Release Notes for Cisco ONS 15454, ONS 15454 M2, and ONS 15454 M6 DWDM, Release 9.6.x.x

Revised: October 4, 2016, OL-26859-05

Cisco ONS 15454 DWDM Release Notes

This Release Notes document contains information about new features and enhancements, in the Cisco ONS 15454 DWDM platforms. For the latest version of the Release Notes for Cisco ONS 15454, visit the following URL:

http://www.cisco.com/en/US/products/ps13234/prod_release_notes_list.html

For detailed information regarding features, capabilities, hardware, and software introduced in this release, see the guides listed in the Additional References section.

Cisco also provides Bug Search Tool, a web resource for tracking defects. To access Bug Search Tool, visit the following URL: https://tools.cisco.com/bugsearch.

Revision History

Date	Notes
October 2016	Added the Critical Bug Fixes in Release 9.6.1.3, on page 3 section.
March 2016	Added the Critical Bug Fixes in Release 9.6.1.1, on page 3 section.
June 2015	Added the Critical Bug Fixes in Release 9.8.1.3 section.
October 2014	Added the Critical Bug Fix in Release 9.6.0.8, on page 3 section.
September 2014	Added procedure to search for bugs in Bug Search Tool.
August 2014	Revised the part number and added the Critical Bug Fixes in Release 9.6.0.7, on page 4 section.
June 2014	Updated the 100G-LC-C, 10x10G-LC, and CFP-LC Cards, on page 6 section in Release 9.6.03 with support for Y-cable protection on the 10x10G-LC card.
January 2014	Revised the part number and added the Critical Bug Fixes in Release 9.6.0.5, on page 4 section.
July 2013	Revised the part number and added the Critical Bug Fixes in Release 9.6.0.4, on page 4 section.
March 2013	Revised the part number and added the New Features and Functionality for Release 9.6.0.3, on page 5 section.
June 2012	This is the first release of this publication.
September 2015	Added a section "MXP_MR_S and MXPP_MR_S Operating Modes".

Software and Hardware Requirements

Before you begin to install the Software, you must check whether your system meets the minimum software and hardware requirements.

- Hardware—IBM-compatible PC with a Pentium IV or faster processor, CD-ROM drive, a minimum of 1 GB RAM, 20 GB hard disk with 250 MB of available hard drive space.

- One of these Operating Systems:
  - Windows 2000 Professional, Windows XP Professional, Windows Vista, or Windows 7, Windows Server 2003 and 2008.
  - Apple Mac OS X, CTC must be installed using the CacheInstaller available at the Cisco Software Download page or the Software CD.
  - UNIX workstation with Solaris Version 9 or 10 on an UltraSPARC-III or faster processor, with a minimum of 1 GB RAM and a minimum of 250 MB of available hard drive space.
  - Ubuntu 12.10

  Use the latest patch or service pack released by the OS vendor.
- Java Runtime Environment—JRE 1.7.
- Browser:
  - For PC—Internet Explorer 6.x, 7.x, 8.x, 9.x (R9.6 and later releases), 10 (R9.4.0.3, R9.6.0.3 and later releases), Mozilla Firefox 22 and Google Chrome 27
  - For UNIX Workstation—Mozilla 1.7
  - For MacOS-X PC—Safari

Critical Bug Fixes in Release 9.6.1.3

The following critical issues have been resolved in Release 9.6.1.3 :

- Although there is loss in traffic, alarms are not raised on the OTU2_XP card.
- The ONS 15454 node with TCC2P card as the node controller crashes when GMPLS circuits are created on the OTU2_XP card with regenerator support enabled.

Critical Bug Fixes in Release 9.6.1.1

The following critical issues have been resolved in Release 9.6.1.1 :

- The Database Out Of Synchronization (DBOSYNC), Backup Memory Failure (BKUPMEMP), and Equipment Failure (EQPT-FAIL) alarms are raised when the standby controller card leaks the raw file system descriptors and fails to access the flash memory.
- The USB Write Failure (USB-WRITE-FAIL) alarm is raised on the TNCE card when the LCD unit is removed from the node.
- The subtended shelf controller does not activate occasionally.
- The system traffic switches from the active TNC card to the standby TNC card even when the DBOSYNC, BKUPMEMP, and EQPT-FAIL alarms are present in the standby TNC card.

