

Optical Service Channel Cards for the Cisco ONS 15454 Multiservice Transport Platform

The Cisco® ONS 15454 Multiservice Transport Platform (MSTP) (Figure 1) provides a comprehensive, intelligent dense wavelength-division multiplexing (DWDM) solution for expanding metropolitan (metro) and regional bandwidth

Figure 1. Cisco ONS 15454 Optical Service Channel Cards



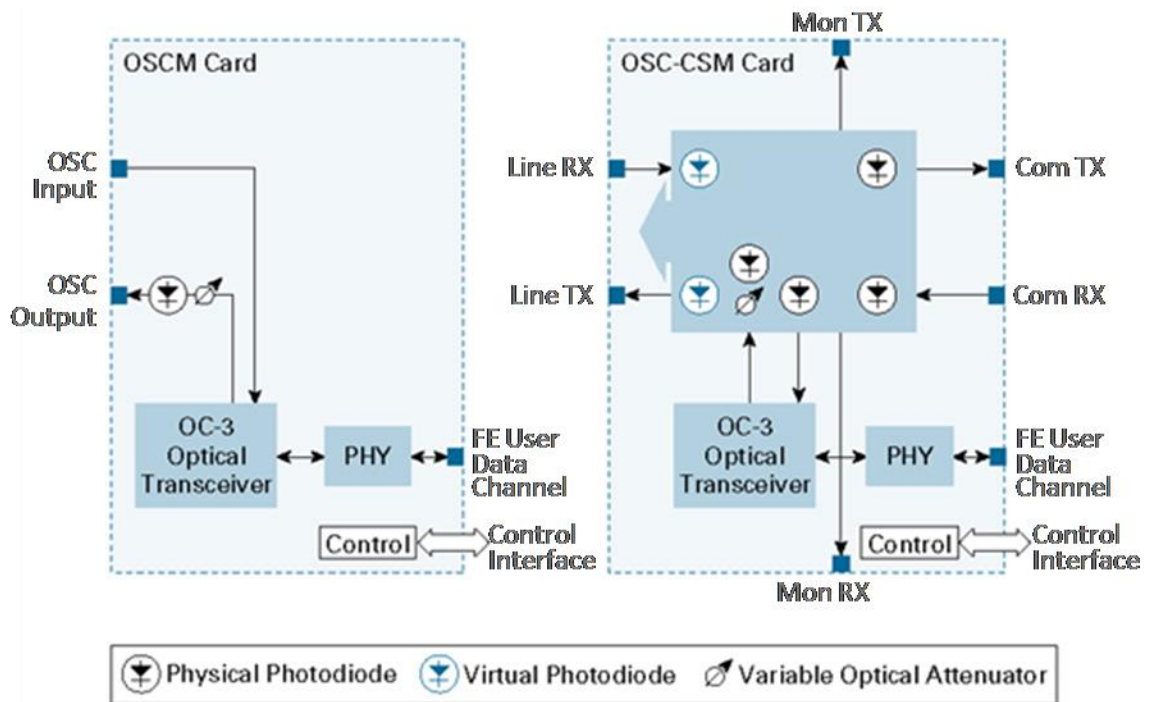
Product Overview

The Cisco ONS 15454 MSTP incorporates an optical service channel (OSC) to provide a bidirectional channel connecting all the nodes in a DWDM ring. The OSC offers support for the following functions:

- Supervisory data channel (SDC) for node-to-node communications
- Distribution of synchronous clocking
- 100-Mbps user data channel

The OSC cards provide an OC-3/STM-1 formatted, 1510-nanometer (nm) signal inserted onto the fiber of a DWDM network outside the band for transmission signals (Figure 2). In nonamplified sites, the OSC-Combiner/Splitter Module (OSC-CSM) card provides access to the OSC received signal while expressing the remaining wavelengths and its transmitted signal is optically coupled into the fiber together with the transmitted wavelengths. In amplified sites, an OSC optical add/drop multiplexer (OADM) filter is integrated within the booster amplifier, providing the OSC wavelength to the OSCM (Optical Service Channel Module) card (Figures 3, 4, and 5). The OSC card's optical interface provides extended optical reach to meet the node-to-node distances found in typical metro and regional networks. The power levels of the OSC and composite express channels are controlled via software-controlled variable optical attenuators (VOAs) by the intelligent DWDM software of the Cisco ONS 15454 MSTP.

