

# 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 expenditures (CapEx) and operating expenses (OpEx). 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 an 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. You can configure the M2 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 to 240 VAC, 50 to 60 Hz. With its front-facing connections, the M2 is ideal for cabinet installations and ETSI front-connection requirements, making this platform truly global.

Although a single processor card controls the node, the Cisco ONS 15454 M2 has a built-in memory module to backup the software package, IP address, and circuit database (Figure 2). This backup capability improves mean time to repair (MTTR) and increases operational simplicity. Also new to the M2 is the ability to connect, via through

a USB port, 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 erasable programmable ROM (EEPROM) in the device that the M2 can be readable by the M2 and therefore will show up appears in the Cisco Transport Controller inventory management pane.

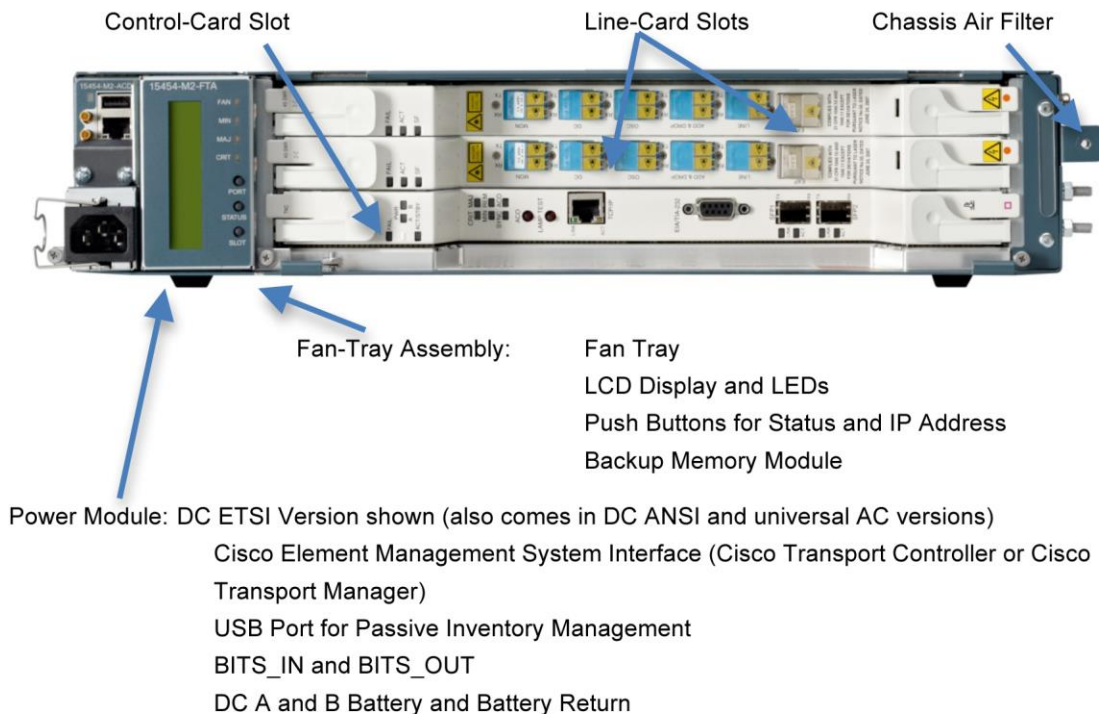
You can mount the Cisco ONS 15454 M2 MSTP in 19-, 21-, or 23-inch racks or cabinets.Brackets come with the Shelf Assembly and can also be ordered as spares.Optional air deflectors can be used in 21" and 23" installations With 19-inch brackets, the airflow is right to left; with 21-inch brackets, airflow can be selected as right to left; right front in, and left front out; 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. If a single fan fails (unlikely), you receive a fan fail alarm and the other fans increase in speed to provide sufficient airflow to give you time to safely replace the fan tray.

Doors are optional and hence do not come with the Shelf Assembly. They can be ordered as spares.

Specifically designed for the new M2 platform are new control cards that consolidate the functions of the control card, 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, giving you more bandwidth for use with the user data channel.