Critical Bug Fix in Release 9.6.0.8

The following critical issue has been resolved in Release 9.6.0.8 :

The USB-WRITE-FAIL alarm is raised on the node controller when a bulk performance monitoring parameter query is run on a large multi-shelf configuration.

Critical Bug Fixes in Release 9.6.0.7

The following critical issues have been resolved in Release 9.6.0.7:

- The TNC/TSC cards reset with the Backup Memory Failure (BKUPMEMP) alarm when all the sockets in the node are leaked.
- After upgrading the node from earlier releases to release 9.6.0.5, the OSC Termination failed alarm is raised.
- Exhaustion of the temporary pipes that are needed for the communication between TNC card and line-card software tasks is seen.

Critical Bug Fixes in Release 9.6.0.5

The following critical issues have been resolved in Release 9.6.0.5:

- The release addresses the control card resets and USB sync/write related alarms for several scenarios.
- The OSC link on the standby TNC/TNC-E card raises an EOC alarm periodically.
- The Secure Shell access might not work after upgrading the ONS 15454 software package or after a control card reset.
- The OPT-EDFA-24 card remains in APR mode when the optical channel is switched on after a fiber cut or during circuit provisioning which might cause traffic recovery or bring up issues.
- The control card resets when loopback is set as Terminal on the trunk port of 100G-LC-C card in MXP-10x10G operating mode.
- The Provisionable Patchcords (PPCs) are occasionally deleted in CTC after the ENE node is reset.
- The TL1 session occasionally locks up on ONS 15600 and ONS 15454 nodes. The new TL1 sessions cannot be opened.
- Some client and trunk ports of the OTU2-XP and AR-XP cards display invalid Rx and Tx power values (-40 dBm) resulting in invalid power threshold crossing alarm.
- During a software upgrade in a multi-shelf setup, the line cards in the subtended shelf reboot that might result in traffic loss.
- OSPF LSDB shows invalid link metric values which causes sub-optimal routing to NEs.

Critical Bug Fixes in Release 9.6.0.4

The following critical issues have been resolved in Release 9.6.0.4:

- On the ONS 15454 M6 shelf, when the 100G-LC-C card is provisioned on a slot that is below the CFP-LC card slot position, traffic does not flow through the ports of the CFP-LC card.
- If a port of a GE_XP, GE_XPE, 10GE_XP, or 10GE_XPE card is not part of the Link Aggregation Group (LAG), then Link Aggregation Control Protocol (LACP) BPDU packets are dropped at the ingress of the port, even when the port is configured to tunnel BPDU packets.
- The nodes in a multishelf configuration of more than 20 shelves, each carrying the maximum permissible number of 40G and 100G muxponder cards, cannot be managed because the node controllers (TCC3 and TNC) reboot frequently.
- When the client signal is of type ISC3, traffic does not flow between two AR_MXP cards.

- A limited number of 100G-LC-C cards report an Equipment Degrade (EQPT-DEG) alarm on CTC approximately 4 minutes after the boot completion. However, the cards work properly and traffic continues to flow normally.
- The connectivity fails when Cisco MDS operating in expansion port (E port) mode using 8GFC payload interoperates with the 10x10G-LC card.

New Features and Functionality for Release 9.6.0.3

This section highlights new features and functionality for Release 9.6.0.3. For detailed documentation of each of these features, consult the user documentation.

Common Hardware

The following hardware units have been introduced in Release 9.6.0.3:

AR_XPE Card

The AR_XPE (Any Rate Enhanced Xponder) card provides a high degree of flexibility for the multiservice aggregation transport of a variety of signals and interfaces into enterprise or metropolitan (metro) area and regional service provider networks. Multiple rates and aggregation over a DWDM interface are provided using OTN technology resulting in huge operational savings.

The AR_XPE card is supported on the Cisco ONS 15454, ONS 15454 M2, and ONS 15454 M6 platforms.

The AR_XPE card can be configured to function in multiple operating modes. The cards are equipped with pluggables for client and trunk port options that offer several configurations. The criterion used to select a specific operating mode is defined by the network level design. The Cisco Transport Planner helps by choosing the appropriate operating mode. The AR_XPE card supports a bandwidth of up to 20 Gbps. It aggregates a mix of client SAN services (FICON, ESCON, ISC3-STP, and Fiber Channel), Ethernet (GE, FE), OCn (OC3/STM-1, OC12/STM-4, and OC48/STM-16), OTU1, and video (SD-SDI, HD-SDI, and 3G-SDI) into a 10 Gbps signal on the trunk side.

