Cisco ONS 15454 M2 Multiservice Transport Platform

Product Overview

The Cisco® ONS 15454 M2 Multiservice Transport Platform (MSTP) sets the industry benchmark for compact, simple, fast, and intelligent dense wavelength-division multiplexing (DWDM) solutions. Its compact form, simplicity, and low power consumption reduce capital and operational expenditures. The Cisco ONS 15454 M2 (Figure 1) is compatible with the existing portfolio of Cisco ONS 15454 MSTP line cards, thereby offering a multitude of MSTP applications in a smaller footprint. From access aggregation solutions with the integrated AC power module to core applications such as optical line amplifiers with optical service channel (OSC), the flexible Cisco ONS 15454 M2 supports a broad range of solutions.

Figure 1. Cisco ONS 15454 M2 Multiservice Transport Platform

Key Features and Benefits

The Cisco ONS 15454 M2 chassis has one slot for the control card and two slots for service cards. These two line card slots provide increased power and cooling capability over the original Cisco ONS 15454 chassis, and a usable high-speed backplane for future applications. The M2 can be configured with integrated DC or AC power inputs. The DC power module has inputs for redundant A and B feeds. The integrated AC power module has a single input and is universal in that it accepts a power input ranging from 110 VAC to 240 VAC, 50 Hz to 60 Hz. With its front-facing connections, the M2 is ideal for cabinet installations and ETSI front connection requirements, making this a truly global platform.

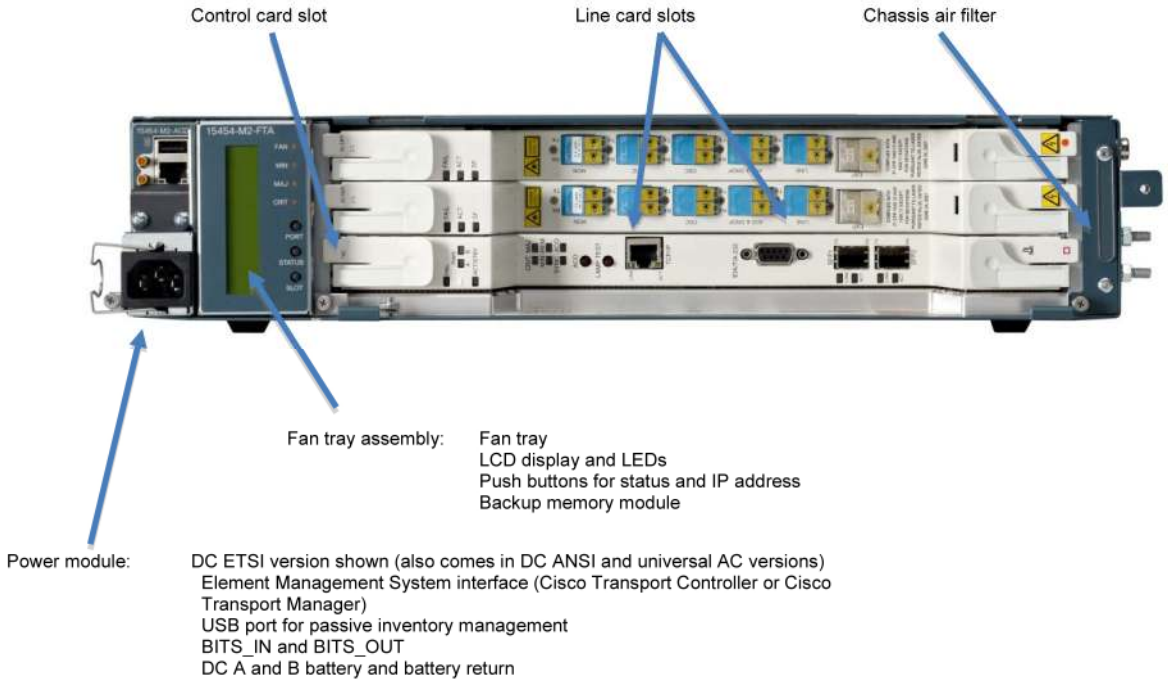
Although the node is controlled by a single processor card, the Cisco ONS 15454 M2 has a built-in memory module to back up the software package, IP address, and circuit database. This improves mean time to repair (MTTR) and increases operational simplicity. Also new to the M2 is the ability to connect, via USB, to a Cisco ONS passive device for inventory management. Some Cisco ONS 15216 passive devices, such as the single-module reconfigurable optical add/drop multiplexer (SM-ROADM) patch panel, have an EEPROM in the device that can be readable by the M2 and therefore will show up in the Cisco Transport Controller inventory management pane.

The Cisco ONS 15454 M2 MSTP can be mounted in 19-inch, 21-inch, or 23-inch racks or cabinets and has brackets with integrated air deflectors to support the following options: With 19-inch brackets, the airflow is right to left. With 21-inch brackets, airflow can be selected as right to left, or right front in, and left front out, or left up out, or left back out. With 23-inch brackets, airflow is from right front in to left back out.

The Cisco ONS 15454 M2 MSTP has a single high-capacity fan tray assembly where the three fans are individually monitored and controlled. In the unlikely event that a single fan fails, the user will receive a fan fail alarm and the other fans will increase in speed to provide sufficient airflow to allow the user time to safely replace the fan tray.

Specifically designed for the new M2 platform are new control cards that consolidate the functions of the control card, optical service channel (OSC) termination, and increased alarms into just one card. Virtually all MSTP applications that were possible with the original 12-service-slot MSTP chassis are now supported in the more compact M2 chassis. The OSC now also supports Fast Ethernet and Gigabit Ethernet connections, in addition to OC-3/STM-1, providing the user with more bandwidth for use with the User Data Channel.

Figure 2. Cisco ONS 15454 M2 MSTP Modules



The Cisco ONS 15454 M2 MSTP provides capital and operational efficiency by addressing the increasing demand for bandwidth and multiple services at the edge of the network. It utilizes the existing Cisco Transport Controller management and integrates well with other optical transport platforms. With innovative technology, the Cisco ONS 15454 M2 MSTP pushes intelligence to the edge of the network, thus allowing the optimization of next-generation networks across multiple layers and removing costly Optical-Electrical-Optical (OEO) devices for network segmentation or regeneration.

The Cisco ONS 15454 M2 MSTP carries on the existing features like multilayer graphical network, node, and card visibility; A-to-Z network-based service provisioning; and graphical software wizards to simplify and speed user operations for such tasks as initial network turn-up, service provisioning, and network, node, and bandwidth upgrades. The Cisco ONS 15454 M2 MSTP takes advantage of the embedded software architecture and control plane to introduce a level of operational simplicity unheard of in DWDM networks.

In addition to the integrated software features, the Cisco ONS 15454 M2 MSTP is supported by an easy-to-use but powerful network design tool, the Cisco Transport Planner. The Cisco Transport Planner is a user-friendly, Java-based application (fully developed and tested by Cisco) for modeling and optimizing DWDM networks based on the user's network parameters.

Topology Flexibility

One recent core network trend is the consolidation of multiple Layer 2/3 networks into a single IP/Multiprotocol Label Switching (IP/MPLS) infrastructure. In spite of this Layer 2/3 convergence, however, the underlying transport layer (Layer 1) of many service provider core networks has continued to use SONET/SDH. This has remained largely the case in many service provider networks globally today, creating OpEx and CapEx concerns for service providers as well as the challenges of profitability and return on investment. Some network inefficiencies result from the way core transport networks are built out today to support the IP or service layer over the SONET/SDH layer, supported by an underlying DWDM infrastructure. The OEO conversions and the associated electrical processing driven by the layered network architecture result in an additional cost in terms of space, because many racks of shelves may be required in a service provider POP, as well as the additional power and cooling that is necessary because of the active electronics components that they contain.

The Cisco ONS 15454, ONS 15454 M6, and ONS 15454 M2 MSTP chassis can be configured to support any edge, metro, regional, or core DWDM topology, allowing a unified solution to be used for the overall network, independently from the topology and reach. The ultimate topology flexibility is achieved through a set of fully reconfigurable optical add/drop multiplexers (ROADMs). Multi-degree ROADMs (2 through 8 degrees of freedom) allow wavelengths to remain in the optical domain while being passed from one ring or network segment to another, further eliminating the need for OEO conversions and utilizing the ability of core routers to initiate DWDM-compatible wavelengths.

The Cisco ONS 15454 M2 MSTP with the single-module ROADM offers a tremendous decrease in footprint, power requirements, and patch-cable complexity over the first-generation ROADM. The SM-ROADM could be used in an M2 for edge DWDM solutions where East and West are on separate nodes.

Product Specifications

Table 1 lists the modules that make up the Cisco ONS 15454 M2 MSTP.

Table 1. Cisco ONS 15454 M2 Modules

Module	Unit Name
Common Equipment for the Cisco ONS 15454 M2	
Shelf assembly	15454-M2-SA
Chassis door	15454-M2-DR
Fan-tray assembly with LCD status and backup memory	15454-M2-FTA
Chassis air filter	15454-M2-FTF
Power options	
DC Power module with ANSI power connector	15454-M2-DC
With Element Management Solution connection	
With USB connection to passive Cisco ONS device for inventory management	
With BITS 1 input and output	
DC power module with ETSI power connector	15454-M2-DC–E
With Element Management Solution connection	
With USB connection to passive Cisco ONS device for inventory management	
With BITS 1 input and output	
AC power module with universal IEC power connector	15454-M2-AC
With Element Management Solution connection	
With USB connection to passive Cisco ONS device for inventory management	
With BITS 1 input and output	
Brackets and air deflectors	
19-in. version	15454-M2-BRKT19
21-in. version	15454-M2-BRKT21
23-in. version	15454-M2-BRKT23
Wall mount bracket	15454-M2-WM
Common Equipment for the Cisco ONS 15454 M6 and M2	
Transport Node Controller (TNC) card	15454-M-TNC
Transport Shelf Controller (TSC) card	15454-M-TSC
Slot filler cards	
Line card blank	15454-BLANK
Line card slot detectable filler	15454-M-FILLER
Control card slot detectable filler	15454-M-T-FILLER
Cisco ONS 15454 M6 power module blank filler	15454-M6-PWRFLR

Table 2 provides details about physical and operational parameters of the Cisco ONS 15454 M2 MSTP.

Table 2. Product Specifications

Item	Specification
Power requirements	Maximum
M2 fan tray assembly	40W
M2 AC power module	300W
M2 DC ANSI power module	30W
M2 DC ETSI power module	30W
Physical dimensions	
Rack mounting	19-in. or 23-in. EIA rack-mounting 600mm or 19-in. rack-mounting or 21-in. cabinet mounting
Shelf assembly	
15454 M2 shelf assembly	3.46 in. (H) x 17.18 in. (W) x 11.02 in. (D) 87.9 mm (H) x 436.4 mm (W) x 280 mm (D)

Item	Specification
Environmental conditions	
Storage temperature	–40 to 70ºC (–40 to 158ºF)
Operating temperature	
Normal	0 to 55ºC (32 to 131ºF)
Short term[1]	–5 to 55ºC (23 to 131ºF)
Relative humidity	
Normal	5% to 85%, noncondensing
Short term	5% to 90% but not to exceed 0.024 kg water/kg of dry air

1. Short-term refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year. (This refers to a total of 360 hours in any given year, but no more than 15 occurrences during that 1-year period.)

Regulatory Standards Compliance

Table 3 summarizes regulatory standards compliance and agency approvals.

Table 3. Regulatory Standards Compliance and Agency Approvals

ANSI (15454) System	ETSI (15454E) System
Supported Countries	
• Canada • United States • Korea	• Europe • Latin America • Japan • Asia Pacific • Middle-East and Africa
EMC (Class A)	
• ICES-003 Issue 4 (2004) • GR-1089-CORE, Issue 4 (Type 2 and Type 4 equipment) • GR-1089-CORE – Issue 03 (Oct 2002) (Objective O3-2 – Section 3.2.1 – Radiated Emissions requirements with all doors open) • FCC 47CFR15, Class A subpart B (2006)	• EN 300 386 v1.3.3 (2005) and v1.4.1 (2007) • CISPR 22 – Fifth edition (2005-04) Class A and the amendment 1 (2005-07) • CISPR 24 – First edition (1997-09) and amendment 1 (2001-07) and amendment 2 (2002-10). • EN 55022:1998 Class A – CENELEC Amendment A2: 2003 • EN 55024:1998 – CENELEC Amendment A1:2001 and Amendment A2:2003 • Resolution 237 (Brazil) • VCCI V-3/2006.04 • EN 61000-6-1:2001 • EN 61000-6-2:1999
Safety	
• UL/CSA 60950-1 First Edition (2003) • GR-1089-CORE, Issue 4 (Type 2 and Type 4 equipment)	• UL/CSA 60950-1 First Edition (2003) • IEC 60950-1 (2001/10)/Amendment 11:2004 to EN 60950-1:2001, 1st Edition (with all country deviations)
Environmental	
• GR-63-CORE, Issue 3 (2006)	• ETS 300-019-2-1 V2.1.2 (Storage, Class 1.1) • ETS 300-019-2-2 V2.1.2 (Transportation, Class 2.3) • ETS 300-019-2-3 V2.1.2 (Operational, Class 3.1E) • EU WEEE regulation • EU RoHS regulation
Power & Grounding	
• GR-1089-CORE, Issue 4	• ETS 300 132-2
Optical Safety	
• EN or IEC-60825-2 Third edition (2004-06) • EN or IEC 60825-1 Consol. Ed. 1.2 – incl. am1+am2 (2001-08) • 21CFR1040 (2004/04) (Accession Letter and CDRH Report) • IEC-60825-2 Third edition (2004-06) • ITU-T G.664 (2006)	

