



Release Notes for Cisco ONS 15327

Release 7.0

August 2007



Note

The terms "Unidirectional Path Switched Ring" and "UPSR" may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as "Path Protected Mesh Network" and "PPMN," refer generally to Cisco's path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

Release notes address closed (maintenance) issues, caveats, and new features for the Cisco ONS 15327 SONET. For detailed information regarding features, capabilities, hardware, and software introduced with this release, refer to Release 7.0 of the *Cisco ONS 15327 Procedure Guide*, *Cisco ONS 15327 Reference Manual*, *Cisco ONS SONET TL1 Command Guide*, and *Cisco ONS 15327 Troubleshooting Guide*. For the most current version of the Release Notes for Cisco ONS 15327 Release 7.0, visit the following URL:

<http://www.cisco.com/univercd/cc/td/doc/product/ong/15327/rnotes/index.htm>

Cisco also provides Bug Toolkit, a web resource for tracking defects. To access Bug Toolkit, visit the following URL:

http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl

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Changes to the Release Notes

This section documents supplemental changes that have been added to the *Release Notes for Cisco ONS 15327 Release 7.0* since the production of the Cisco ONS 15327 System Software CD for Release 7.0.

No changes have been added to the release notes for Release 7.0.

Caveats

Review the notes listed below before deploying the ONS 15327. Caveats with tracking numbers are known system limitations that are scheduled to be addressed in a subsequent release. Caveats without tracking numbers are provided to point out procedural or situational considerations when deploying the product.

Maintenance and Administration



Caution

VxWorks is intended for qualified Cisco personnel only. Customer use of VxWorks is not recommended, nor is it supported by Cisco's Technical Assistance Center. Inappropriate use of VxWorks commands can have a negative and service affecting impact on your network. Please consult the troubleshooting guide for your release and platform for appropriate troubleshooting procedures. To exit without logging in, enter a Control-D (hold down the Control and D keys at the same time) at the Username prompt. To exit after logging in, type "logout" at the VxWorks shell prompt.



Note

In releases prior to 4.6 you could independently set proxy server gateway settings; however, with Release 4.6.x and forward, this is no longer the case. To retain the integrity of existing network configurations, settings made in a pre-4.6 release are not changed on an upgrade to Release 7.0.x. Current settings are displayed in CTC (whether they were inherited from an upgrade, or they were set using the current GUI).

CSCeh84908

A CTC client session can disconnect from an ONS node during simultaneous deletion of large numbers of VT level circuits (3000+). Connectivity to the node will recover without any user action. If the condition persists, restart the CTC session to reconnect. This issue is under investigation.

CSCed24448

After a static route is provisioned to 0.0.0.0 and then deleted, the default route disappears. If this occurs, reprovision the default gateway. This issue will not be resolved.

CSCee65731

An ONS 15327 that does not have an SNTP server reference resets the time to Jan. 1, 1970 during a software activation. A routine common control switchover does not cause the node to lose the time setting. To avoid this issue provision a SNTP server reference. This issue cannot be resolved.

CSCdy10030

CVs are not positively adjusted after exiting a UAS state. When a transition has been made from counting UAS, at least 10 seconds of non-SES must be counted to exit UAS. When this event occurs, Telcordia GR-253 specifies that CVs that occurred during this time be counted, but they are not. There are no plans to resolve this issue at this time.

CSCdy49608

A node connection might fail during bulk circuit creation, causing the circuit creation to also fail. For example, this has been seen while creating 224 VT 1.5 protected circuits, on a path protection consisting of eight ONS 15327 nodes. If you experience a bulk circuit creation failure of this type, cancel the circuit creation batch, then delete any incomplete circuits. Restart the batch from the last successful circuit. This issue will not be resolved.

CSCdx35561

CTC is unable to communicate with an ONS 15327 that is connected via an Ethernet craft port. CTC does, however, communicate over an SDCC link with an ONS 15327 that is Ethernet connected, yielding a slow connection. This situation occurs when multiple ONS 15327s are on a single Ethernet segment and the nodes have different values for any of the following features:

- Enable OSPF on the LAN
- Enable Firewall
- Craft Access Only

When any of these features are enabled, the proxy ARP service on the node is also disabled. The ONS 15327 proxy ARP service assumes that all nodes are participating in the service.