**Figure 2.** Cisco ONS 15454 M2 MSTP Modules



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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 uses 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 such as 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. Many service provider networks globally still use SONET/SDH today, creating OpEx and CapEx concerns for service providers as well as the challenges of profitability and return on investment (ROI). 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 directed 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 point of presence (POP), as well as the additional power and cooling that is necessary because of the active electronics components that they contain.

You can configure the Cisco ONS 15454, ONS15454 M6, and ONS 15454 M2 MSTP chassis to support any edge, metro, regional, or core DWDM topology, allowing you to use a unified solution 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). Multidegree 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 using 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. You can use the SM-ROADM 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   | Part Number                 |
|--|-----------------------------|
| <b>Common Equipment for the Cisco ONS 15454 M2</b>                       |                             |
| <b>Shelf Assembly with brackets</b>                                      | 15454-M2-SA                 |
| Chassis door (optional), and deep door version                           | 15454-M2-DR, 15454-M2-DDR   |
| <b>Fan-Tray Assembly with LCD Status and Backup Memory</b>               | 15454-M2-FTA, 15454-M2-FTA2 |
| Chassis air filter   | 15454-M2-FTF                |
| <b>Power Options</b>   |                             |
| 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 Building Integrated Timing Supply (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   |                             |
| <b>Brackets and Air Deflectors (Optional spares)</b>                     |                             |
| 19-in., 21-in., and 23-in. brackets                                      | 15454-M2-BRKT               |
| 21-in. air deflectors  | 15454-M2-DEFL21             |
| 23-in. air deflectors  | 15454-M2-DEFL23             |
| Wall-mount bracket   | 15454-M2-WM                 |
| <b>Common Equipment for the Cisco ONS 15454 M6 and M2</b>                |                             |
| Transport Node Controller (TNC) card                                     | 15454-M-TNC                 |
| Transport Shelf Controller (TSC) card                                    | 15454-M-TSC                 |
| Enhanced TNC card  | 15454-M-TNCE                |
| Enhanced TSC card  | 15454-M-TSCE                |
| <b>Slot Filler Cards</b>   |                             |
| 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.** Cisco ONS 15454 M6 Cables

| Product Name         | Description                            | Length | Gauge       | Connector 1         | Connector 2      |
|----------------------|--|--------|-------------|---------------------|------------------|
| 15454-M-120TMGCBL(=) | BITS IN/OUT cable for ANSI             | 0.6 m  | COAX 23 AWG | DIN 1.0/2.3         | 2 WIRE WRAP PINS |
| 15454-M2-DCCBL-LE(=) | DC power cable for ETSI left exit      | 10 m   | 12 AWG      | Power D-Sub 2 poles | none             |
| 15454-M6-DCCBL-LE(=) | DC power cable for ETSI left exit      | 10 m   | 8 AWG       | Power D-Sub 3 poles | none             |
| 15454-M6-DCCBL-RE(=) | DC power cable for ETSI right exit     | 10 m   | 8 AWG       | Power D-Sub 3 poles | none             |
| 15454-M-ACCBL-L(=)   | AC power cable ANSI 110 Vac left exit  | 3 m    | 15A – 125V  | C13                 | NEMA 5-15P       |
| 15454-M-ACCBL-L2(=)  | AC power cable ANSI 220 Vac left exit  | 3 m    | 15A – 250V  | C13                 | NEMA 6-15P       |
| 15454-M-ACCBL-R(=)   | AC power cable ANSI 110 Vac right exit | 3 m    | 15A – 125V  | C13                 | NEMA 5-15P       |

