



Release Notes for Cisco ONS 15200 SNM Software Release 1.1(3)

Release Notes address closed issues, caveats, and new features for the Cisco ONS 15200 SNM software. For detailed information regarding features, capabilities, and software introduced with this release, refer to the documents listed in the “[Related Documentation](#)” section on page 14. For the most current version of the Release Notes for Cisco ONS 15200 Release 1.1, visit the following URL:

<http://www.cisco.com/univercd/cc/td/doc/product/ong/15200/15200rnt/index.htm>

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Changes to the Release Notes

This section documents changes that have been added to the *Release Notes for Cisco ONS 15200 Release 1.1* since the production of the Cisco ONS 15200 System Software CD for Release 1.1.

This document details additions, changes, and removals since release 1.1(2)

New Features and Functionality

The following new features and functionality have been added to the ONS 15200 Software Release 1.1(3) software.

New Software Features

Source information in event log changed

The Element ID has been replaced with the CLIP name to improve event log information.

Root cause of a fault is reported, subsequent faults are suppressed

Only the root cause of a fault is reported, subsequent fault(s) will be suppressed and displayed with normal, if read by the user.

Limitation in Performance Monitoring

The limitation of the maximum number of 10 simultaneous PM sessions has been increased to 64 simultaneous PM sessions.

New Web interface page

A new web interface page has been added to show the power levels for all CLIPs managed by the SNM.

Improved global alarm page in Web interface

The global alarms Web interface page now provides links to alarming CLIPs.

Improved path summary page in Web interface

The main path view Web interface page now provides active path information.

Error notification when creating users

When you try to create more than 100 users from the Web interface or the CLI, an error message appears notifying you of this limitation.

Alphabetic order of users

The users are now presented in alphabetic order in the Web interface and the CLI.

Resize problems with Netscape navigator in Web interface

The Netscape System Explorer applet resizing problems (Win/Unix) has been resolved.

Alarm supervision in Web interface

The Web interface now reports qdbs.cfg version mismatch and Network configuration mismatch errors.

Improved page, setting thresholds from the Web interface

The allowed ranges for the thresholds are presented under the view where you change the threshold. It is also possible to change all thresholds in the same operation.

Command to re-read MCU backplane jumper settings

The software CLI enables the operator to re-read the MCU backplane jumper settings by entering **configure MCU xxxxx**, and then applying **upload**.

Auto-commit when inserting and removing SNMs

After you have performed **remove SNM_xxxxx** or **insert SNM_xxxx**, there is no need to perform a **commit SNM SNM_xxxxx**, because this is now done automatically.

Limitations and Restrictions

This section describes ONS 15200 system limitations and restrictions.

CIM and NAM LED status

The role of the CIM is to reflect the summary status of the CLIPs that the SNM manages.

CLIPs that the SNM observes but not manages, are not included in the summary calculation, even if those CLIPs are located in the same MCU as the NCB.

The CIM status displayed in the Web interface and the real status will not be the same in one case—when viewing an MCU with a remote NCB. The CIM is not lit in the Web interface.

The MCU and SCU summary pages show the NAM status. The NAM status viewed in the Web interface will correspond to the status displayed by the real NAM with two exceptions:

1. The Web interface will not show the real status if the SNM only observes the CLIP.
2. There are discrepancies related to the FW version.

	High Alarm	High Warning	Low warning	Low Alarm
Client laser bias current	Red	Yellow	Yellow	Red
Client input power	Red	Yellow	Yellow	Red
DWDM Peltier element current	Yellow ¹	Yellow	Yellow	Yellow ¹
DWDM laser temperature	Red	Yellow	Yellow	Red
DWDM laser bias current	Red	Yellow	Yellow	Red
DWDM A input power	Red ²	Yellow	Yellow	Standby: Yellow Active: Red
DWDM laser output power	Red	Yellow	Yellow	Red
DWDM B input power	Red ²	Yellow	Yellow	Standby: Yellow Active: Red
Board temperature	Red	Yellow	Yellow	Red

1. The NAM controlled by the CLIP will have its red LED lit if the FW version 0.3(8) is running
2. The NAM LED controlled by the CLIP will be controlled in the same way as for Low Alarm when running FW version 0.3(8).