This situation can also occur immediately after the aforementioned features are enabled. Other hosts on the Ethernet segment (for example, the subnet router) may retain incorrect ARP settings for the ONS 15327s.

To avoid this issue, all nodes on the same Ethernet segment must have the same values for Enable OSPF on the LAN, Enable Firewall, and Craft Access Only. If any of these values have changed recently, it may be necessary to allow connected hosts (such as the subnet router) to expire their ARP entries.

You can avoid waiting for the ARP entries to expire on their own by removing the SDCC links from the affected ONS 15327 nodes. This will disconnect them for the purposes of the proxy ARP service and the nodes should become directly accessible over the Ethernet. Network settings on the nodes can then be provisioned as desired, after which the SDCC can be restored.

This issue will not be resolved.

CSCdy11012

When the topology host is connected to multiple OSPF areas, but CTC is launched on a node that is connected to fewer areas, the topology host appears in CTC, and all nodes appear in the network view, but some nodes remain disconnected. This can occur when the CTC host does not have routing information to connect to the disconnected nodes. (This can happen, for example, if automatic host detection was used to connect the CTC workstation to the initial node.)

CTC will be able to contact the topology host to learn about all the nodes in all the OSPF areas, but will be unable to contact any nodes that are not in the OSPF areas used by the launch node. Therefore, some nodes will remain disconnected in the CTC network view.

To work around this issue, if no firewall enabled, then the network configuration of the CTC host can be changed to allow CTC to see all nodes in the network. The launch node must be on its own subnet to prevent network partitioning, and craft access must not be enabled. The CTC host must be provisioned with an address on the same subnet as the initial node (but this address must not conflict with any other node in the network), and with the default gateway of the initial node. CTC will now be able to contact all nodes in the network.

If a firewall is enabled on any node in the network, then CTC will be unable to contact nodes outside of the initial OSPF areas. This issue will not be resolved.

CSCdy37198

On Cisco ONS 15327 platforms equipped with XTC cross-connect cards, Ethernet traffic may be lost during a BLSR protection switch, with no accompanying alarm or condition raised. Possible affected circuits will be between Ethernet cards (E100T-4) built over Protection Channel Access (PCA) bandwidth on BLSR spans. When BLSR issues the switch, the PCA bandwidth is preempted. Since there is no longer a connection between the ends of the Ethernet circuit, traffic is lost. Further, in nodes equipped with XTC cards, the E100T-4 cards do not raise an alarm or condition in CTC. This issue will not be resolved.

CSCds23552

You cannot delete the standby XTC once it is removed. If you have two XTC cards and then decide to operate with only one, you will get a standing minor alarm. The alarm cannot be removed by CTC. The XTC is a combo card, combining the functionality of the ONS 15454 TCC2, cross connect, DS1 and DS3 cards, with a protection group automatically provisioned. On the ONS 15454, similar behavior occurs for the TCC2 card. The cross connect card for the ONS 15454 can only be deleted if there are no circuits provisioned. DS1 and DS3 cards can only be deleted if they are not in a protection group. User-defined alarm profiles from Release 5.0.x allow you to mask the improper removal alarm from the standby XTC slot without masking any other items if desired, thus avoiding this issue. This issue will not be resolved.

Data IO Cards

CSCdy41135

When using a G1000-2 card, TIM-P can be mistakenly raised on a PCA circuit after a protection switch. This occurs when path trace is enabled on a PCA circuit that is no longer in use after a protection switch. To work around this issue, either disable path trace or use alarm profiling to filter out the unwanted alarm. This issue will not be resolved.

CSCdy13035

Excessive Ethernet traffic loss (greater than 60 ms) might occur when the active XTC is removed from the chassis while using the G1000-2 card. On rare occasions, permanent loss of traffic can occur. Do not remove the active XTC from the chassis to force a protection switch. Instead, perform a soft reset of the active XTC through the network management interface. Once the XTC is in standby mode, it can be removed from the chassis without inducing excessive traffic loss.

This issue impacts only cards with Version number 800-18490-01 and is resolved by a newer version of the G1000-2 cards. Cards with Version number 800-18490-02, rev A0 or later incorporate improved hardware PLL circuitry on the G1000-2 line card to allow an active XTC removal without causing excessive traffic loss. The caveat herein is for the previous hardware version.