| Product Name         | Description                            | Length | Gauge                 | Connector 1  | Connector 2              |
|----------------------|--|--------|-----------------------|--------------|--------------------------|
| 15454-M-ACCBL-R2(=)  | AC power cable ANSI 220 Vac right exit | 3 m    | 15A – 250V            | C13          | NEMA 6-15P               |
| 15454-M-ACL6-L(=)    | AC power cable for Data Center         | 3 m    | 15A – 250V            | C13          | NEMA WD 6 L6-20P         |
| 15454-M-ACL6-R(=)    | AC power cable for Data Center         | 3 m    | 15A – 250V            | C13          | NEMA WD 6 L6-20P         |
| 15454-M-ALMCBL(=)    | SCSI Alarm cable                       | 20 m   | 28 AWG                | Mini SCSI    | None                     |
| 15454-M-ALMCBL2(=)   | SCSI Alarm cable limited to 8 inputs   | 20 m   | 24 AWG                | Mini SCSI    | None                     |
| 15454-M-CBL-LARG(=)  | AC power cable – ARG left exit         | 3 m    | 10A – 250V            | C13          | IRAM 2073 – IEC 60884-1  |
| 15454-M-CBL-LAUS(=)  | AC power cable – AUS left exit         | 3 m    | 10A – 250V            | C13          | AS/NZS 3112: 2000        |
| 15454-M-CBL-L-CHI(=) | AC power cable – China left exit       | 3 m    | 10A – 250V            | C13          | GB2099.1/GB1002          |
| 15454-M-CBL-L-EU(=)  | AC power cable – EU left exit          | 3 m    | 10A – 250V            | C13          | CEE 7 STANDARD SHEET VII |
| 15454-M-CBL-L-IND(=) | AC power cable – India left exit       | 3 m    | 10A – 250V            | C13          | IS 1293                  |
| 15454-M-CBL-L-JPN(=) | AC power cable – Japan left exit       | 3 m    | 15A – 125V            | C13          | JIS C8303 & JIS C8306    |
| 15454-M-CBL-LKOR(=)  | AC power cable – KOR left exit         | 3 m    | 10A – 250V            | C13          | K60884-01                |
| 15454-M-CBL-L-UK(=)  | AC power cable – UK left exit          | 3 m    | 10A – 250V            | C13          | BS 1363/A & SS145/A      |
| 15454-M-CBL-RARG(=)  | AC power cable – ARG right exit        | 3 m    | 10A – 250V            | C13          | IRAM 2073 – IEC 60884-1  |
| 15454-M-CBL-RAUS(=)  | AC power cable – AUS right exit        | 3 m    | 10A – 250V            | C13          | AS/NZS 3112: 2000        |
| 15454-M-CBL-R-CHI(=) | AC power cable – China right exit      | 3 m    | 10A – 250V            | C13          | GB2099.1/GB1002          |
| 15454-M-CBL-R-EU(=)  | AC power cable – EU right exit         | 3 m    | 10A – 250V            | C13          | CEE 7 STANDARD SHEET VII |
| 15454-M-CBL-R-IND(=) | AC power cable – India right exit      | 3 m    | 10A – 250V            | C13          | IS 1293                  |
| 15454-M-CBL-R-JPN(=) | AC power cable – Japan right exit      | 3 m    | 15A – 125V            | C13          | JIS C8303 & JIS C8306    |
| 15454-M-CBL-RKOR(=)  | AC power cable – KOR right exit        | 3 m    | 10A – 250V            | C13          | K60884-01                |
| 15454-M-CBL-R-UK(=)  | AC power cable – UK right exit         | 3 m    | 10A – 250V            | C13          | BS 1363/A & SS145/A      |
| 15454-M-TMGCBL(=)    | BITS IN/OUT cable for ETSI             | 20 m   | COAX 23 AWG           | DIN 1.0/2.3  | none                     |
| 15454-M-USBCBL(=)    | USB cable for passive devices          | 3 m    | 28#/1P + 24#/2C + AEB | USB "A" MALE | USB "A" MALE             |

Table 3 provides details about physical and operational parameters of the Cisco ONS 15454 M2 MSTP.

**Table 3.** Product Specifications

| Item                              | Specification  |
|-----------------------------------|--|
| <b>Power Requirements</b>         | Maximum  |
| M2 AC power configuration         | 350W   |
| M2 DC power configuration         | 450W   |
| <b>Power Consumption</b>          |  |
| M2 fan-tray assemblies            | 40W  |
| M2 AC power module                | 52W  |
| M2 DC power modules               | 30W  |
| <b>Physical Dimensions</b>        |  |
| Rack mounting                     | 19- or 23-in. (483- or 584-mm, respectively) EIA rack-mounting<br>19-in. (83-mm) rack-mounting or 21-in. (533-mm) cabinet mounting |
| <b>Shelf assembly</b>             |  |
| Cisco ONS 15454 M2 shelf assembly | (H x W x D): 3.46 x 17.18 x 11.02 in. (87.9 x 436.4 x 280 mm)  |

| Item                            | Specification  |
|---------------------------------|--|
| <b>Environmental Conditions</b> |  |
| Storage temperature             | –40 to 158°F (–40 to 70°C)   |
| Operating temperature           | Normal: 32 to 131°F (0 to 55°C)<br>Short-term <sup>1</sup> : 23 to 131°F (–5 to 55°C)                                |
| Relative humidity               | Normal: 5 to 85%, noncondensing<br>Short-term <sup>2</sup> : 5 to 90% but not to exceed 0.024 kg water/kg of dry air |

<sup>1</sup>Refers to a period of not more than 96 consecutive hours and a total of not more than 15 days in 1 year.