Figure 2. OSCM and OSC-CSM Card Functional Diagrams



The Cisco ONS 15454 OSC cards are plug-in modules that take advantage of the proven Cisco ONS 15454 carrier-class features to maintain management connectivity for the Cisco ONS 15454 MSTP network. Table 1 describes the deployment applications of the OSC card.

Table 1. OSC Cards with Applications

Component	Deployment Application
OSCM	This card provides an internode communications channel for management and user data. Used in nodes with the booster amplifier, this card allows network-level communications to support intelligent DWDM implementation without the use of client transponder data-communication overhead.
OSC-CSM	This card provides an internode communications channel for management and user data, allowing network-level communications to support intelligent DWDM implementation without the use of client transponder data-communication overhead. It integrates an optical add/drop filter to remove and add the OSC wavelength while passing the other wavelengths. The OSC-CSM is used in nodes without a booster amplifier or future cross-connect equipped systems.

The Cisco ONS 15454 OSC cards incorporate faceplate-mounted LEDs, providing a quick visual check of the operational status at the card. Printed on each of the faceplates is an icon, either a green cross or an orange circle, which is matched to shelf-slot icons indicating the shelf slot where the card can be physically installed. The cards are supported by the integrated Cisco ONS 15454 Cisco Transport Controller craft manager, which provides the user access for operations, administration, maintenance, and provisioning (OAM&P) for the system.