Path Protection Functionality

CSCee53579

Traffic hits can occur in an unprotected to path protection topology upgrade in unidirectional routing. If you create an unprotected circuit, then upgrade the unprotected circuit to a path protection circuit using Unprotected to path protection wizard, selecting unidirectional routing in the wizard, the circuit will be upgraded to a path protection circuit. However, during the conversion, traffic hits on the order of 300 ms should be expected. This issue will not be resolved.

CSCeb37707

With a VT path protection circuit, if you inject signals with a thru-mode test set into one path of the circuit in a particular order, you may not see the appropriate alarms. This can occur when you first inject LOP-P, then clear, then inject LOP-V. This issue will not be resolved.

BLSR Functionality

CSCsc14824

A low memory alarm might be raised when interconnecting two BLSRs on a single ONS 15327 node. When interconnecting one BLSR or using path protection, 1:1, or 1:0 protection the low memory alarm will not be seen. To clear a low memory alarm perform an XTC side switch.

Performance Monitoring

CSCdt10886

The far-end STS PM counts do not accumulate on an OC-48 linear 1+1 circuit even though the near-end STS PM counts on the other end are increasing. To see this issue, connect two nodes with an OC-12 or OC-48 linear 1+1 protected span. Place a piece of test equipment in the middle of the span and inject B3 errors. The near-end STS PM counts accumulate, but the far-end STS PM counts do not accumulate. To work around this issue, Use the near-end STS PM count from the adjacent node to see the far-end STS PM count for the current node. This issue will be resolved in a future release.

TL1

**Note**

To be compatible with TL1 and DNS, all nodes must have valid names. Node names should contain alphanumeric characters or hyphens, but no special characters or spaces.

Resolved Caveats for Release 7.0

The following items are resolved in Release 7.0.

Bridge and Roll

CSCei37364

When a rollTo leg is not receiving a good signal, and because of this the rollPending alarm is not cleared, there is no alarm indicating the reason that the RollPending alarm fails to clear. This issue is resolved in Release 7.0.

New Features and Functionality

This section highlights new features and functionality for Release 7.0.x. For detailed documentation of each of these features, consult the user documentation.

New Software Features

BLSR STS and VT Squelching

Release 7.0 supports BLSR STS squelching for the ONS 15454, ONS 15327, and ONS 15600, and VT squelching for the ONS 15454, and ONS 15327, with limited VT squelching support (see below) provided by the ONS 15600.

Release 7.0 nodes display STS and VT squelch tables depending on the type of circuits created. For example, if a fiber cut occurs, the BLSR squelch tables show STSs or VTs that will be squelched for every isolated node. Squelching replaces traffic by inserting the appropriate alarm indication signal path (AIS-P) and prevents traffic misconnections. For an STS with a VT-access check mark, the AIS-P will be removed after 100 ms.

BLSR STS Squelch Tables in CTC

BLSR STS squelch tables show STSs that will be squelched for every isolated node. BLSR STS numbers, East and West source and destination information, and East and West incoming, or outgoing VT traffic indications are displayed in the BLSR Squelch Table window. BLSR squelching is performed on STSs that carry STS circuits only. Squelch table entries will not appear for STSs carrying VT circuits

or Ethernet circuits to, or from E-Series Ethernet cards provisioned in a multcard Ethergroup. These squelch tables contain entries with adjacent node IDs displayed, instead of source or destination node IDs.

BLSR VT Squelch Tables in CTC

BLSR VT squelch tables only appear on the node dropping VTs from a BLSR and are used to perform VT-level squelching when a node is isolated. VT squelching is supported on the ONS 15454 and the ONS 15327 platforms. The ONS 15600 platform does not support VT squelching; however, when an ONS 15454 and an ONS 15600 are in the same network, the ONS 15600 node allows the ONS 15454 node to carry VT circuits in a VT tunnel. The ONS 15600 performs 100-ms STS-level squelching for each VT-access STS at the switching node in case of a node failure.

When using a VT circuit on a VT tunnel (VTT), or on a VT aggregation point (VAP), the VTT or VAP allows multiple VT circuits to be passed through on a single STS without consuming VT matrix resources on the cross-connect card.

In case of a source and destination node failure of a VTT, the switching node performs 100-ms STS-level squelching for the VTT STS. The node dropping VT traffic performs VT-level squelching. VT traffic on the VTT that is not coming from the failed node is protected.

An STS grooming node (VAP source) does not carry VT circuits through a VTT. The STS grooming node performs STS-level squelching for each STS timeslot at the switching node in case the VT-grooming (VAP destination) node fails. The node dropping VT traffic performs VT-level squelching for each VT timeslot in case the STS-grooming end node fails. No VT traffic on the VAP is protected during a failure of the STS-grooming node or the VT-grooming node.

The VT squelch table provides BLSR VT group number and channel indications, and East and West source information. To view the VT squelch table, double-click the VT with a check mark in the BLSR STS squelch table window. The check mark appears on every VT-access STS; however, the VT-squelch table appears only by double-clicking the check mark on the node dropping the VT. The intermediate node of the VT does not maintain the VT-squelch table.

“Ring is Squelching STS Traffic” Condition

Release 7.0 supports an informational Ring is Squelching STS Traffic (STS-SQUELCH-L) condition that can be raised on an OC-N facility. The STS-SQUELCH-L condition indicates that traffic is squelched due to node failure (traffic outage). If the node failure scenario includes the source or destination node, then switching the nodes will squelch all the STSs that originate from or are destined to the failure node. The condition resolves when the node is no longer failing.

“Ring is Squelching VT Traffic” Condition

Release 7.0 supports an informational Ring is Squelching VT Traffic (VT-SQUELCH-L) condition that can be raised on an OC-N facility. The VT-SQUELCH-L condition indicates that traffic is squelched due to node failure (traffic outage). If the node failure scenario includes the source node, the node dropping VT will squelch VT traffic. The condition resolves when the node failure is recovered.

BLSR STS and VT Squelching

Release 7.0 supports BLSR STS squelching for the ONS 15454, ONS 15327, and ONS 15600, and VT squelching for the ONS 15454, and ONS 15327, with limited VT squelching support (see below) provided by the ONS 15600. STS-level squelching is supported in previous releases. With VT-level squelching added in Release 7.0 the STS squelch table now displays VT-access status for each STS (every entry) in the table. There is a check box in both the east and west sides for each entry of STS squelch table, and a check mark in this box indicates that the STS is VT-access.

Release 7.0 nodes display STS and VT squelch tables depending on the type of circuits created. For example, if a fiber cut occurs, the BLSR squelch tables show STSs or VTs that will be squelched for every isolated node. Squelching replaces traffic by inserting the appropriate alarm indication signal path (AIS-P) and prevents traffic misconnections. For an STS with a VT-access check mark, the AIS-P will be removed after 100 ms.

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The VT squelch table provides BLSR VT group number and channel indications, and East and West source information. To view the VT squelch table, double-click the STS with a check mark in the BLSR STS squelch table window. The check mark appears on every VT-access STS; however, the VT-squelch table appears only by double-clicking the check mark on the node dropping the VT. The intermediate node of the VT does not maintain the VT-squelch table.

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“Ring is Squelching VT Traffic” Condition

Release 7.0 supports an informational Ring is Squelching VT Traffic (VT-SQUELCH-L) condition that can be raised on an OC-N facility. The VT-SQUELCH-L condition indicates that traffic is squelched due to node failure (traffic outage). If the node failure scenario includes the source node, the node dropping VT will squelch VT traffic. The condition resolves when the node failure is recovered.

Link Consolidation

CTC provides the ability to consolidate the DCC and provisionable patchcord (PPC) links shown in the network view into a more streamlined view. Link consolidation allows you to condense multiple internodal links into a singular link. The link consolidation sorts links by class, meaning that all DCC links are consolidated together, for example. You can access individual links within consolidated links using the right-click shortcut menu. Each link has an associated icon.

Link consolidation is only available on non-detailed maps. Non-detailed maps display nodes in icon form instead of detailed form, meaning the nodes appear as rectangles with ports on the sides. Refer to the Cisco ONS 15454 Procedure Guide for more information about consolidated links.