<sup>2</sup>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 4 summarizes regulatory standards compliance and agency approvals.

**Table 4.** Regulatory Standards Compliance and Agency Approvals

| ANSI (Cisco ONS 15454) System   | ETSI (Cisco ONS 15454E) System   |
|---|--|
| <b>Supported Countries</b>  |  |
| <ul style="list-style-type: none"> <li>• Canada</li> <li>• United States</li> <li>• Korea</li> </ul>  | <ul style="list-style-type: none"> <li>• Europe</li> <li>• Latin America</li> <li>• Japan</li> <li>• Asia Pacific</li> <li>• MiddleEast and Africa</li> </ul>  |
| <b>EMC (Class A)</b>  |  |
| <ul style="list-style-type: none"> <li>• ICES-003 Issue 4(2004)</li> <li>• GR-1089-CORE, Issue 4 (Type 2 and Type 4 equipment)</li> <li>• GR-1089-CORE – Issue 03 (Oct 2002) (Objective O3-2 – Section 3.2.1 – Radiated Emissions requirements with all doors open)</li> <li>• FCC 47CFR15, Class A subpart B (2006)</li> </ul> | <ul style="list-style-type: none"> <li>• EN 300 386 v1.3.3 (2005) and v1.4.1 (2007)</li> <li>• CISPR 22 – Fifth edition (2005-04) Class A and the amendment 1 (2005-07)</li> <li>• CISPR 24 – First edition (1997-09) and amendment 1 (2001-07) and amendment 2 (2002-10).</li> <li>• EN 55022:1998 Class A – CENELEC Amendment A2:2003</li> <li>• EN 55024:1998 – CENELEC Amendment A1:2001 and Amendment A2:2003</li> <li>• Resolution 237 (Brazil)</li> <li>• VCCI V-3/2006.04</li> <li>• EN 61000-6-1:2001</li> <li>• EN 61000-6-2:1999</li> </ul> |
| <b>Safety</b>   |  |
| <ul style="list-style-type: none"> <li>• UL/CSA 60950 -1 First Edition(2003)</li> <li>• GR-1089-CORE, Issue 4 (Type 2 and Type 4 equipment)</li> </ul>  | <ul style="list-style-type: none"> <li>• UL/CSA 60950 -1 First Edition (2003)</li> <li>• IEC 60950-1 (2001/10)/Amendment 11:2004 to EN 60950-1:2001, 1st Edition (with all country deviations)</li> </ul>  |
| <b>Environmental</b>  |  |
| <ul style="list-style-type: none"> <li>• GR-63-CORE, Issue 3 (2006)</li> </ul>  | <ul style="list-style-type: none"> <li>• ETS 300-019-2-1 V2.1.2 (Storage, Class 1.1)</li> <li>• ETS 300-019-2-2 V2.1.2 (Transportation, Class 2.3)</li> <li>• ETS 300-019-2-3 V2.1.2 (Operational, Class 3.1E)</li> <li>• EU WEEE regulation</li> <li>• EU RoHS regulation</li> </ul>  |
| <b>Power and Grounding</b>  |  |
| <ul style="list-style-type: none"> <li>• GR-1089-CORE, Issue 4</li> </ul>   | <ul style="list-style-type: none"> <li>• ETS 300 132-2</li> </ul>  |
| <b>Optical Safety</b>   |  |
| <ul style="list-style-type: none"> <li>• EN or IEC-60825-2 Third edition (2004-06)</li> <li>• EN or IEC 60825-1 Consol. Ed. 1.2 – incl. am1+am2 (2001-08)</li> <li>• 21CFR1040 (2004/04) (Accession Letter and CDRH Report)</li> <li>• IEC-60825-2 Third edition (2004-06)</li> <li>• ITU-T G.664 (2006)</li> </ul>             |  |