Procedure

Configuration of SNM 1.1

The following procedure describes how to configure a new 1.1 system from scratch. This procedure must be repeated for all NCBs in the system.

-
- Step 1 Open a telnet session to the system and log on as an operator.
 - Step 2 Verify that you have the proper NCB (P/N and Rev no.) SNM Release 1.1(3) requires a minimum NCB board level of 800-09474-02.
 - a. Enter configure system mode by typing **config system** and press Enter.
 - b. Type **version** and press Enter
 - c. Verify that the NCB part number shown has -02 at the end. If it has -01, contact TAC to get the board replaced.
 - d. Type **exit** and press Enter.
 - Step 3 Type **show inventory** and press Enter. The only thing that should show up is the NCB board you are connected to. Observe the name of the NCB/SNM.
 - Step 4 Verify the name of the NCB/SNM. If the name is SNM_0, this NCB board can not run 1.1(3) software properly. Contact TAC to get the NCB board replaced.
 - Step 5 Set unitid on the NCB, by configuring the SNM. At the **NCB:>** prompt, type **configure SNM SNM_XXXXX** and press Enter.

- Step 6** Set `unitid` to either `SNM_1` or `SNM_2`, according to preference. If two NCBs share the same CAN bus, they must have different `unitids`.
- Type **`unitid SNM_1`** or **`unitid SNM_2`** and press Enter.
 - Type **`commit`** and press Enter to save the changes to the file.
 - Type **`exit`** when finished to get back to the login prompt.
- Step 7** After about 15 seconds, type **`show inventory`** and press Enter to display the inventory. This should allow the system enough time to collect the inventory information.
- Step 8** Set the SNM to primary, secondary, or unassigned manager according to your preference.
- To assign a primary manager:
- At the **`NCB:>`** prompt, go into network configuration mode by typing **`configure network`** and press Enter.
 - Type **`configure CLIP CLIP_XXXXX`** and press Enter.
 - Type **`primary this`** and press Enter.
 - Type **`exit`** and press Enter to get back to configure network mode.
- To assign a secondary manager:
- If not in network configuration mode, enter it by typing **`configure network`** and press Enter at the prompt.
 - Type **`configure CLIP CLIP_XXXXX`** and press Enter.
 - Type **`secondary this`** and press Enter.
 - Type **`exit`** and press Enter to get back to configure network mode.
- Step 9** Define your MCUs/SCUs (containers).
- To create an MCU or SCU from configuration network mode, type **`create mcu <neid>`** or **`create scu <neid>`** and press Enter. (<neid> is an identifier, an arbitrary number unique for the SCU/MCU.)
- To name the MCU:
- At the **`mcu_x:#`** prompt, type **`name <your_choice_of_MCU_name>`** and press Enter.
 - Type **`commit`** and press Enter to save the changes to the file.
 - Type **`exit`** and press Enter to get back to the network configuration menu.
- To name the SCU:
- At the **`scu_z:#`** prompt, type **`name <your_choice_of_SCU_name>`** and press Enter.
 - Type **`commit`** and press Enter to save the changes to the file.
 - Type **`exit`** and press Enter to get back to the network configuration menu.
- Step 10** Insert your CLIPs and SNMs into the defined containers.
- From the configuration network mode, insert your CLIPs and SNMs assigned to a particular MCU by performing the following:
- Type **`configure mcu <mcuname_of_mcu_to_be_configured>`** and press Enter.
 - Type **`insert CLIP_XXXXX`** and press Enter, and repeat this step for all CLIPs concerned.
 - Type **`insert SNM_YYYYY`** and press Enter if applicable.
 - Type **`commit`** and press Enter to save the changes to the file.
 - Type **`exit`** and press Enter to get to network configuration mode

- f. Repeat for all MCUs.