Data Communications Network Tool

Release 7.0 CTC includes a data communications network (DCN) tool that assists with network troubleshooting for Open Shortest Path First (OSPF) networks. This tool, located in network view, executes an internal dump command to retrieve information about all nodes accessible from the entry point. The retrieved information is the same as you would get if you were to execute a dump using special networking commands. The contents of the dump file can be saved or printed and furnished to Cisco Technical Support for use in OSPF network support.

Advanced Circuit Filtering and Export

Release 7.0 adds an Advanced tab to the Circuit Filter dialog. With advanced circuit filtering you can filter on selected rings, nodes, links, or source/drop combinations.

Also, you can export the active Circuit window data in HTML, comma-separated values (CSV), or tab-separated values (TSV) format using the Export command from the File menu.

Superuser Privileges for Provisioning Users

With Release 7.0 Superusers can grant permission to Provisioning users to perform a set of tasks, including retrieving the audit log, restoring a database, clearing performance monitoring (PM) parameters, activating a software load, and reverting a software load. These privileges can only be set using the node-level network element (NE) defaults, with the exception of the PM clearing privilege, which can be granted to a Provisioning user from the CTC Provisioning > Security > Access tabs. For more information about setting up Superuser privileges, refer to the Cisco ONS 15454 Procedure Guide.

CTC Download Highest Level NET JAR File

As of Release 7.0 CTC, during network topology discovery, polls each node in the network to determine which one contains the most recent version of the CTC software. If CTC discovers a node in the network that has a more recent version of the CTC software than the version you are currently running, CTC

generates a message stating that a later version of CTC has been found in the network, and offers to install the CTC software upgrade JAR files. If you have network discovery disabled, CTC will not seek more recent versions of the software. Unreachable nodes are not included in the upgrade discovery.

Local Domain Creation and Viewing

With Release 7.0 a Superuser can control whether domains that any future users create and view persist globally (for all CTC sessions), or only locally (within the current CTC session in which they are created), as well as who can create domains (all users, or just Superusers). This control is given to Superusers by means of the NE default, CTC.network.LocalDomainCreationAndViewing. The factory pre-set default value is FALSE, meaning domain information is applied to all CTC sessions and only Superusers can create a domain or add a node to a domain. Setting the default to TRUE enables the option for local domain creation by any user.

Enhanced Fault Management

Release 7.0 adds increased flexibility for fault management. When an entity is put in the OOS,MT administrative state, the node suppresses all standing alarms on that entity. All alarms and events appear on the Conditions tab. You can change this behavior for the LPBKFACILITY and LPBKTERMINAL alarms. To display these alarms on the Alarms tab, you can set the NODE.general.ReportLoopbackConditionsOnOOS-MTPorts to TRUE in the NE Defaults editor.

Rx and Tx Indication for TCAs

For electrical card or port PMs for which a direction, either Receive (Rx) or Transmit (Tx), can be detected, Release 7.0 CTC and TL1 display the Rx or Tx value with the associated threshold crossing alert (TCA) description. For specific cards, port types, and PMs supported consult the Performance Monitoring chapter of the *Cisco ONS 15327 Reference Manual*.

TL1

TL1 Command Changes

Command Syntax Changes

The syntax of the following commands is changed in Release 7.0.

ENT-TADRMAP syntax:

```
ENT-TADRMAP[:<TID>]::<CTAG>::TIDNAME=<name>,[IPADDR=<ipAddr>],[PORT=<port>],[ENCODING=<encoding>],[NSAP=<nsapAddr>];
```

Is changed to:

```
ENT-TADRMAP[:<TID>]::<CTAG>::TIDNAME=<tidname>,[IPADDR=<ipaddr>],[PORT=<port>],[ENCODING=<encoding>],[NSAP=<nsap>];
```

OPR-SYNCNSW syntax:

```
OPR-SYNCNSW[:<TID>]::<CTAG>;
```

Is changed to:

```
OPR-SYNCNSW[:<TID>][:<aid>]:<CTAG>;
```

RTRV-NE-SYNCN syntax:

```
RTRV-NE-SYNCN[:<TID>]:<CTAG>[:::];
```

Is changed to:

```
RTRV-NE-SYNCN[:<TID>][:<aid>]:<CTAG>[:::];
```

RTRV-SYNCN syntax:

```
RTRV-SYNCN[:<TID>]:<aid>:<CTAG>[:::];
```

Is changed to:

```
RTRV-SYNCN[:<TID>][:<aid>]:<CTAG>[:::];
```

RTRV-TADRMAP syntax:

```
RTRV-TADRMAP[:<TID>][:<AID>]:<CTAG>:::MODE=<modeType>
```