For more information about the AR_XPE card, see the Provision Transponder and Muxponder Cards chapter in the *Cisco ONS 15454 DWDM Configuration Guide, Release 9.6.x*.

Pluggable Port Modules Support

The Pluggable Port Modules (PPMs) supported in the Cisco ONS cards are as follows:

- ONS-CC-40G-FR on CFP-LC card.
- ONS-SC+-10G-C on 10x10G-LC card.
- ONS-SC+-10G-EP30.3= through ONS-SC+-10G-EP61.8= on 10x10G-LC card.
- ONS-CC-100GE-LR4= on CFP-LC card.
- ONS-SC+-10G-CU1 on 10x10G-LC card.
- ONS-SC+-10G-CU3 on 10x10G-LC card.
- ONS-SC+-10G-CU5 on 10x10G-LC card.
- ONS-SC+-10G-CU7 on 10x10G-LC card.

For more information about the Pluggable Port Modules support, see the Installing the GBIC, SFP, SFP+, and XFP Optical Modules in Cisco ONS Platforms document.

New Software Features and Functionality

The following new software features have been introduced in Release 9.6.0.3:

GMPLS Restoration and UNI

The Generalized Multiprotocol Label Switching (GMPLS) control plane supports optical restoration and User-Network Interface (UNI) features. The GMPLS control plane is available with the Cisco ONS 15454 DWDM WSON package and is supported on the Cisco ONS 15454, Cisco ONS 15454 M6, and Cisco ONS 15454 M2 platforms.

The GMPLS optical restoration feature helps to restore optical circuits from a failed path to a new path using the GMPLS control plane. The optical failure is indicated through any signal alarm such as Loss of Signal (LOS), Loss Of Signal due to absence of payload (LOS-P), and signal failure (SF). The GMPLS control plane initiates restoration after a failure is detected on the circuit. The restoration is supported for OCHNC and OCH trail circuits. The OCHCC restoration is provided by the underlying OCH trail circuits.

If the original path fails and restoration is enabled, the GMPLS control plane establishes an alternate restored path and traffic flows on the restored path. The following types of restoration are supported:

- 1+R Restoration—The restoration is enabled for an unprotected optical circuit.
- 1+1+R Restoration—The restoration is enabled for a protected optical circuit. 1+1+R supports Protection Switching Module (PSM), Y-Cable, and splitter protection schemes.

The GMPLS UNI is a signaling interface that is set up between the client router and the DWDM network. The GMPLS UNI allows the router to request bandwidth from the DWDM network.

For more information about GMPLS restoration and UNI, see the Provision Transponder and Muxponder Cards chapter in the *Cisco ONS 15454 DWDM Configuration Guide, Release 9.6.x*.

100G-LC-C, 10x10G-LC, and CFP-LC Cards

The software enhancements for 100G-LC-C, 10x10G-LC, and CFP-LC cards include the following:

- Support for low latency loopback mode on the 10x10G-LC card configured with 10GE and 10GFC payloads.
- Support for GFP mapping mode on the 10x10G-LC card configured with 10GE payloads.
- Support for OTU4 payload on the CXP port of the 100G-LC-C card.
- Support for Y-cable protection on:
    - 10x10G-LC card configured in the TXP-10G or MXP-10G card mode for 10GE and 8GFC payloads.
    - 10x10G-LC card configured in the MXP-10G card mode for the OC192 (STM-64) payload.
    - CFP-LC card configured with 100GE or 40GE payloads.
- Support for CXP fanout configuration on the 10x10G-LC card configured with 10GE payloads on the CXP client port.
- Support for proactive protection on the 100G-LC-C card when:
    - The 100G-LC-C card is configured in the TXP-100G mode and is connected to the Cisco ASR 9000 series router that supports 100GE payloads on its CFP pluggable.
    - The 100G-LC-C card is configured in the RGN-100G mode and is connected to the Cisco CRS-3 router using the 100G DWDM PLIM that supports OTU4 interfaces.
- Support for GCC on the 10x10G-LC and 100G-LC-C cards.

- Supports Ultra Forward Error Correction (UFEC) standard G.975.1 (sub-clause I.7) with 20% overhead on the trunk ports of the 100G-LC-C card.

For more information about the 100G-LC-C, 10x10G-LC, and CFP-LC cards, see the Provision Transponder and Muxponder Cards chapter in the *Cisco ONS 15454 DWDM Configuration Guide, Release 9.6.x*.