From the configuration network mode, insert the CLIP assigned to a particular SCU by performing the following:

- a. Type **configure scu <scuname_of_scu_to_be_configured>** and press Enter.
- b. Type **insert CLIP_xxxxx** and press Enter.
- c. Type **commit** and press Enter to save the changes to the file.
- d. Type **exit** and press Enter to get to network configuration mode
- e. Repeat for all SCUs.

Step 11 Optional CLIP and SNM name assignment.

To assign a CLIP name:

- a. At the configure network prompt, type **configure CLIP CLIP_xxxxx** and press Enter.
- b. Type **name <what_you_want_the_CLIP_to_be_called>** and press Enter.
- c. Type **commit** and press Enter to save the changes to the file.
- d. Type **exit** and press Enter.
- e. Repeat for all CLIPs you want to assign a name.

To assign a SNM name:

- a. At the configure network prompt, type **configure SNM SNM_yyyyyy** and press Enter.
- b. Type **name <what_you_want_the_SNM_to_be_called>** and press Enter.
- c. Type **commit** and press Enter to save the changes to the file.
- d. Type **exit** and press Enter.

Step 12 At the configure network prompt, issue a **commit network** and press Enter to create a network.cfg file for the network.

Step 13 Type **show inventory** and press Enter. Verify that all of the expected hardware in your system appears in the inventory.

Caveats

Review the notes listed below before deploying the ONS 15200. Caveats with DDTS bug tracking numbers are known system limitations that are scheduled to be addressed in a subsequent release. Caveats without DDTS bug tracking numbers are provided to point out procedural or situational considerations when deploying the product.

Open Caveats – Software Release 1.1(3)

Bug CSCdw08317 – The CLI and Web interface do not clear alarms

Component: SNM software

Detail: The CLI and Web interface do not clear alarms even though the value is between lwt and hwt.

Workaround: Perform an upload.

Resolution: This issue will be resolved in a future release.

Bug CSCdx27119 – Documentation missing procedure to add SCUs or CLIPs

Component: Software documentation

Detail: The Release 1.1 documentation does not include a procedure describing how to add SCUs or CLIPs to an existing ring.

Workaround: Use the following Web interface procedure to add an SCU and CLIP to an existing ring.

1. Use the Web interface to login to the NCB.
2. Click on **SCU**.
You will see a table of all of the defined SCUs with the last line blank.
3. At the blank, last line of the table, enter the SCU name and NE ID and click **Submit**.
4. Click on the newly created SCU to view the SCU information. In the lower half of the screen you can insert a CLIP in the SCU.
5. Click **Insert**. A CLIP will appear in the lower half of the screen.
6. Select the new CLIP and click **Submit**.
7. Repeat steps 2 through 6 for each additional CLIP you wish to add to the SCU.

Resolution: This procedure will be added to the documentation in a future revision.

Bug CSCdx30478 – SNMP agent sending null values for Var Binds

Component: SNM software

Detail: When a CLIP is removed from an MCU or when the DWDM-side fiber is disconnected, the SNMP agent sends an OutOfService trap. When the CLIP is reinserted or the fiber is reconnected, the SNMP agent sends an InService trap. After receiving the trap, CTM tries to upload inventory and alarm information for the CLIP. Because the Var Binds are null, CTM cannot upload the information successfully.

Workaround: If the alarm information is incorrect, mark the NE as Under Maintenance and click Save. Then, mark it as In Service and click Save.

Resolution: This issue will be resolved in a future release.

Bug CSCdx30943 – When changing client datarate, start at farthest CLIP from NCB

Component: Software documentation

Detail: When turning up a path between two CLIPs, it is possible that the clients may not be able to communicate with each other because of datarate mismatch.

Workaround: If you wish to change the CLIP datarate, always start with the CLIP that is the farthest away from the NCB.

It is preferable to remove the client input signal before changing data rate or to change the datarate on a path level rather than a CLIP level.

Resolution: This note will be added to the documentation in a future revision.

Bug CSCdx47651 – Toggling QPP alarms with wrong datarate set

Component: NEC firmware

Detail: Some pairs of clips show toggling QPP alarms if the signal between them is Gigabit Ethernet, but datarate is set to STM-16/OC-48 in the management interface (CLI). When the expected datarate is set incorrectly, the clock and data recovery function will not work. It will transmit noise, which will modulate the DWDM signal and thus disturb the QPP signal directly.

Workaround: Be sure to always set the datarate correctly.

Resolution: None.

Bug CSCuk31979 – Alarms not cleared for values ~1.5 dB from thresholds

Component: NEC firmware

Detail: Alarms are not cleared in WEB and CLI for values that are around 1.5 dB from thresholds in normal operating range. To avoid flickering alarms, threshold hysteresis is implemented. The present value is fluctuating above and below the threshold during the time of the hysteresis, 2 seconds.

Workaround: None.

Resolution: This issue will be resolved in a future release.

Bug CSCuk32585 – No manageability of protected channels with regeneration

Component: NEC firmware

Detail: The ONS 15200 system uses in-band signaling (QPP) for management communication. A protected CLIP transmits identical signals on both the alternative connections, including QPP. QPP is terminated/re-transmitted in each node, including the regenerator nodes. Unfortunately the QPP protocol definition does not currently include information, identifying to which of the alternative paths a message was addressed. Thus there is a possible addressing conflict. A further problem is that a protected CLIP assumes that it receives identical QPP messages on both the incoming QPP links, which is not the case when there are regenerating CLIPs along the alternative paths. The CLIP will randomly pick packets from either of the incoming links. Due to the above described problems it is not currently possible to manage a network with regeneration in protected paths.

Workaround: None in SNM 1.1(1). In 1.1(2) it is possible to set pinglevel to one, thereby limiting management to one CAN bus. An NCB is required in each node.

Resolution: This issue will be resolved in a future release.

Bug CSCuk34561 – CLEI code label missing

Component: Clip-board

Detail: No CLEI label on clip front. All current clips are affected.

Workaround: None.

Resolution: This issue will be resolved in a future release.

Bug CSCuk34568 – Automatic logout from Web interface

Component: Web interface

Detail: When you disconnect a patch cord to an active path with no standby and then look at the clip status on a clip one QPP away, the Web interface logged out.

Workaround: Login again.

Resolution: This issue will be resolved in a future release.

Bug CSCuk34598 – Multiple NCBs can take on identical unit ID

Component: SNM software

Detail: Several NCBs can be configured (configure snm snm_XXXXX) with identical unit ID. No check or negotiation is done by the SNM software to verify that the unit ID is not already used.

Workaround: Make sure each unit ID is only used once.

Resolution: This issue will be resolved in a future release.

Bug CSCuk34607 – Datarate mismatch

Component: SNM software

Detail: CIM board LED does not exhibit expected red LED when the System has data rate mismatch alarm on a path.

Workaround: None.

Resolution: This issue will be resolved in a future release.

Bug CSCuk34613 – Reset of DLST on and off configuration after a reboot

Component: Web interface

Detail: A reset of the Daylight Savings Time on and off configuration after a reboot occurs when the configuration of Daylight Savings Time on and off is executed from the Web interface.

Workaround: Set the Daylight Savings Time on and off from the CLI.

Resolution: This issue will be resolved in a future release.

Bug CSCuk34861 – Inconsistency in Web interface

Component: SNM software

Detail: An NCB can be displayed with a red LED (on web), with only two minor alarms in the system (protected clip with loss of power on one side). The NCB (snm) itself is displayed with NE Status normal in the snm_name Summary page. Under some circumstances, the presented alarm level is too high and under others the level is too low.

Workaround: None.

Resolution: This issue will be resolved in a future release.

Bug CSCuk34864 – CLIP got red LED, CIM got yellow

Component: SNM software

Detail: With alarms client Rx power, client laserbias, dwdm loc, dwdm rxpower, dcn qpp and dcn qppb, the NAM under the clip exhibit red LED, but the CIM exhibit yellow LED.