Is changed to:

```
RTRV-TADRMAP[:<TID>][:<AID>]:<CTAG>[:::MODE=<modeType>]
```

ED-NE-GEN syntax:

```
ED-NE-GEN[:<TID>]:<CTAG>[:::NAME=<name>],[IPADDR=<ipaddr>],[IPMASK=<ipmask>],[DEFRTR=<defrtr>],[IIOPPORT=<iioport>],[NTP=<ntp>],[SUPPRESSIP=<mode>];
```

Is changed to:

```
ED-NE-GEN[:<TID>]:<CTAG>[:::NAME=<name>],[IPADDR=<ipaddr>],[IPMASK=<ipmask>],[DEFRTR=<defrtr>],[IIOPPORT=<iioport>],[NTP=<ntp>],[PROXYSRV=<isProxyServer>],[FIREWALL=<isFireWall>];
```

Command Response Changes

The following TL1 response has changed in Release 7.0.

RTRV-INV response:

```
<aid>,<aidtype>:[<pn>],[<hwrev>],[<fwrev>],[<sn>],[<clei>],[<twl1=nwl in code>],[<pluginvendorid>],[<pluginpn>],[<pluginhwrev>],[<pluginfwrev>],[<pluginsn>],[<ilossref>],[<productId>],[<versionId>],[<fpgaVersion>]
```

Is changed to:

```
<aid>,<aidtype>:[<pn>],[<hwrev>],[<fwrev>],[<sn>],[<clei>],[<twl1=nwl in code>],[<pluginvendorid>],[<pluginpn>],[<pluginhwrev>],[<pluginfwrev>],[<pluginsn>],[<ilossref>],[<productId>],[<versionId>],[<fpgaVersion>],[<vendorId>]
```

TL1 ENUM Items Added

Table 1 highlights ENUM items added for Release 7.0, by ENUM type.

Table 1 EQUIPMENT_TYPE enum items added to Release 7.0

Enum Name	Enum Value
EQUIPMENT_TYPE_ET_UNKNOWN	"UNKNOWN"
EQUIPMENT_TYPE_ET_UNPROVISIONED	"UNPROVISIONED"

EQUIPMENT_TYPE is used in the following commands:

- CHG-EQPT
- ENT-EQPT

Related Documentation

Release-Specific Documents

- *Release Notes for the Cisco ONS 15327, Release 6.0*
- *Release Notes for the Cisco ONS 15454 SDH, Release 7.0*
- *Release Notes for the Cisco ONS 15454, Release 7.0*
- *Release Notes for the Cisco ONS 15600, Release 7.0*
- *Release Notes for the Cisco ONS 15310-CL, Release 7.0*
- *Cisco ONS 15327 Software Upgrade Guide, Release 7.0*

Platform-Specific Documents

- *Cisco ONS 15327 Procedure Guide*
Provides installation, turn up, test, and maintenance procedures
- *Cisco ONS 15327 Reference Manual*
Provides technical reference information for SONET/SDH cards, nodes, and networks
- *Cisco ONS 15327 Troubleshooting Guide*
Provides a list of SONET alarms and troubleshooting procedures, general troubleshooting information, and hardware replacement procedures
- *Cisco ONS SONET TL1 Command Guide*
Provides a comprehensive list of TL1 commands

Obtaining Optical Networking Information

This section contains information that is specific to optical networking products. For information that pertains to all of Cisco, refer to the [Obtaining Documentation, Obtaining Support, and Security Guidelines](#) section.

Where to Find Safety and Warning Information

For safety and warning information, refer to the *Cisco Optical Transport Products Safety and Compliance Information* document that accompanied the product. This publication describes the international agency compliance and safety information for the Cisco ONS 15454 system. It also includes translations of the safety warnings that appear in the ONS 15454 system documentation.

Cisco Optical Networking Product Documentation CD-ROM

Optical networking-related documentation, including Cisco ONS 15xxx product documentation, is available in a CD-ROM package that ships with your product. The Optical Networking Product Documentation CD-ROM is updated periodically and may be more current than printed documentation.

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section.

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