Automatic Power Calculations

When the ONS-15454-M6 shelf is powered by the 15454-M6-DC20 power module, the power consumption is limited to 960 W. The line cards in the shelf boot up sequentially. During the boot up process, if a new line card causes the power consumption of the shelf to exceed 960 W that line card will not boot up.

The PWR-CON-LMT alarm is raised in the Alarms tab in CTC when the installation or pre-provisioning of a card causes the power consumption to exceed 960 W. The total power consumption of the shelf can be viewed in CTC under the Provisioning > Power Monitor tabs.

For more information about automatic power calculations, see the Installing the ONS 15454 M6 Shelf chapter in the *Cisco ONS 15454 Hardware Installation Guide*.

Enhancements in 40E-MXP-C and 40ME-MXP-C Cards

On the 40E-MXP-C and 40ME-MXP-C cards, 10 Gigabit Ethernet LAN-Phy client inputs can be aggregated when overclock is enabled on the trunk port with mapping mode set to Constant Bit Rate (CBR). However, such payload must be deleted before overclock is disabled.

For more information about the enhancements in 40E-MXP-C and 40ME-MXP-C Cards, see the Provision Transponder and Muxponder Cards chapter in the *Cisco ONS 15454 DWDM Configuration Guide, Release 9.6.x*.

Splitter Wavelengths

On the AR-XP, AR-MXP, AR-XPE, and OTU2XP cards having splitter protection, OCHCC circuits can be configured with different trunk wavelengths for the working and protect paths. It is also possible to upgrade these OCHCC circuits to WSON circuits.

For more information about the splitter wavelengths, see the Provision Transponder and Muxponder Cards chapter in the *Cisco ONS 15454 DWDM Configuration Guide, Release 9.6.x*.

CIR and PIR Granularity

The Committed Info Rate (CIR) and Peak Info Rate (PIR) values can be specified with 0.1% granularity for provisioning port rate limiting and VLAN rate limiting on the GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards. The CIR and PIR parameters are available in the SVLAN > Provisioning > Profiles, Provisioning > Ether Ports > Ethernet, and Provisioning > Channel Groups tabs in CTC.

For more information about the CIR and PIR granularity, see the Provision Transponder and Muxponder Cards chapter in the *Cisco ONS 15454 DWDM Configuration Guide, Release 9.6.x*.

Lamp Test Per Card

The LED lamp test can be performed for each card in CTC. The Lamp Test option is available in the Maintenance > Diagnostic tabs in CTC. The lamp test can be performed for all the cards or per card.

Persistence of Perspective View

Existing perspective views can be saved. The saved perspective views are managed in the Perspective tab available in the Edit > Preferences menu in CTC. The persistence can be enabled or disabled. The perspective views are provided a name and saved in an XML file. The number of perspective views that must be persisted can be specified.

For more information about persistence of perspective view, see the Connect the PC and Log into the GUI document.

CTC Limitations

CTC might not start in systems running Windows 7 and Java 7. Perform the following steps to start CTC:

1. Remove all the Java versions from the system.
2. Reboot the system.
3. Install the appropriate JRE 1.7 from here.
4. Reboot the system again.
5. Start CTC.

From 9.6.0.3 release onwards, CTC is removed from Lite package. Hence, you cannot start CTC using a browser for a node having the TCC2P card as the controller card. The CTC standalone start application is required to start CTC. If startCTC.exe is not available, launch the CTC for the full package node having the TCC3/TNC/TSC/TNCE/TSCE card as the controller card, and add the Lite package node to the CTC.

Transaction Language 1 (TL1)

This section contains a list of new commands, command syntax changes, and command response changes that have been introduced in Release 9.6.0.3. For detailed information on TL1, see the Cisco ONS TL1 Command Guide.

New TL1 Commands

The following TL1 commands are added in Release 9.6.0.3:

Table 1: R9.6.0.3—New TL1 Commands

DLT-ALM-CPS	RTRV-ALM-CPS	RTRV-ALM-ODU0
RTRV-COND-ODU0	RTRV-ODU0	—

Command Syntax Changes

The syntax of the following commands have changed in Release 9.6.0.3:

- CHG-EQPT
- DLT-OPMODE
- ED-CPS
- ED-DWDM-CLNT
- ED-FOG
- ED-FSTE
- ED-G1000
- ED-GIGE

- ED-OCH
- ED-OCHCC
- ED-OCN-TYPE
- ED-OPMODE
- ED-OTU
- ED-POS
- ENT-CPS
- ENT-EQPT
- ENT-FOG
- ENT-OCHCC
- ENT-OPMODE
- OPR-CPS