ANSI (15454) System	ETSI (15454E) System
Miscellaneous	
• Acoustic Noise ◦ GR-63-CORE, Issue 3 (2006) ◦ ETS 300 753 ed.1 (1997-10) • Rain, Sand, Dust and Moisture Proofing ◦ AS 1939-1990, 4.2, IP 53 • Mechanical Shock & Bumps ◦ AS1099- 2.27 • Customer specific requirements ◦ AT&T Network Equipment Development Standards (NEDS) Generic Requirements, AT&T 802-900-260 ◦ SBC TP76200MP ◦ Verizon SIT.NEBS.NPI.2002.010	

Ordering Information

To place an order, visit the Cisco Ordering homepage. To download software, visit the Cisco Software Center.

Table 4 provides ordering information.

Table 4. Ordering Information

Product ID	Description
Common Equipment	
15454-M2-SA= 15454-M2-DR=	Shelf assembly, Cisco ONS 15454 M2 Chassis Door, Cisco ONS 15454 M2
15454-M2-FTA= 15454-M2-FTF=	Fran Tray assembly, Cisco ONS 15454 M2 Chassis Air Filter, Cisco ONS 15454 M2
15454-M2-DC= 15454-M2-DC-E= 15454-M2-AC=	DC Power Supply Module, Cisco ONS M2 DC ETSI Power Supply Module, Cisco ONS M2 AC Power Supply Module, Cisco ONS M2
15454-M2-BRKT19= 15454-M2-BRKT21= 15454-M2-BRKT23= 15454-M2-WM=	19” Brackets, Cisco ONS 15454 M2 21” Brackets and Air deflector, Cisco ONS 15454 M2 23” Brackets and Air deflector, Cisco ONS 15454 M2 Wall mount bracket, Cisco ONS M2
15454-M-SHIPKIT=	Shipkit, Cisco ONS 15454 M6 and Cisco ONS 15454 M2
15454-M-TNC-K9= 15454-M-TSC-K9=	Transport Node Controller Transport Shelf Controller
15454-BLANK= 15454-M-FILLER= 15454-M-T-FILLER=	Shelf slot-filler panel, fits any slot in Cisco ONS 15454 ANSI shelf assembly Shelf line-slot filler card, fits line-card slots in Cisco ONS 15454 M6 and ONS 15454 M2 chassis Shelf control-slot filler card, fits control-card slots in Cisco ONS 15454 M6 and ONS 15454 M2 chassis

Warranty

The following are warranty terms that apply to the Cisco ONS 15454 M2 MSTP as well as services you may use during the warranty period. Your formal Warranty Statement appears in the Cisco Information Packet that accompanies your Cisco product.

- Hardware Warranty Duration: Five (5) Years
- Software Warranty Duration: One (1) Year
- Hardware Replacement, Repair, or Refund Procedure: Cisco or its service center will use commercially reasonable efforts to ship a replacement part for delivery within fifteen (15) working days after receipt of the defective product at Cisco's site. Actual delivery times of replacement products may vary depending on Customer location.

Product warranty terms and other information applicable to Cisco products are available at: http://www.cisco.com/go/warranty.

Service and Support

Cisco Services make networks, applications, and the people who use them work better together.

Today, the network is a strategic platform in a world that demands better integration between people, information, and ideas. The network works better when services, together with products, create solutions aligned with business needs and opportunities.

The unique Cisco Lifecycle approach to services defines the requisite activities at each phase of the network lifecycle to help ensure service excellence. With a collaborative delivery methodology that joins the forces of Cisco, our skilled network of partners, and our customers, we achieve the best results.

For More Information

For more information about the Cisco ONS 15454 Multiservice Transport Platform, please contact your local account representative or visit Cisco at www.cisco.com/go/optical or www.cisco.com/go/IPoDWDM.

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