| ANSI (Cisco ONS 15454) System   | ETSI (Cisco ONS 15454E) System |
|---|--------------------------------|
| <b>Miscellaneous</b>  |                                |
| <ul style="list-style-type: none"> <li>• Acoustic noise               <ul style="list-style-type: none"> <li>◦ GR-63-CORE, Issue 3 (2006)</li> <li>◦ ETS 300 753 ed.1 (1997-10)</li> </ul> </li> <li>• Rain, sand, dust, and moisture proofing               <ul style="list-style-type: none"> <li>◦ AS 1939-1990, 4.2, IP 53</li> </ul> </li> <li>• Mechanical shock and bumps               <ul style="list-style-type: none"> <li>◦ AS1099- 2.27</li> </ul> </li> <li>• Customer-specific requirements               <ul style="list-style-type: none"> <li>◦ AT&amp;T Network Equipment Development Standards (NEDS) Generic Requirements, AT&amp;T 802-900-260</li> <li>◦ SBC TP76200MP</li> <li>◦ Verizon SIT.NEBS.NPI.2002.010</li> </ul> </li> </ul> |                                |

## Ordering Information

To place an order, visit the Cisco Ordering homepage and refer to Table 4. To download software, visit the Cisco Software Center.

**Table 5.** Ordering Information

| Product ID              | Description  |
|-------------------------|--|
| <b>Common Equipment</b> |  |
| 15454-M2-SA=            | Shelf assembly, Cisco ONS 15454 M2   |
| 15454-M2-DR=            | Chassis Door, Cisco ONS 15454 M2   |
| 15454-M2-DDR=           | Chassis Deep Door, Cisco ONS 15454 M2  |
| 15454-M2-FTA=           | Fran Tray assembly, Cisco ONS 15454 M2   |
| 15454-M2-FTA2=          | 2 <sup>nd</sup> gen Fan Tray assembly, Cisco ONS 15454 M2  |
| 15454-M2-FTF=           | Chassis Air Filter, Cisco ONS 15454 M2   |
| 15454-M2-DC=            | DC Power Supply Module, Cisco ONS M2   |
| 15454-M2-DC-E=          | DC ETSI Power Supply Module, Cisco ONS M2  |
| 15454-M2-AC=            | AC Power Supply Module, Cisco ONS M2   |
| 15454-M2-BRKT=          | 19"/23" and 21" Brackets, Cisco ONS 15454 M2   |
| 15454-M2-DEF21=         | 21" Air deflector, Cisco ONS 15454 M2  |
| 15454-M2-DEF23=         | 23" Air deflector, Cisco ONS 15454 M2  |
| 15454-M2-WM=            | Wall mount bracket, Cisco ONS M2   |
| 15454-M-SHIPKIT=        | Shipkit, Cisco ONS 15454 M6 and Cisco ONS 15454 M2   |
| 15454-M-TNC-K9=         | Transport Node Controller  |
| 15454-M-TSC-K9=         | Transport Shelf Controller   |
| 15454-M-TNCE-K9=        | Enhanced Transport Node Controller   |
| 15454-M-TSCE-K9=        | Enhanced Transport Shelf Controller  |
| 15454-BLANK=            | Shelf slot-filler panel, fits any slot in Cisco ONS 15454 ANSI shelf assembly                          |
| 15454-M-FILLER=         | Shelf line-slot filler card, fits line-card slots in Cisco ONS 15454 M6 and ONS 15454 M2 chassis       |
| 15454-M-T-FILLER=       | Shelf control-slot filler card, fits control-card slots in Cisco ONS 15454 M6 and ONS 15454 M2 chassis |



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## Warranty

The following warranty terms 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 years
- Software warranty duration: One year
- Hardware replacement, repair, or refund procedure: Cisco or our service center will use commercially reasonable efforts to ship a replacement part for delivery within 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 among 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, contact your local Cisco account representative or visit Cisco at: [www.cisco.com/go/optical](http://www.cisco.com/go/optical) or [www.cisco.com/go/IPoDWDM](http://www.cisco.com/go/IPoDWDM).



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San Jose, CA

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