Command Response Changes

The command responses of the following commands have changed in Release 9.6.0.3:

- RTRV-ALM-ALL
- RTRV-ALM-BITS
- RTRV-ALM-EQPT
- RTRV-ALM-MOD2ALM
- RTRV-ALM-SYNCN
- RTRV-ALS
- RTRV-COND-ALL
- RTRV-COND-BITS
- RTRV-COND-EQPT
- RTRV-COND-MOD2ALM
- RTRV-COND-SYNCN
- RTRV-CPS
- RTRV-DWDM-CLNT
- RTRV-FFP
- RTRV-FOG
- RTRV-FSTE
- RTRV-G1000
- RTRV-GIGE
- RTRV-NE-APC

- RTRV-NE-WDMANS
- RTRV-OCH
- RTRV-OCHCC
- RTRV-OCN-TYPE
- RTRV-OPMODE
- RTRV-OTU
- RTRV-PM-MOD2
- RTRV-PMSCHED-ALL
- RTRV-PMSCHED-MOD2
- RTRV-POS
- RTRV-TH-ALL
- RTRV-TH-MOD2
- RTRV-TRC-MOD2

New Features and Functionality for Release 9.6

This section highlights new features and functionality for Release 9.6. For detailed documentation of each of these features, consult the user documentation.

Common Hardware

The following hardware units have been introduced in Release 9.6:

100G-LC-C, 10x10G-LC, and CFP-LC Cards

The 100G-LC-C, 10x10G-LC, and CFP-LC cards provide a 100 G DWDM solution for the Cisco ONS 15454 M2 and Cisco ONS 15454 M6 platforms. The 100G-LC-C, 10x10G-LC, and CFP-LC cards can be configured in multiple operating modes.

The 100G-LC-C, 10x10G-LC, and CFP-LC cards provide the following key features:

- Simplifies the integration and transport of the 100 Gigabit Ethernet, 10 Gigabit Ethernet, and Optical Transport Unit Level 4 (OTU4) interfaces and services on the enterprise or service provider optical networks.
- Provides an advanced capability to deliver 100 Gbps services, which includes protocol transparency, wavelength tunability, flow-through timing, management, and performance monitoring capabilities.
- Supports Generalized Multiprotocol Label Switching (GMPLS) circuits.
- The 100G-LC-C card supports feature-based licensing. The 10x10G-LC card supports count-based licenses.

100G-LC-C Card
The 100G-LC-C card is a tuneable DWDM trunk card supported on Cisco ONS 15454 M2 and Cisco ONS 15454 M6 platforms. This card transports 100 GE LAN-PHY and OTN OTU4 over a 50-GHz spaced, 50-GHz stabilized, ITU-compliant wavelength. The card is tuneable on 96 wavelength channels spaced at 50 GHz over the entire C-band. The card has a pluggable client interface that

is used to provide transponder capabilities, mapping the client signal to a single DWDM line interface. The client port supports a standard CXP format pluggable that is compliant with a 100G-BASESR10 LAN PHY or OTU4 equivalent interface.

10x10G-C Card
The 10x10G-LC card is a DWDM client card supported on Cisco ONS 15454 M2 and Cisco ONS 15454 M6 platforms. This card provides 10 Gbps services to support the 100G-LC-C card.

CFP-LC Card
The CFP-LC card is a client card supported on the Cisco ONS 15454 M6 platform. This card provides 100 Gbps services to support 100 G DWDM wavelengths generated by the 100G-LC-C card.

For more information about the 100G-LC-C, 10x10G-LC, and CFP-LC cards, see the Provision Transponder and Muxponder Cards chapter in the *Cisco ONS 15454 DWDM Configuration Guide, Release 9.6.x*.

15454-M2-FTA2 and 15454-M6-FTA2 Fan-Tray

The 15454-M2-FTA2 and 15454-M6-FTA2 are the next generation fan-trays that provide increased air flow for better cooling. It is necessary to install the FTA2 in the shelf if it is populated with 100G-LC-C, 10x10G-LC, and CFP-LC cards. These fan-trays have the following specifications.