Workaround: None.

Resolution: This issue will be resolved in a future release.

Bug CSCuk34868 – LED not lit on CIM

Component: SNM software

Detail: The CIM did not present the right status when Client Rx Power = High warning was created on a CLIP. Additionally, the Web interface presented the wrong CIM status as well.

Workaround: None.

Resolution: This issue will be resolved in a future release.

Bug CSCuk35485 – Commit network and show discrepancy is not the empty set

Component: CLI software

Detail: When performing a commit network and show discrepancy, you do not get the empty set. Clips with names other than their native name (i.e. clip_XXXXX) will show up as discrepancies.

Workaround: None.

Resolution: This issue will be resolved in a future release.

Bug CSCuk35487 – WEB application locked, not able to login

Component: Web interface

Detail: Under special circumstances, the Web interface locks. You are unable to login to the system via the Web interface. This occurs when there is a lot of internal traffic in the system and if you cycle through pages too quickly.

Workaround: Use the CLI to unlock the Web interface by performing a manual reboot with the CLI.

Resolution: This issue will be resolved in a future release.

Resolved Caveats – Software Release 1.1(3)

Bug CSCdw60220 – Path on the browser shown as a bold line instead of thin line

Component: Web interface

Detail: When working in the Web interface, a path was shown as a bold line instead of a thin line when one of the paths around the ring was lost.

Workaround: None.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCdx09854 – Firmware 0.3(8) and 1.2(2) incompatibility

Component: NEC firmware

Detail: Clips on pinglevel four can not be managed from the NCB. Appears in systems with mixed FW versions 0.3(8) and 1.2(2), if the path from the NCB to the clip starts via FW version 0.3(8), and passes through a clip on the second CAN bus (pinglevel three) with FW version 1.2(2). The clip talking to this clip will not be manageable.

Workaround: Avoid mixing firmware 0.3(8) and 1.2(2) as described.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCdx11814 – SNM is sending DwdmLOC alarm with unknown severity

Component: SNM software

Detail: If you disconnect the DWDM-side fiber from a clip in the MCU where the NCB sending traps resides, the associated remote CLIP will generate a DwdmLOC alarm with a severity of Unknown. The alarm appears in the Alarm Log, but not in the Alarm Browser.

Workaround: Using CTM, mark the NE as Under Maintenance and click Save. Then, mark the NE as In Service and click Save.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCdx30487 – SNMP agent sending clipDwdmRxPower-severity alarm for protected CLIP

Component: SNM software

Detail: A clipDwdmRxPower-Severity alarm is sent for a protected CLIP. A corresponding cease will never be sent for this alarm. This problem occurs if you disconnect the DWDM-side fiber for a protected CLIP. The SNMP agent sends a clipDwdmRxPower-Severity alarm for the associated SCU.

Workaround: Using CTM, wait several minutes; then, mark the NE as Under Maintenance and click **Save**. Then, mark it as In Service and click **Save**.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCuk32060 – Not able to turn off DLST_on

Component: SNM software

Detail: You are not able to turn off Daylight Savings Time (DLST_on) after have configured it to be on.

Workaround: Set DLST_on equal to DLST_off.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCuk32150 – SNMP malformed packets

Component: SNM software

Detail: Malformed SNMP traps can cause NCB resets. See PSIRT notification on SNMP vulnerabilities.

Workaround: Do not activate the SNMP interface i.e don't create any communities via the CLI interface.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCuk34569 – Yellow LED lit on CIM even though no active alarms are presented

Component: Web interface

Detail: The yellow LED is lit on the CIM, even though no active alarms were raised in CLI, Web interface and MM.

Workaround: None.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCuk34587 – CIM is not lit in Web interface

Component: Web interface

Detail: The CIM card is not marked yellow or red in the Web interface during testing.

Workaround: None.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCuk34792 – Configuration of unitid not saved

Component: SNM software

Detail: The configuration of the unitid is not saved when performing a reboot of the system.

