

Mesh/Multiring Upgrade Card for the Cisco ONS 15454 Multiservice Transport Platform

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

Product Overview

The Cisco ONS 15454 MSTP offers a Mesh/Multiring Upgrade (MMU) card, shown in Figure 1, to provide a simple, reliable, and cost-effective solution to upgrade a Degree-2 ROADM Node to support additional flexibility. The MMU card is part of the Cisco ONS 15454 MSTP intelligent DWDM architecture engineered to reduce DWDM complexity and speed the deployment of next-generation networking solutions.

Figure 1

Cisco ONS 15454 Mesh/Multiring Upgrade Card



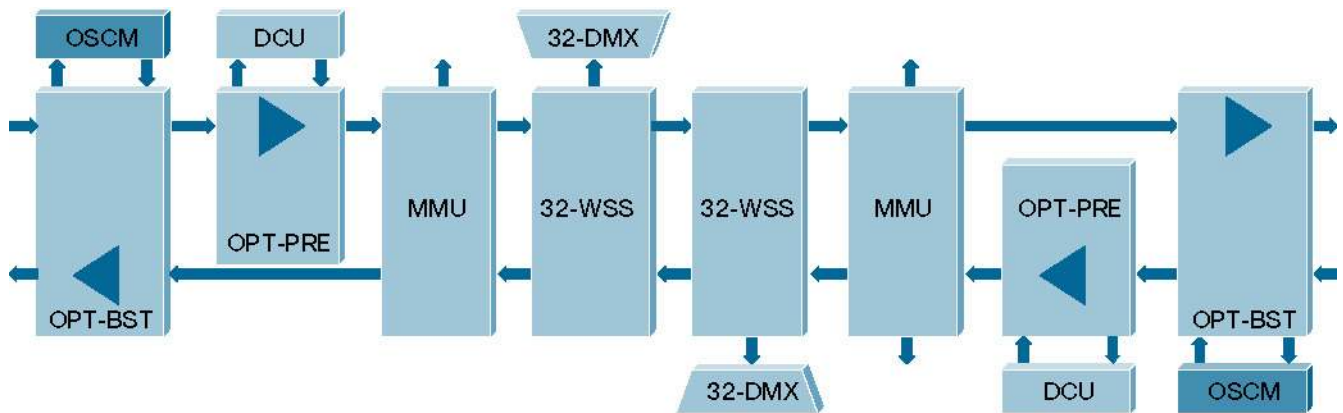
The MMU card is a plug-in module that takes advantage of the proven Cisco ONS 15454 carrier-class features to deliver the flexibility to deploy a ROADM node that is scalable in-service to support additional add/drop directions. Cisco ONS 15454 MSTP ROADM units provide each customer with access to every wavelength in all the nodes of a network, with the flexibility to decide if the wavelength has to be dropped locally or be allowed to pass through to the rest of the network (Degree-2 ROADM). This flexibility is enough for about 80 percent of the add/drop locations in a metro or metro core DWDM network, according to what customers are expecting in the foreseeable future of their networks. Other locations in the network will require, in the future, the ability to route wavelengths and services across more than two

directions (Degree-N ROADM). For all these locations the Mesh/Multiring Upgrade (MMU) card provides a solution today which will support the require flexibility in the future.

The MMU card can operate in both the C band and the L band and is compatible with 100-GHz and 50-GHz channel spacing. Each card features integrated optical power monitoring capabilities to provide node- and network-based automatic power-level management. The MMU card incorporates faceplate-mounted LEDs to provide a quick visual check of the operational status at the card. Printed on each of the faceplates is an icon, an orange circle, which is mapped to shelf-slot icons indicating the shelf slot where the card can be physically installed. The card is supported by the integrated Cisco Transport Controller craft manager, which provides the user access for operations, administration, maintenance, and provisioning (OAM&P) for the system.

The need for the MMU card in ROADM nodes depends on the requirements of the network. The Cisco MetroPlanner optical design tool is available to assist in the engineering, bill-of-material development, and deployment of the DWDM network. Figures 2 shows a sample signal-flow diagram for a Cisco ONS 15454 MSTP ROADM node, where scalability to Degree-N is required.

Figure 2
C-Band ROADM Node with Scalability to Degree-N



OSCM : Optical Service Channel Module	DCU: Dispersion Compensation Unit
OPT-BST: Optical Booster Amplifier	32-WSS: 32-Channels Wavelength Selection Switch
OPT-Pre: Optical Pre-Amplifier	32-DMX: 32-Channels Demultiplexer

Product Specifications

Tables 1 through 4 give specifications for the Cisco ONS 15454 MMU card. Figure 3 shows functional diagram.

Table 1. Regulatory Compliance¹

ANSI System	ETSI System
Countries	
<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 • EN50081-1 • EN55022 • AS/NZS3548, Amendment 1 + 2 1995
EMC immunity	
<ul style="list-style-type: none"> • GR-1089-CORE • CISPR24 • EN50082-2 	<ul style="list-style-type: none"> • EN300-386-TC • EN55024
Safety	
<ul style="list-style-type: none"> • CAN/CSA-C22.2 No. 60950-00 Third Ed., 12/1/2002 • GR-1089-CORE • GR-63-CORE • TS001 	<ul style="list-style-type: none"> • UL 60950 Third Ed., 12/1/2000 • EN60950 (to A4) • IEC60950/EN60950, Third Ed. • AS/NZS3260 Supplement 1, 2, 3, 4, 1997
Environmental	
<ul style="list-style-type: none"> • GR-63-CORE • AT&T Network Equipment Design Specifications (NEDS) 	<ul style="list-style-type: none"> • ETS 300-019 (Class 3.1E) (Note 2)
Structural dynamics	
<ul style="list-style-type: none"> • GR-63-CORE • AT&T NEDS 	<ul style="list-style-type: none"> • ETS 300-019 (Class 3.1E) (Note 2)
Power and grounding	
<ul style="list-style-type: none"> • SBC (TP76200MP) • ETS 300-132-1 (DC power) 	<ul style="list-style-type: none"> • ETS 300-253 (grounding)
Optical	

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.

ANSI System	ETSI System
<ul style="list-style-type: none"> GR-253-CORE G.692 	
Quality	
<ul style="list-style-type: none"> TR-NWT-000332, Issue 4, Method 1 calculation for 20-year mean time between failure (MTBF) 	

Table 2. System Requirements

Component	Cisco ONS 15454 ANSI	Cisco ONS 15454 ETSI
Processor	Timing, Communications, and Control 2 (TCC2) card/TCC2 Plus (TCC2P)	TCC2/ TCC2P
Cross-connect	All (not required)	All (not required)
Shelf assembly	15454-SA-HD or 15454-SA-HD-DDR shelf assembly with FTA3 version fan-tray assembly	15454-SA-ETSI shelf assembly with SDH 48V fan-tray assembly
System software	Release 7.0.0 ANSI or later	Release 7.0.0 ETSI or later

Table 3. Common Specifications

Specification	Description
Management	
Card LEDs	
Failure (FAIL)	Red
Active/standby (ACT/STBY)	Green/yellow
Signal fail (SF)	Yellow
Operating environment	
Temperature	–5 to 55°C 23 to 131°F
Humidity	5 to 95% relative humidity
Storage environment	
Temperature	–40 to 185°F –40 to 85°C
Humidity	5 to 95% RH

Figure 3
Functional Diagram of the Cisco ONS 15454 MMU Card

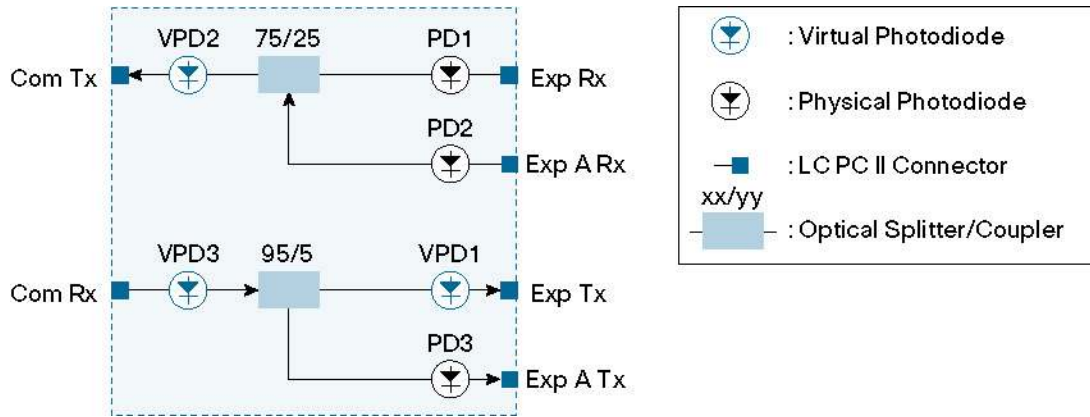


Table 4. Specifications for Cisco ONS 15454 MMU Card

Specification	Description
Optical parameters	
Maximum Insertion loss	7.0 dB (EXP-RX – COM-TX) 2.3 dB (EXP-A-RX – COM-TX) 0.8 dB (COM-RX – EXP-TX) 14.8 dB (COM-RX – EXP-A-TX)
Operating bandwidth (all paths)	1500 nm to 1605 nm
Maximum input power	27 dBm
Maximum Polarization Dependent Loss (PDL)	0.2 dB (C band only) 0.2 dB (L band only) 0.3 dB (C + L band)
Chromatic dispersion	-20 to 20 ps/nm
Connectors	LC
Power	
Card power draw	
Typical	10W
Maximum	25W
Physical	
Size	1 slots
Supported shelf slots	1-6, 12-17

Ordering Information

Table 5 gives ordering information for the Cisco ONS 15454 MMU card.

Table 5. System Ordering Information

Part Number	Description
15454-MMU=	Mesh/Multiring upgrade unit, C band and L band, for use with ONS 15454 MSTP Reconfigurable Optical Addr/Drop Multiplexer (ROADM) nodes (32-WSS/32-DMX or 32-WSS-L/32-DMX-L), LC connectors, includes one 2-meter LC/LC fiber-optic cable

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