Fan-Tray	Shelf	Typical Power Consumption	Air Flow
15454-M2-FTA2	Cisco ONS 15454 M2	40 Watts	135 BTU/Hr
15454-M6-FTA2	Cisco ONS 15454 M6	130 Watts	445 BTU/Hr

For more information about the 15454-M2-FTA2 and 15454-M6-FTA2 fan-trays , see the Cisco ONS 15454 Hardware Installation Guide.

Cisco ONS 15216-EF-40-ODD and 15216-EF-40-EVEN Patch Panels

The ONS 15216-EF-40-ODD= and ONS 15216-EF-40-EVEN= units are the Cisco ONS 15216 40 channels 100GHz spaced multiplexer/demultiplexer exposed faceplate (EF) patch panels that operate on the odd or even 100GHz ITU grid respectively. They are equivalent in functionality to 15216-MD-40-ODD= and 15216-MD-40-EVEN= respectively with exposed faceplate for improved fiber management. The ONS 15216-EF-40 patch panel can combine 40-channels of ITU wavelengths spaced at 100 GHz to a denser DWDM signal and separate the combined signal to 40-channels of ITU wavelengths spaced at 100 GHz. To increase the network capacity, the patch panel is plugged with a Cisco ONS 15216 50/100 GHz Interleaver and Deinterleaver module (15216-MD-ID-50 or 15216-MD-48-CM) and is used along with another patch panel of a different grid (odd or even).

For more information about the Cisco ONS 15216-EF-40-ODD and 15216-EF-40-EVEN patch panels, see the Installing the Cisco ONS 15216-EF-40-ODD and 15216-EF-40-EVEN Mux/Demux Patch Panels document.

Cisco ONS 15216-MD-48-ODD and 15216-MD-48-EVEN Patch Panels

The ONS 15216-MD-48-ODD= and ONS 15216-MD-48-EVEN= units are the Cisco ONS 15216 48 channels 100GHz spaced multiplexer/demultiplexer exposed faceplate patch panels that operate on the odd or even 100GHz ITU grid respectively. The ONS 15216-MD-48 patch panel can combine 48-channels of ITU wavelengths spaced at 100 GHz to a denser DWDM signal and separate the combined signal to 48-channels of ITU wavelengths spaced at 100 GHz. To increase the network capacity, the patch panel is plugged with a Cisco ONS 15216 50/100 GHz Interleaver and Deinterleaver module (15216-MD-48-CM) and is used along with another patch panel of a different grid (odd or even).

For more information about the Cisco ONS 15216-MD-48-ODD and 15216-MD-48-EVEN patch panels, see the Installing the Cisco ONS 15216-MD-48-ODD and 15216-MD-48-EVEN Mux/Demux Patch Panels document.

Cisco ONS 15216-MD-48-CM Interleaver and Deinterleaver Pluggable

The Cisco ONS15216-MD-48-CM is 50 GHz/100 GHz C-band interleaver and deinterleaver pluggable that provides signal interleaving and deinterleaving in 50-GHz channel spacing DWDM systems. It operates inside the ONS 15216-MD-40, ONS 15216-EF-40, or ONS 15216-MD-48 odd and even patch panels.

The advantages of installing the ONS15216-MD-48-CM/15216-MD-48-CME are:

- Extends existing network capacity.
- Provides low-cost future proofing of network capacity.
- Allows for non-traffic affecting capacity upgrade when the patch panel is equipped with the ONS15216-MD-48-CM/15216-MD-48-CME pluggable at first installation.

For more information about the interleaver and deinterleaver pluggable, see the Installing the Cisco ONS 15216-MD-48-CM Interleaver and Deinterleaver Pluggable document.

Cisco ONS 15216 FBG DCU

The Cisco ONS 15216 FBG DCU is a low latency dispersion compensation unit (DCU) that uses the Fiber Bragg Grating (FBG) technology. It has a very low insertion loss when compared to a standard DCU. The Cisco ONS 15216 FBG DCU complements the Cisco ONS 15216 platform and can interoperate with the ONS 15454, ONS 155xx, and ONS 15600 products.

There are multiple FBG DCU modules, each designed to operate at a specific compensation level. Individual modules can be cascaded to provide higher level of compensation. The Cisco ONS 15216 FBG DCU modules operate in the C-band within the wavelength range of 1528.77 nm to 1566.31 nm at a 100 GHz grid spacing.

The Cisco ONS 15216 FBG DCU has the following features:

- Latency lower than 25 ns.
- Low insertion loss values (4.5 dB maximum).
- Optical connectivity, using the LC-UPC connector.
- USB connectivity with Cisco ONS 15454 M6 shelf for retrieving inventory data.
- Installation supported in standard Cisco ONS 15216 DCU SA chassis.

