Release Notes for *Cisco ONS 15600 Release 7.2.3*

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.

August 2007

Release notes address closed (maintenance) issues, caveats, and new features for the Cisco ONS 15600. For detailed information regarding features, capabilities, hardware, and software introduced with this release, refer to Release 7.2 of the *Cisco ONS 15600 Procedure Guide, Cisco ONS 15600 Reference Manual, Cisco ONS SONET TL1 Command Guide, and Cisco ONS 15600 Troubleshooting Guide.* For the most current version of the Release Notes for Cisco ONS 15600 Release 7.2.3, visit the following URL:

http://www.cisco.com/en/US/products/hw/optical/ps4533/prod_release_notes_list.html

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

http://tools.cisco.com/Support/BugToolKit/action.do?hdnAction=searchBugs

Contents

Changes to the Release Notes

This section documents supplemental changes that have been added to the *Release Notes for Cisco ONS 15600 Release 7.2* since the production of the Cisco ONS 15600 System Software CD for Release 7.2.3.

No changes have been added to the release notes for Release 7.2.3.

Caveats

Review the notes listed below before deploying the ONS 15600. 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.

Hardware

ONS-SE-2G-xx.x

The ONS-SE-2G-xx.x complies with performance criteria for all intra-facility fiber cables and connectors per Telcordia GR-326-CORE, Issue 3 Sept. 1999. Cisco recommends the following approved suppliers for intrafacility fiber cables to use with this product:

- Volex
- Fitel
- Sumitomo
- Fujikura
- Tyco

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.

CSCse36337

When a Server Trail is created on a 1+1 Protection Group, the Node's database gets deleted, and the Node goes for continuous reboot. No workaround available. This issue will be resolved in Release 7.22, 8.0.

CSCse89357

CTC Network view shows up without any Nodes. The initialization of the network view sometimes would get interrupted with exceptions. Workaround is to relaunch CTC. This issue will be resolved in a future release.

CSCse96077

On an IO port with this issue false TCAs that indicate line or traffic problems are raised every 15 min after the 15 min pm report. There are no alarms with the associated ports. Traffic is not affected. In Release 7.2, during a very short period when the defect is present (less than 1 sec), false TCAs might be raised. This can be reproduced by either removing or then reinserting the card, or by a small burst of defects.

The cards affected are:

- ONS 15454 DS1, DS1_E1_56, DS3 (including DS3, DS3N, DS3E, DS3NE), DS3_EC1, DS3XM.
- DWDM, E1, E1_42, OC3-8, OC12-4, MRC-12, OC192XFP; and ONS 15310-CL and ONS 15310-MA IO ports.

There are two workarounds:

- Place the affected ports in OOS-DSBLD and then back to IS. This clears the problem for the specific port on the card, but the traffic will be down during the period of OOS-DSBLD.
- Soft reset the card with problem ports. This clears the problem on all ports on the card. Soft reset might cause a protection switch if any circuit path on the card or any port on the card or the card itself is in a protection group. Note that the protection switch itself might cause a defect burst, which might introduce false TCAs. Before resetting the card, check if any circuit, port, or card is in a protection group. If there is path protection, BLSR, 1+1 or 1:1/1:N protection on the card, lock the protection using a switch command (for example, LOCKOUT/LOCKON) available to users before you reset the card ensuring that no protection switch occurs during soft reset, and that traffic will not be affected. For a card with no protection type, simply soft reset the card and traffic will not be affected.

This issue will be resolved in a future release.

CSCsd39248

Users may be unable to login to a 15600 GNE node after upgrade from a pre-7.0 load up to a 7.0+ load. CTC may not connect, although telnet/ssh will work (as they did prior to the upgrade). Running a 15600, with BLSR configured; upgrade the 15600 to 7.0.

Workaround:

Step 1 Telnet/ssh into the NE.

Step 2 Gather the blsrRingIds (run 'dumpBlsrRing' at the shell) ring indices will in almost all cases be [0, [1, 2 ...]]

Step 3 For each ring index, enter the shell command:

forceTableUpdate <ringIndex>

after this sequence is performed; the CTC will no longer experience the failure during startup (attaching to the NE).

This issue will be resolved in a later release.

CSCsd45025

PPM hardware part numbers are displayed incorrectly in the inventory column. This issue will be resolved in Release 8.0.

CSCsd84932

When an ASAP card 1PIO that has STS1 circuits on it is removed, the downstream NE will see UNEQ-P on the STS1 circuits instead of AIS-P, as expected. Concatenated circuits will see AIS-P, as expected. This issue does not occur with 4PIO removals, or with concatenated circuits. This issue will be resolved in a future release.

CSCsb96697

When you perform a Manual Switch To Protect and then an SD-L condition is raised on the Protect port that preempts the Manual Switch To Protect, the CTC Maintenance > Protection tab shows "APS_CLEAR." When you click Clear in that tab while the SD-L is still present on the protect port, the K bytes will change to "No Request" for about 400-1000 frames before redeclaring the SD-L condition. This issue can occur on ONS 15600 ASAP cards with 1+1 protection. It does not affect other cards or protection schemes. This issue does not affect traffic. This issue can only occur when using the CTC Maintenance > Protection tab under the aforementioned conditions. To avoid this issue, do not click Clear when the CTC Maintenance > Protection tab shows "APS_CLEAR" and SD-L is present on the protect port. This issue will be resolved in a future release.

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.

CSCeg57163

ONS platforms support only a single OSPF virtual link. This issue will be resolved in a future release.

CSCdy58342

Network connectivity could be lost if a backbone area becomes segmented into multiple GNEs. This occurs only if multiple ONS 15600 nodes and routers are connected to the same LAN in OSPF area 0. If a link between two routers breaks, the CTC session connected to Router 1 will not be able to communicate with the ONS 15600 connected to Router 2. To resolve, you must repair the link between the routers or provide another form of redundancy in the network. This is as designed.

CSCdz07098

If OSPF on LAN is enabled with an area ID that is the same as the area ID of any of the DCC Links, CTC will not be able to discover any of the DCC Connected Nodes. To avoid this issue, set the OSPF on LAN area ID to an area other than any of those already occupied by a DCC link. This is as designed.

CSCdy25142

Equipment alarms are always reported based on the activity of the particular card, without taking card redundancy into consideration. Thus, an equipment alarm such as CTNEQPT-PB-0 may be raised against a line card as CR(SA) even though the traffic is protected. This issue will not be resolved.

CSCeb49407

Choosing certain qualities of RES settings in the CTC Provisioning tab, Timing subtab, may trigger a reference failure. Specifically, this can occur if you select the quality of RES level such that any of the following are true.

- ST3 < RES < ST3E
- ST4 < RES < SMC
- RES < ST4

When you then input an actual reference signal lower than ST3E quality, the failure is triggered. This issue will not be resolved.

Common Control Cards

CSCsb62127

A DCC Link discovered by CTC, can show incorrect bandwidth. When a DCC tunnel is created using two different OC cards, like OC12 and OC48 at its ends, CTC Network view shows incorrect bandwidth. Such a provisioning is a provisioning mistake. No workaround available. This issue will be resolved in a future release.

CSCsh41998

On 15600 if 128 Section Data Communication channels (SDCC) are deleted simultaneosuly through CTC and LDCC's are created in place of them , then sometimes Active TSC might reboot. Workaround is to delete SDCC's in groups of 20 at a time. This will be fixed in a future release.

Optical IO Cards

CSCsd88186

A MFGMEM alarm might be incorrectly raised when using an ASAP card with the PIO4 with one SFP, then replacing that with a PIO1 and an XFP, then returning to the original configuration. When the alarm is mistakenly raised, it does not clear. You must remove and reinsert the SFP to clear the alarm. This issue will be resolved in a future release.

CSCse08282

When the Active XC is removed, the traffic from the line card might be lost. If the line card is an ASAP card, the lack of traffic will cause a low transition signal density to enter the ASAP line card ASIC on the backplane egress interface. The downstream FPGA on the ASAP 1PIO daughter card will begin detecting B1 errors. These B1 errors will cause unexpected path protection switches. These errors will also be reported as equipment failures.

To avoid this issue ensure that the Active XC is in OOS-MT state before removing it. If this issue does occur, reset the 1PIO ASAP daughter card to clear the errored state. Resetting the ASAP carrier card will also clear the errored state. This issue will be resolved in a future release.

CSCsc51518

In ASAP card view, the PIM graphic might not update with the correct color after an alarm is cleared. This can occur anytime there is an alarm raised against the PIM or any of its subcomponents (PPM or port). To recover from this state, you must either click the Synchronize button, or change to node view and then back to card view. This issue will be resolved in a future release.

CSCef20813

No graphical representations of LEDs for ASAP ports are displayed in the CTC card view. SD and SF LED representations are also absent from the CTC node view for some legacy OCn cards. There are no plans to resolve this issue.

BLSR Functionality

CSCsd62731

When you create a circuit in IS,AINS state while a BLSR is in the switch state the circuit will not transition from IS/AINS to IS. To avoid this ensure that the BLSR is in a stable state before creating a circuit. This issue will be resolved in a future release.

CSCeh49665

Connections might still exist after circuit deletions on BLSR DRI rings for which the primary node is isolated. For BLSR DRI rings with several types of DRI circuits, if you isolate the primary node by deleting the database, reseat the I/O cards, then delete all BLSR DRI circuits, the SSXCs still show connections. To avoid this issue, do not delete or create BLSR DRI circuits when a node on the BLSR DRI ring is isolated. This issue will not be resolved.

Interoperability

CSCdx61916 and CSCeg20536

If, using CTC, you attempt to create a protected VT1.5 circuit that originates on one ONS 15327/454 that is connected to the ONS 15600 via path protection to another ONS 15327/454 that is connected to the ONS 15600 via 1+1 or BLSR, the circuit creation request will be denied because of mixed protection

domains. CTC is currently incapable of routing VT circuits across the ONS 15600 when mixed protection schemes are involved. VT traffic can be routed across the ONS 15600 when mixed protection schemes are involved by performing the following:

Step 1 On the ONS 15600, create an STS level cross connect with the requisite path selectors.

Step 2 Use CTC to create a VT circuit from the source node to the trunk ports that interface to the 15600.

Step 3 Use CTC to create a VT circuit between the destination node and the trunk ports that interface with the 15600.

✎ **Note** While this workaround provides the ability to route VT traffic across the ONS 15600 when mixed protection domains exist, the traffic must be managed as three separate circuits instead of one single end-to-end circuit.

This issue will be resolved in a future release.

CSCdy68110

When you attempt to configure VT circuits on a test configuration consisting of two ONS 15454 nodes and one ONS 15600 node, when both ONS 15454s are connected to the ONS 15600 node using a dual path protection connection configuration, and when the ONS 15600 node serves as an intermediate node between the two ONS 15454 nodes, you may be unable to create a VT circuit from one ONS 15454 to the ONS 15600 and then to the other ONS 15454. VT Tunnels are created, but the VT circuit is not created. A mixed protection domain error message is raised when this occurs. To avoid this issue, create the VT tunnels manually, so that the two tunnels do not create a topology where the working and protect tunnels share the same I/O card. After the tunnels have been created, the VT circuit can be successfully added. This issue will be resolved in future release.

CSCdx94969

Physical PM parameters can not be retrieved through the SNMP interface. MIBs released with the ONS 15600 do not have entries for the following physical PM parameters.

- LBC
- OPR
- OPT

The standard SONET Generic MIB does not have entries for these. To work around this issue, use CTC to retrieve the values. SNMP support for these parameters may be considered for a future release.

CSCdy54737

The following PM parameters can not be retrieved through SNMP.

- **Line**:
  - FC-L
- **Path**:

- FC-P
- PPJC-Pdet
- NPJC-Pdet
- PPJC-Pgen
- NPJC-Pgen

- **Protection groups**:
  - PSC
  - PSD
- Far End counts for line and path
- 1-Day PM counts

To retrieve these counts, use CTC. SNMP support for these parameters may be considered for a future release.

Bridge and Roll

CSCdy14265

The manual bridge and roll feature allows you to perform the END command once the roll operation transitions from a ROLL PENDING to ROLL condition, even if the roll to port has an invalid signal. To avoid traffic impact, ensure that the roll-to line is alarm-free. If an alarm exists, you can choose to do nothing and wait for the alarm to clear, to delete the roll, or to proceed in spite of the alarm. This issue will not be resolved.

Alarms

CSCsh33590

When an alarm that was created at some point of time in the past is cleared, the time stamp being reported to the TL1 and the history is the same time that the alamr was raised. The time should be when the alarm was cleared. This issue will be resolved in a future release

CSCee62635

LOS alarm clearance messages are sent to TL1 even though the alarms are suppressed. Change the facility's administrative state to IS, AINS or OOS, MT. Have LOS alarm raised and suppressed. Delete the parent equipment (either card, PIM or PPM). No workaround available. This issue will be resolved in a future release.

CSCsd52527

The AS-MT and the AS-CMD alarms do not show up on the alarm profile in CTC, so you cannot change the severity of these alarm using CTC. This issue will be resolved in a future release.

CSCsh38711

When LDCC is configured between 15454 and 15600 nodes and ospfDumpLSDB command is issued over Active TSC card of 15600, it incorrectly shows SDCC metric in the output . This does not happen on 15454, it shows LDCC metric correctly.This issue is expected to be resolved in a future release

CSCsh41254

Static Route functionality some times does not work properly in 15600. This is observed when the network has a mix of 15454 and 15600s in a ring topology. When this occurs one workaround is to configure the node connecting to the router as a GNE. This issue will be resolved in a future release.

TL1

CSCsd52415

You cannot set the GIGE admin state to IS,AINS using the TL1 ED-GIGE command for the ONS 15600 ASAP card. The TL1 ED-GIGE command denies attempts to change the ADMIN state to IS,AINS this card. CTC, however, can execute the state change. This issue will be resolved in a future release.

CSCsd59138

The wrong SSMs for additional references are displayed in the TL1 RTRV-SYNCN command response for a 1+1 working line when that line is used as the primary reference for a node. References including SYNC-NE 2 and 3, and SYNC-BITS are incorrectly reported. To avoid confusion, use CTC to view the correct SSMs. This issue will be resolved in a future release.

CSCsd95331

The status field incorrectly displays IS-NR when performing a RTRV-EQPT TL1 command where the AID is of type PIM (Pluggable I/O Module) or PPM (Pluggable Port Module). Since PIMs and PPMs do not support equipment protection, the status field should display NA. This issue will be resolved in a future release.

CSCsb72582

You cannot perform an ENT-EQPT for a valid card type when the current equipment state is OOS-AUMA,MEA&UAS. When the fault PPM comes up as OOS-AUMA,MEA&UAS and then the ENT-EQPT command is entered using TL1, the command is rejected. This issue will be resolved in a future release.

CSCeb46234

A TL1 user cannot preprovision IO cards when a filler card is in the slot. Removal of the filler card will clear the slot and allow the TL1 user to preprovision the IO card. This is by design.

Resolved Caveats for Release 7.2.3

The following caveats were resolved in Release 7.2.3

Maintenance and Administration

CSCse92125

Attempt to log-in using CTC. CTC login fails. Workaround is to ensure that the PC is not running a Turkish locale. This issue is fixed in Release 8.0.

CSCse99104

CTC can incur either repeated failures when you attempt to log in to an NE, and/or a very long time to discover all ENEs behind a GNE (could be over 30 minutes on a medium sized network). This issue affects all ONS 15xxx releases from R4.1 to 7.2. This condition is more likely to happen on Windows XP after an upgrade to Service Pack 2, and when the network is made of a medium to large number of GNEs/ENEs with SOCKS enabled. This condition can also happen in the case of networks with poor connectivity between CTC and the GNEs.

The solution involves an enhancement to the SOCKS discovery protocol by introducing the concept of designated SOCKS servers. A designated SOCKS server is a NE that runs SOCKS, is LAN connected and has been explicitly marked as a potential SOCKS server by the user. CTC allows the user to enter an unlimited number of designated SOCKS servers. When designated SOCKS servers are defined, the automatic SOCKS server discovery protocol is disabled, resulting in substantial performance improvement during CTC login and ENE discovery.

CSCse53017

Circuit creation when attempted on ML cards between a 7.2 NE and an older NE, the wizard would die. The source should be on 7.2 NE and destination on the older NE. Workaround is to interchange the source and destination. This issue is resolved in Release 7.22, 8.0.

CSCsb82218

When a PPM or PIM is physically removed from a node yet remains provisioned, the CTC display shows as blue, as though it was only preprovisioned. Because the PPM or PIM is physically removed, and thus raises an improper removal alarm, CTC should display the alarmed entity as yellow. This issue is resolved in Release 7.2.

CSCsj04557

Users can now control the local/global domain flag through CTC preference. Previously, the user controlled the local/global flag setting from the login node Network Element (NE) default (CTC.network.LocalDomainCreationAndViewing). Any flag changes would be applied immediately in the CTC session. To change the flag in Release 7.2.3, from Node view or Network view, open the "Edit" menu and select "Preferences." In the Preferences dialog, click the checkbox labeled "Domain Settings." You must restart CTC after changing the flag.

Common Control Cards.

CSCse98996

The issue can be reproduced as follow:

Step 1   On the node Infy12 went to Network view, Edit--->Preferences---->Checked Display events with Node Time Zone

Step 2   Changed the time to 11-Mar-2007 01:59:00 PST and let it pass the 02:00:00 am.

Step 3   CTC Node view-->Provisioning-->General Tab correctly showed the changed time as 03:00:00 PDT.

Step 4   Generated a LOS on a OC3 card. CTC Alarm pane showed the new PDT time.

Step 5   Retrieved audit trail. Audit trail showed the correct PDT time.

The problem is not observed on this load.

CSCei19088

REPT DBCHG is generated even if the TL1 command fails. It happens in the following two cases: ED-OCN command is used to change MODE attribute fails, a REPT DBCHG is getting raised. Also seen with SET-TH-OCxx comand , when used to change the monotype. REPT DBCHG is raised. This is resolved in 7.22

CSCsf09514

The standby and active TSC card's DB auditor generates different DB CRCs on active TSC and standby TSC, but the CRCs in the DB header is same and is not getting updated. When the DB auditor sends a message to the standby side with the active TSC's DB CRC in the message. The standby TSC only checks the DB header for the CRC with what is in the message if they match it does NOT FTP database. This causes DBOSYNC alarm cycling this continues until a provisioning change is made, which in turn forces the FTP of the active database to standby card. This issue is resolved in 7.22

Alarms

CSCsg28023

On ASAP card with multi-rate SFP ports , for ports with the reach type as non-SR, when the port state is changed to IS, the reach value improperly goes to SR, thus raising the PROV-MISMATCH alarm. When manually changed to IR(for OC48) the alarm clears off. But appears again after a TSC switch. Workaround is to set the reach to proper value, before changing the port state to IS. This issue is resolved in 7.22 and 8.0

CSCsb70768

Whenever performing node power down testing for a node with 32 4F BLSR rings, after the node recovered, the CTC was not able to reconnect to the node automatically. Workaround is to relaunch CTC. This issue has been resolved in the 7.02, 7.22 and 8.0 releases

CSCse85207

WTR condition cleared before WTR time expired on ASAP with OC192. When a 192 on a ASAP PPM is involved in a 1+1 and the ASAP card is rebooted, the WTR will clear even though the traffic will not revert until the WTR timer expires. No workaround available. This issue has been resolved in 7.22 and 8.0 releases.

New Features and Functionality

This section highlights new features and functionality for Release 7.2. For detailed documentation of each feature, consult the user documentation.

New Hardware Features

One-Port I/O Module for OC-192 Support on ASAP Cards

Release 7.2 supports a new 1-Port I/O (1PIO) module, also called a Pluggable Input/Output Module (PIM), which plugs into the ASAP carrier card. With the Release 7.2 1PIO module the ASAP card provides up to four OC-192 ports per card. The ports operate at up to 2488.320 Mbps over a single-mode fiber. The ASAP card, when used with the new 1PIO module, supports up to four physical connector adapters (known as Small Form-factor Pluggables [SFPs or XFPs]), with two fibers per connector adapter (transmit [Tx] and receive [Rx]), for use with OC-192 line rates.

New ASAP Connectors

The following XFPs are new for Release 7.2, and work with the 1PIO only:

- ONS-XC-10G-S1
- ONS-XC-10G-L2

An ASAP carrier card supports up to four 1PIO/PIMs for OC192 line rates. Each 1PIO supports one SFP/XFP. The maximum configuration for an ASAP card using 1PIOs is 4 SFP/XFP ports. These ports can each be provisioned as OC192 line rate.

New Software Features

Network Circuit Automatic Routing Overridable NE Default

The Network Circuit Automatic Routing Overridable NE default makes it possible to set by default whether or not a user creating circuits can change (override) the automatic circuit routing setting (also provisionable as a default).

The new NE default supporting this feature is:

CTC.circuits.RouteAutomaticallyDefaultOverridable

This default works in combination with the existing circuit routing default:

CTC.circuits.RouteAutomatically

The overridable option enables network administrators to manage how circuits are created on a network-wide basis. For example, if the Automatic Circuit Routing default is set to FALSE (the check box is unchecked by default), then setting the Network Circuit Automatic Routing Overridable default to FALSE ensures that manual circuit routing is enforced for all users creating circuits (the default is not overridable by the user). When the Network Circuit Automatic Routing Overridable default is set to TRUE (the factory configured setting) users can click in the Automatic Routing check box to change the automatic routing setting if they wish.

When the Route Automatically check box is not selectable during circuit creation, the following automatic routing sub-options will also be unavailable:

- Using Required Nodes/Spans
- Review Route Before Creation

Like the Automatic Circuit Routing default, the Network Circuit Automatic Routing Overridable default applies to all nodes in the network. The Route Automatically check box is either overridable or not depending on how the default is set for the node you are logged into through CTC. To ensure correct behavior after setting the default, propagate the chosen default setting to all nodes through which users might log into the network to perform provisioning. For more information on NE defaults and their provisioning consult the user documentation.

CTC Cache Installer

The purpose of this cache installer is to allow installing/reinstalling/upgrading CTC core jars into the user's CTC jar cache. The executable: SetupCtc-MMmm00.exe - a self-extracting .zip file - is for this purpose (where MM is the major release and mm is the minor release). To use it, the user runs the SetupCtc .exe. This produces a directory that consists of the CTC core jars and LDCACHE.exe. The user can then, from that installed directory, 'double-click' on LDCACHE.exe to get the CTC core run-time jars copied into the CTC jar cache. LDCACHE.exe can be run at a later time as well to recopy the CTC core jars into the user's CTC jar cache.

TL1

TL1 ENUM Changes

TL1 ENUM Items Added or Removed

Table 1 highlights ENUM items changed (added or removed) for Release 7.2, by ENUM type.

Table 1 EQUIPMENT_TYPE enum items added to Release 7.2

Enum Name	Enum Value
EQUIPMENT_TYPE_ET_PIM_1	"PIM-1"

EQUIPMENT_TYPE is used in the following commands:

- ENT-EQPT

- CHG-EQPT

- RTRV-EQPT

- DLT-EQPT

- RTRV-INV

Related Documentation

Release-Specific Documents

- Release Notes for the Cisco ONS 15600, Release 7.0

- Release Notes for the Cisco ONS 15454 SDH, Release 7.2

- Release Notes for the Cisco ONS 15327, Release 7.2

- Release Notes for the Cisco ONS 15454, Release 7.2

- Release Notes for the Cisco ONS 15310-CL, Release 7.2

- Cisco ONS 15600 Software Upgrade Guide, Release 7.2

Platform-Specific Documents

- *Cisco ONS 15600 Procedure Guide*
  Provides installation, turn up, test, and maintenance procedures

- *Cisco ONS 15600 Reference Manual*
  Provides technical reference information for SONET/SDH cards, nodes, and networks

- *Cisco ONS 15600 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 Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, 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

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