Figure 3. Cisco ONS 15454 MSTP Hub Node

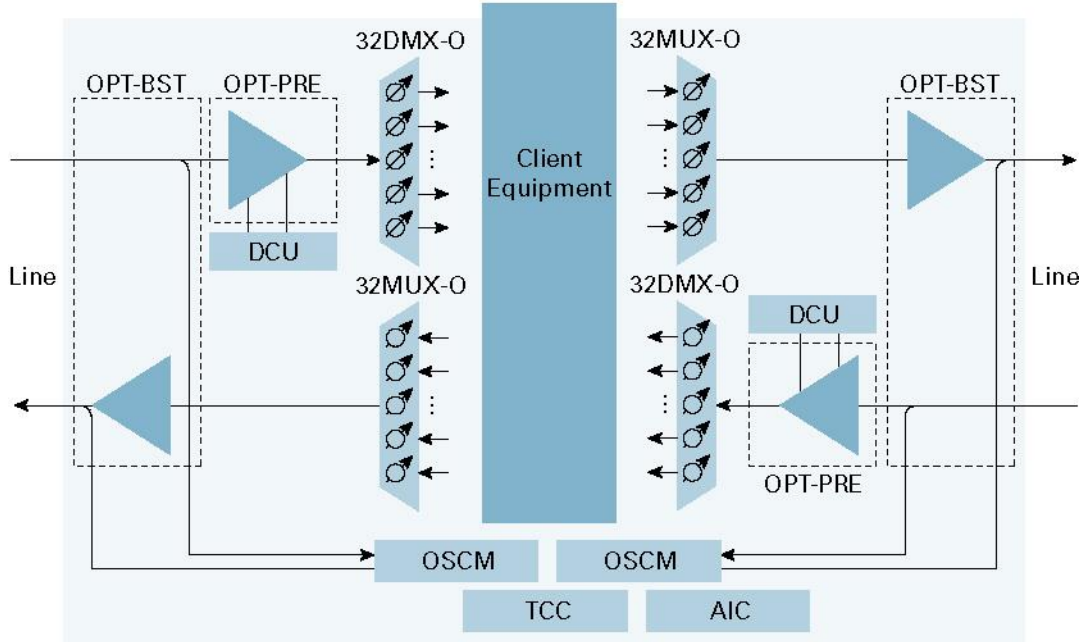


Figure 4. Terminal Node

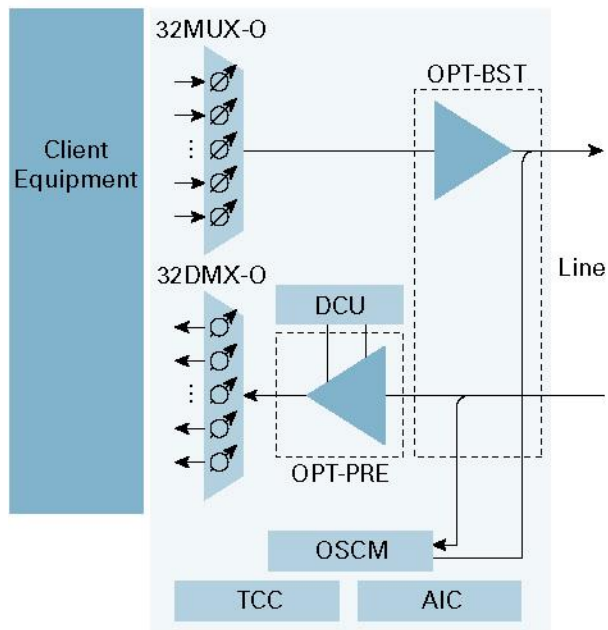
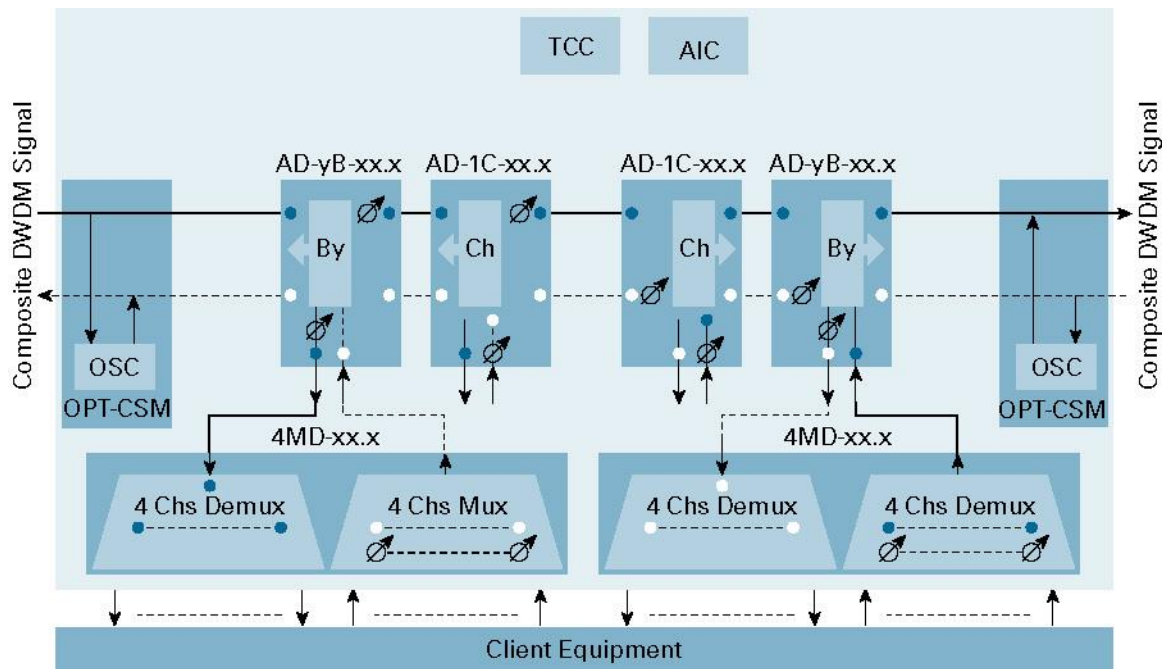


Figure 5. Passive OADM Node



OSC Card Specifications

Tables 2 through 5 give specifications for the Cisco ONS 15454 OSC card.

Table 2. Regulatory Compliance¹

Countries Supported	
SONET/ANSI System	SDH/ETSI System
<ul style="list-style-type: none"> • Canada • United States • Mexico • Korea • Japan • European Union 	<ul style="list-style-type: none"> • European Union • Australia • New Zealand • Singapore • China • Mexico • Hong Kong • Korea
EMC Emissions (radiated, conducted)	
<ul style="list-style-type: none"> • ICES-003 • GR-1089-CORE • 47CFR15 • VCCI V-3/2000.04 • CISPR24 	<ul style="list-style-type: none"> • EN 300 386-TC • EN 50081-1 • EN 55022 • AS/NZS3548, Amendment 1 + 2 1995
EMC Immunity	
<ul style="list-style-type: none"> • GR-1089-CORE • CISPR24 • EN 50082-2 	<ul style="list-style-type: none"> • EN 300-386-TC • EN 55024

Countries Supported	
Safety	
• CAN/CSA-C22.2 No. 60950-00 Third Ed., 12/1/2002	• UL 60950 Third Ed., 12/1/2000
• GR-1089-CORE	• EN 60950 (to A4)
• GR-63-CORE	• IEC60950/EN60950, Third Ed.
• TS001	• AS/NZS3260 Supplements 1, 2, 3, 4, 1997
Environmental	
• GR-63-CORE	• ETS 300-019 (Class 3.1E) (Note 2)
• AT&T Network Equipment Design Specifications (NEDS)	
Structural Dynamics	
• GR-63-CORE	• ETS 300-019 (Class 3.1E) (Note 2)
• AT&T NEDS	
Power and Grounding	
• SBC (TP76200MP)	• ETS 300-253 (grounding)
• ETS 300-132-1 (DC power)	
Optical	
• GR-253-CORE	
• G.692	
Quality	
• TR-NWT-000332, Issue 4, Method 1 calculation for 20-year mean time between failure (MTBF)	

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

Table 3. System Requirements

Component	Cisco ONS 15454 SONET/ANSI	Cisco ONS 15454 SDH/ETSI
Processor	TCC2 OR TCC2P	TCC2 OR TCC2P
Cross-connect	All (not required)	All (not required)
Shelf assembly	15454-SA-ANSI or 15454-SA-HD shelf assembly with FTA3 version fan-tray assembly	15454-SA-ETSI shelf assembly with SDH 48V fan-tray assembly
System software	Release 4.6.0 SONET or later	Release 4.6.0 SDH or later

Table 4. Common Amplifier Specification

Specification	
Management	
Card LEDs	
Failure (FAIL)	Red
Active/standby (ACT/STBY)	Green/yellow
Signal fail (SF)	Yellow
Operating environment	
Temperature	23 to 131°F (–5 to 55°C)
Humidity	5 to 95% noncondensing
Storage environment	
Temperature	–40 to 131°F (–40 to 85°C)
Humidity	5 to 95% noncondensing

Table 5. OSC Card Specifications-Specific

Specification	OSCM	OSC-CSM
Optical parameters		
Insertion loss (maximum at minimum VOA)		
Express (line input to composite Output)	–	2.2 dB
Express (composite input to line Output)	–	2.2 dB
Monitor	–	~30 dB
VOA dynamic range	30 dB	30 dB
Maximum input power	300mW	300mW
Filter type	–	Interferential
Filter passband (at 0.5 dB resolution bandwidth)		
Transmit filter	–	1500 to 1520 nm
Receiver filter	–	1529 to 1562 nm
OC-3/STM-1 (155 Mbps) optical transceiver		
Transmit power	3 dBm (+/-2 dBm)	3 dBm (+/-2 dBm)
Transmit wavelength (nominal)	1510 nm	1510 nm
Receiver sensitivity (at 10E-10 bit error rate [BER])	–40 dBm	–40 dBm
Connectors		
Input/output ports	LC	LC
Monitor ports	LC	LC
Power		
Card power draw		
Typical	23W	23W
Maximum	26W	27W
Physical		
Size	1 slot	1 slot
Supported shelf slots	8, 10	1–6, 12–17

Ordering Information

Table 6 provides ordering information for the Cisco ONS 15454 OSC cards.

Table 6. System Ordering Information¹

Part Number	Description
15454-OSCM 15454E-OSCM	Optical service channel card, 1510 nm, LC connector
15454-OSC-CSM 15454E-OSC-CSM	Optical service channel card, integrated combiner/separator, 1510 nm, LC connector

1. "E" in the Part Number (for example, 15454E-) indicates compatibility with SDH/ETSI systems.



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