For more information about the Cisco ONS 15216 FBG DCU, see the Installing Cisco ONS 15216 FBG DCU document.

Pluggable Port Modules Support

The Pluggable Port Modules (XFP, CFP, CXP, and SFP+) supported in the Cisco ONS cards are as follows:

- ONS-CXP-100G-SR10= CXP module is supported on the 100G-LC-C card.
- ONS-SC+-10G-30.3= through ONS-SC+-10G-61.4=, ONS-SC+-10G-SR=, ONS-SC+-10G-ER=, ONS-SC+-10G-LR=, ONS-SC+-10G-ZR= SFP+ modules are supported on the 10x10G-LC card.
- ONS-CC-100G-LR4=, ONS-CC-100GE-LR4, and ONS-CC-40G-LR4 CFP modules are supported on the CFP-LC card.
- ONS-CCC-100G-x= (x=5, 10, 20 m) are 3 MPO-MPO cables that are supported on the 100G-LC-C and CFP-LC cards for CXP-CFP, CXP-CXP, and CFP-CFP interconnections.

- ONS-XC-10G-96C= XFP module is supported on the ADM-10G, GE_XP, GE_XPE, 10GE_XP, 10GE_XPE, OTU2-XP, AR-XP, and AR-MXP cards.

For more information about the Pluggable Port Modules support, see the Installing the GBIC, SFP, SFP+, and XFP Optical Modules in Cisco ONS Platforms document.

New Software Features and Functionality

The following new software features have been introduced in Release 9.6:

10GE Support in AR_MXP and AR_XP Cards

A 10 GE client payload is supported on the AR_MXP or AR_XP card when the card is configured in the high-rate TXP_MR card mode.

CTC GUI Enhancements

The improved CTC GUI provides enhanced user experience in compliance with the Cisco Brand 2012. The enhancements include the following:

- New home page that provides options or shortcuts to open frequently used views and settings.
- Navigation/Summary pane that provides options to quickly view summary, network explorer, and search circuits.
- Circuit Explorer pane that provides a hierarchical view of all the circuits provisioned in the network.
- Multitabbed structure for displaying views.
- Dockable and undockable panes that are flexible to move, arrange, and resize.
- New menu and toolbar icons that enhance the look-and-feel of the interface.
- New look-and-feel Circuit Creation and Raman Calibration wizards.

For more information on CTC enhancements, see the CTC Enhancements, Operations, and Shortcuts document.

Licensing

The 100G-LC-C card supports feature-based licensing. The 100G-LC-C card has two license levels, base and full license. The base license supports MXP-10x10G operating mode and the full license supports all the operating modes. The 10x10G-LC card supports count-based licenses. The card supports up to nine licenses.

For more information about licensing, see the Cisco ONS 15454 DWDM Licensing Configuration Guide document.

Multishelf Enhancement

The maximum number of shelves that can be aggregated under a single IP address on the ONS 15454 and ONS 15454 M6 is extended to 50 shelves. It is required to use TCC3, TNC, TNCE, TSC, or TSCE cards in the node controller if the number of subtended shelf exceeds 4.

Single Package for ANSI and ETSI

The Cisco ONS 15454 M2 and ONS 15454 M6 system mode can be changed from ANSI (SONET) to ETSI (SDH) or vice-versa. Changing the system mode removes the provisioned data and the system reverts to the default configuration.

Transaction Language 1 (TL1)

This section contains a list of new commands, command syntax changes, and command response changes that have been introduced in Release 9.6. For detailed information on TL1, see the Cisco ONS TL1 Command Guide.

New TL1 Commands

The following TL1 commands are added in Release 9.6:

Table 2: R9.6-New TL1 Commands

DLT-100GIGE	DLT-FFP-100GIGE	DLT-FFP-OTU4
DLT-OTU4	DLT-RMONTH-100GIGE	DLT-RMONTH-OTU3
DLT-RMONTH-OTU4	ED-100GIGE	ED-FFP-100GIGE
ED-FFP-OTU4	ED-OTU4	ED-TRC-OTU4
ENT-100GIGE	ENT-FFP-100GIGE	ENT-FFP-OTU4
ENT-OTU4	ENT-RMONTH-100GIGE	ENT-RMONTH-OTU3
ENT-RMONTH-OTU4	INIT-REG-100GIGE	INIT-REG-OTU4
OPR-LPBK-100GIGE	OPR-LPBK-EQPT	OPR-LPBK-OTU4
OPR-PROTNSW-100GIGE	OPR-PROTNSW-OTU4	RLS-LPBK-100GIGE
RLS-LPBK-EQPT	RLS-LPBK-OTU4	RLS-PROTNSW-100GIGE
RLS-PROTNSW-OTU4	RMV-100GIGE	RMV-OTU4
RST-100GIGE	RST-OTU4	RTRV-100GIGE
RTRV-ALM-100GIGE	RTRV-ALM-OTU4	RTRV-ALMTH-100GIGE
RTRV-ALMTH-OTU4	RTRV-BWP-ETH	RTRV-COND-100GIGE
RTRV-COND-OTU4	RTRV-COS-ETH	RTRV-CRS-ETH
RTRV-FFP-100GIGE	RTRV-FFP-OTU4	RTRV-L2-ETH
RTRV-NE-APC	RTRV-NE-WDMANS	RTRV-OTU4
RTRV-PATH-OCH	RTRV-PM-100GIGE	RTRV-PM-OTU4
RTRV-PMSCHED-100GIGE	RTRV-PMSCHED-OTU4	RTRV-PROTNSW-100GIGE
RTRV-PROTNSW-OTU4	RTRV-RMONTH-100GIGE	RTRV-RMONTH-OTU3
RTRV-RMONTH-OTU4	RTRV-SLV-WDMANS	RTRV-STCN-REP
RTRV-TH-100GIGE	RTRV-TH-OTU4	RTRV-TRC-OTU4
RTRV-VLB-REP	SCHED-PMREPT-100GIGE	SCHED-PMREPT-OTU4
SET-ALMTH-100GIGE	SET-ALMTH-OTU4	SET-TH-100GIGE
SET-TH-OTU4	—	—

Command Syntax Changes

The syntax of the following commands have changed in Release 9.6:

- DLT-OPMODE
- ED-10GFC
- ED-1GFC
- ED-1GFICON
- ED-2GFC
- ED-2GFICON
- ED-4GFC
- ED-4GFICON
- ED-5GIB
- ED-8GFC
- ED-E1
- ED-E3
- ED-OCH
- ED-OPMODE
- ED-OTU1
- ED-OTU2
- ED-OTU3
- ED-T1
- ED-T3
- ENT-OPMODE

Command Response Changes

The command responses of the following commands have changed in Release 9.6:

- RTRV-ALM-UCP
- RTRV-ALS
- RTRV-BLSR
- RTRV-E1
- RTRV-E3
- RTRV-GIGE
- RTRV-OCH

- RTRV-T1
- RTRV-T3

Cisco Bug Search Tool

Use the Bug Search Tool (BST) to view the list of outstanding and resolved bugs in a release.

BST, the online successor to Bug Toolkit, is designed to improve the effectiveness in network risk management and device troubleshooting. The tool allows partners and customers to search for software bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. The tool has provision to filter bugs based on credentials to provide external and internal bug views for the search input.

The BST is available at Bug Search. To search for a specific bug, go to https://tools.cisco.com/bugsearch/bug/*bugid*. For more information on BST, see Bug Search Help.

Search Bugs in BST

Follow the instructions below to search bugs specific to a software release in BST.

Procedure

Step 1 Go to https://tools.cisco.com/bugsearch/.
You will be prompted to log into Cisco.com. After successful login, the Bug Toolkit page opens.

Step 2 To search for release specific bugs, enter the following parameters in the page:

a) Search For – Enter **ONS 15454** in the text box.
b) Releases – Enter the appropriate release number.
c) Show Bugs – Select **Affecting or Fixed in these Releases**.

Step 3 Press **Enter**.
Note:

- By default, the search results include bugs with all severity levels and statuses. After you perform a search, you can filter your search results to meet your search requirements.
- An initial set of 25 search results is shown in the bottom pane. Drag the scroll bar to display the next set of 25 results. Pagination of search results is not supported.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, using the Cisco Bug Search Tool (BST), submitting a service request, and gathering additional information, see What's New in Cisco Product Documentation.

To receive new and revised Cisco technical content directly to your desktop, you can subscribe to the What's New in Cisco Product Documentation RSS feed. RSS feeds are a free service.

Revised: October 4, 2016, OL-26859-05

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA 95134-1706
USA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands