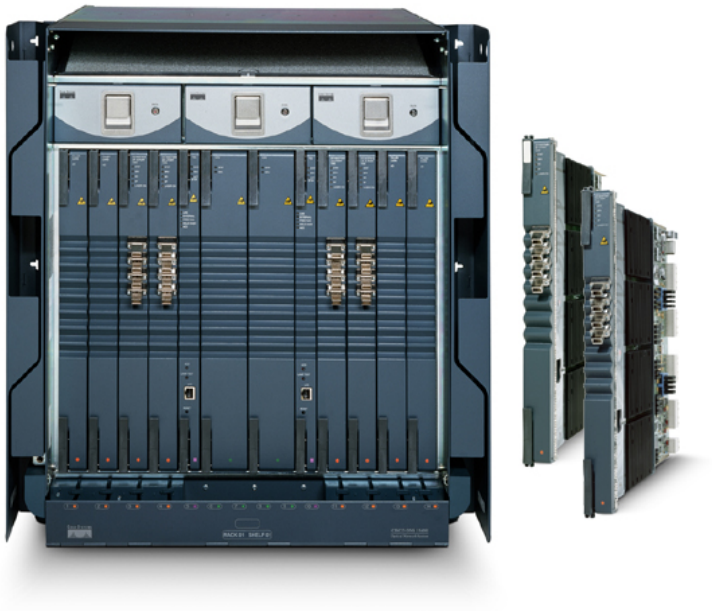
Data Sheet

Cisco ONS 15600 Series 4-Port 10-Gbps Optical Interface Cards

The Cisco® ONS 15600 Series Multiservice Switching Platform (MSSP) offers 40 Gbps of transport bandwidth with two 4-port OC-192/STM-48 interface cards, one short reach/short haul (SR/SH) and one long reach/long haul (LR/LH), providing users the capacity to aggregate and transport mission-critical metropolitan-area (metro) traffic (Figure 1).

Figure 1
Cisco ONS 15600 Series MSSP and the 4-Port OC-192/STM-64 LR/LH and SR/SH Cards



Background

Fully Cisco designed and engineered, the Cisco ONS 15600 Series MSSP simplifies and revolutionizes bandwidth management in the metro core by allowing service providers to transparently integrate their metro core and metro edge networks, while dramatically reducing initial turn-up costs. The Cisco ONS 15600 Series MSSP combines the functions of multiple metro systems, including SONET/SDH multiplexers and digital cross-connect network elements, together in one scalable, easy-to-use platform with carrier-class reliability, availability, serviceability, operations, and management.

Product Overview

The OC-192/STM-64 capabilities on the Cisco ONS 15600 Series consist of a LR/LH and a SR/SH optical line card, providing interface specifications that meet the varied application needs of the service provider. Table 1 outlines the new Cisco ONS 15600 Series 4-Port OC-192/STM-64 Short-Reach/Short-Haul Interface Card and the Cisco ONS 15600 Series 4-Port OC-192/STM-64 Long-Reach/Long-Haul Interface Card now available for the Cisco ONS 15600 Series, and the applications they are designed to support.

Table 1. Cisco ONS 15600 Series 4-Port OC-192/STM-64 SR/SH and LR/LH Interface Cards with Applications

Component	Application
SR/SH interface card	Suitable for metro regional or interoffice connections between central offices with span lengths of less than 2 km
LR/LH interface card	Suitable for metro regional or interoffice connections between central offices with span lengths between 40 and 80 km

Both interface cards provide four transmit and four receive optical interfaces in a single-slot footprint within the Cisco 15600 Series shelf assembly. Each port interface operates at the standard SONET/SDH (Telcordia GR-253-CORE and ITU G.703) 9.95328-Gbps bit rate. The SR/SH and LR/LH OC-192/STM-64 cards use four OGI connectors on the card faceplate that are routed through a cable-routing module to SC, ST, or FC terminations. The cards carry both concatenated payloads of STS-3c/VC-4, STS-12c/VC-4-4c, STS-24c/VC-4-8c, STS-48c/VC-4-16c, and STS-192c/VC-4-64c and nonconcatenated payloads on an STS-1 basis. In SONET mode, each optical port can be provisioned as STM-48 to enable the tunneling of SDH payloads in the form of STS-Nc concatenated payload over a SONET network. This helps enable North American service providers to transport SDH traffic from international cable landing points to customer sites. When operated within the outlined specifications (refer to Table 4) each port interface transports a 10-Gbps signal with a minimum bite error rate (BER) of 10E-12.

The OC-192/STM-64 SR/SH and LR/LH cards are deployable in any of the eight multiservice slots (slots 1–4 or slots 11–14) of the Cisco ONS 15600 Series platform. The cards can be commissioned for use in unidirectional-path switched ring/sub network connection protection (UPSR/SNCP), 2/4-fiber bidirectional line switched ring/multiplex section-shared protection ring (BLSR/MS-SPR), 1 + 1 automatic protection switching/multiplex section protection (APS/MSP), or path-protected mesh network (PPMN) architectures, offering service providers the flexibility to build the type of network required to meet their service demands, traffic patterns, and user needs. This card-provisioning flexibility also helps reduce the cost of inventory and simplifies engineering and deployment.

The OC-192/STM-64 SR/SH and LR/LH cards incorporate faceplate-mounted LEDs to provide a quick visual check of the operational status at the card. Printed on the faceplate is an icon, an orange circle, which indicates the shelf slot where the card can be physically installed. The card is supported by the integrated Cisco ONS 15600 Series Cisco Transport Controller Craft Manager, which provides the user access for operations, administration, maintenance, and provisioning (OAM&P) for the system.

Cisco ONS OC-192/STM-64 Optical Features and Specifications

High-Density Compact Design

- Single-width card-slot design
- 4 OC-192/STM-64 ports per card
- Up to 8 OC-192/STM-64 cards or 32 OC-192/STM-64 ports per shelf assembly

Flexible Restoration Options

- UPSR/SNCP
- 2-fiber BLSR/MS-SPRing
- 4-fiber BLSR/MS-SPRing (R6.0)
- 1 + 1 APS/MSP, 1 + 1 uni- or bidirectional
- PPMN
- Unprotected (0 + 1)

Networking Flexibility

- Ring
- Multiple rings
- Terminal
- Linear add/drop multiplexer (ADM)

Cisco ONS 15600 Series System Specifications

Table 2 gives regulatory compliance information, Table 3 gives system requirements, and Table 4 gives specifications of the Cisco ONS 15600 Series 4-Port 10-Gbps optical interface cards.

Table 2. Regulatory Compliance[1]

Countries
Canada
United States
European Union

1. All compliance testing and documentation may not be completed at release of the product. Check with your Cisco Systems® account representative for countries outside of Canada, the United States, and the European Union.

Table 3. System Requirements

Component	Cisco ONS 15600 SONET	Cisco ONS 15600 SDH
Processor	TSC	TSC
Cross-connect	CXC or SSXC[1]	CXC
Shelf assembly	15600-IO-SHELF shelf assembly	15600-IO-SHELF shelf assembly
System software	R1.1.0 or greater	R1.4
Slot compatibility	1–4 and 11–14	1–4 and 11–14

1. CXC cross-connect card supported only with R1.1 system software. All software releases greater than R1.1.0 requires the SSXC cross-connect card.

Table 4. Card Specifications

Specification	OC-192/STM-64 Long Reach, LR-2	OC-192/STM-64 Short Reach, SR-1
Wavelength, nominal	1550 nm	1310 nm
Spectral range	1530 to 1565 nm	1290 to 1330 nm
Bit rate	9.96 Gbps	9.96 Gbps
Connector type (Tx/Rx)	OGI	OGI
Optical Transmitter		
Type	Lithium niobate (LN) external modulator transmitter	Fabry Perot (FP) laser
Output power	+4 to +7 dBm	–6 to –1 dBm
Laser safety class	1	1
Optical Receiver		
Type	APD/T1A	APD/T1A
Input power	–22 to –9 dBm	–11 to –1 dBm
Link-loss budget	24 dB min. with no dispersion	5 dB min. with no dispersion

Specification	OC-192/STM-64 Long Reach, LR-2	OC-192/STM-64 Short Reach, SR-1
BER, minimum	10E-12	10E-12
Management		
Card LEDs		
STAT Card failure Normal operation	 Red OFF	 Red OFF
SRV In service Out of service	 Green Amber	 Green Amber
SD (signal degrade)	Blue	Blue
SF (signal fail)	Red	Red
LASER ON	Green	Green
Power		
Card power draw, nominal	230W	150W
Card power draw, maximum	260W	225W
Storage Environment		
Operating temperature	23 to 122°F (–5 to +50°C)	23 to 122°F (–5 to +50°C)
Humidity	5 to 95% noncondensing	5 to 95% noncondensing
Dimensions (H x W x D)	16.50 x 1.07 x 18.31 in. (419 x 27 x 465 mm)	16.50 x 1.07 x 18.31 in. (419 x 27 x 465 mm)
Card Weight	12.0 lb (5.44 kg)	12.0 lb (5.44 kg)

Ordering Information

Table 5 gives ordering information for the Cisco ONS 15600 Series 4-Port 10-Gbps optical interface cards.

Table 5. Ordering Information

Part Number	Description
15600-192S4SR1310	Cisco ONS 15600 Series 4-port OC-192/STM-64 SR/SH card, OGI connector
15600-192L4LR1550	Cisco ONS 15600 Series 4-port OC-192/STM-64 LR/LH card, OGI connector

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