Workaround: None.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCdx41420 – Users exist, but are not shown with the sh user command.

Component: CLI software

Detail: In the web browser all users are displayed, but in the CLI only 100 users are displayed. More than 100 users have been created. (This should actually be disallowed by the system, but is possible due to a bug.) Using the CLI command 'sh user' exactly 100 users are shown. The oldest users are not shown.

Workaround: Delete users. The system is not supposed to support more than 100 users!

Resolution: This issue is resolved in release 1.1(3).

Bug CSCdx41423 – Objects belonging to different MCUs allowed to be inserted into one

Component: Web interface

Detail: The web browser gives you the choice to insert an NCB into an MCU, although the rack ID of the NCB does not match the rack ID of the MCU. After pressing the insert button for a slot in an MCU the pop-up showing the possible boards to insert in that slot is activated. The pop-up list gives alternatives, which should not be allowed as the corresponding boards have incorrect values for the rack ID attributes.

Workaround: None.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCuk34902 – Datarate Gigabit Ethernet or STM-16/OC-48 not settable on path level

Component: SNM software

Detail: When setting the datarate on the path (i.e. any clip-clip connection) to Gigabit Ethernet or STM-16/OC-48 from the Web or CLI interfaces, the GUI shows that a change occurs. However, if an actual Gigabit Ethernet signal is applied, no traffic will pass through. All required actions in software have not been carried out properly.

Workaround: Set the datarate on the individual clips, starting with the clip farthest away from the NCB.

As an alternative for Gigabit Ethernet (not STM-16/OC-48), the 2R/3R boards can be set to operate in pass-through mode. For large systems where multiple regenerations are needed, this can not be done because only one regeneration is supported in 2R/3R mode.

Resolution: This issue is resolved in release 1.1(3).

Bug CSCuk34916 – Parameter `pwd_set no` is not saved on reboot

Component: CLI software

Detail: When an administrative user sets the parameter `pwd_set no`, there is no change in the file where the information is stored (`snm.cfg`). If the parameter `pwd_set no` is implemented, it will only be effective as long as reboot or power cycling is avoided. Since the operator is allowed to reboot the system, an operator not allowed to change his/her password can do so by first rebooting and then, when the system has reverted to the default parameter `pwd_set yes`, the user can reset his/her password.

Workaround: Change and replace the `snm.cfg` file. To change the file: use the ftp command `get` to copy the `snm.cfg` file to a computer (requires admin privileges), replace the line `pwd_set yes` with the line `pwd_set no`, and replace the `snm.cfg` file on the NCB board (with the ftp command `put`). Doing so carries out the intended CLI function.

If it later is preferred to go back to the initial setting of `pwd_set yes`, the process above has to be performed to write `pwd_set yes` in the `snm.cfg` file and put the file back onto the NCB board.

Resolution: This issue is resolved in release 1.1(3).

Related Documentation

For additional information on the Cisco ONS 15200, refer to the following documents.

Cisco ONS 15200 Product Description

Cisco ONS 15200 Module Handbook

Cisco ONS 15200 Installation, Setup, and Test Manual

Cisco ONS 15200 Maintenance Manager Installation and Operations Guide

Cisco ONS 15200 Web Interface Software User Manual

Cisco ONS 15200 Command Line Interface Manual

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

Optical Networking Product Documentation CD-ROM

Optical networking-related documentation, including the *Cisco ONS 15200 Release Notes*, is available in a CD-ROM package that ships with your product. The Optical Networking Product Documentation CD-ROM, a member of the Cisco Connection Family, is updated as required. Therefore, it might be more current than printed documentation. To order additional copies of the Optical Networking Product Documentation CD-ROM, contact your local sales representative or call customer service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at <http://www.cisco.com>, <http://www-china.cisco.com>, or <http://www-europe.cisco.com>.

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Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

<http://www.cisco.com/tac>

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

<http://www.cisco.com/register/>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

<http://www.cisco.com/tac/caseopen>

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

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

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