



# Release Notes for StarOS™ Software Version 21.16.8

**First Published:** December 22, 2020

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## Introduction

This Release Note identifies changes and issues related to this software release. This emergency release is based on release 21.16.7. These release notes are applicable to the ASR5500, VPC-SI and VPC-DI platforms.

## Release Package Version Information

**Table 1 - Release Package Version Information**

| Software Packages | Version              |
|-------------------|----------------------|
| StarOS packages   | 21.16.8, build 78730 |

Descriptions for the various packages provided with this release are located in [Release Package Descriptions](#).

## Feature and Behavior Changes

The following features and/or behavior changes have been introduced in this emergency release.

Refer to the [Release Change Reference](#) for a complete list of feature and behavior changes associated with this software release.

## Related Documentation

For a complete list of documentation available for this release, go to <http://www.cisco.com/c/en/us/support/wireless/asr-5000-series/products-installation-and-configuration-guides-list.html>.

## Installation and Upgrade Notes

This Release Note does not contain installation and upgrade instructions. Refer to the existing installation documentation for specific installation and upgrade considerations.

## Firmware Updates

There are no firmware upgrades required for this release.

## Software Integrity Verification

To verify the integrity of the software image you have from Cisco, you can validate the SHA512 checksum information against the checksum identified by Cisco for the software.

Image checksum information is available through the following mechanisms:

- **Cisco.com Software Download Details:** To find the checksum, hover the mouse pointer over the software image you have downloaded.

| File Information                                      | Release Date | Size    |                         |
|---|--------------|---------|-------------------------|
| ASR System Software 21.2.3<br>21_2_3_ReleaseNotes.pdf | 27-JUN-2017  | 0.46 MB | Download<br>Add to cart |
| ASR System Softw<br>asr5500-21.2.3.cksums             |              |         | Download<br>Add to cart |
| ASR System Softw<br>asr5500-21.2.3.zip                |              | MB      | Download<br>Add to cart |
| ASR System Softw<br>asr5500_T-21.2.3.zip              |              | 2 MB    | Download<br>Add to cart |
| ASR System Softw<br>companion-21.2.3.tgz              |              | B       | Download<br>Add to cart |

**Details**

Description: **ASR System Software 21.2.3**

Release: **21.2.3**

Release Date: **27/Jun/2017**

File Name: **21\_2\_3\_ReleaseNotes.pdf**

Size: **0.45 MB (476054 bytes)**

MD5 Checksum: **5cfb2b0c7c87c84d35acca8d54eeee08**

SHA512 Checksum: **c4eb836090a1867146d93d1ce74e490d...**

[Security Advisory](#)

At the bottom you find the SHA512 checksum, if you do not see the whole checksum you can expand it by pressing the "..." at the end.

- **.cksums file:** A file containing software image checksum information is distributed with the image files. The naming convention for this file is:

`<product>-<version>.cksums`

Example: `asr5500-21.4.0.cksums`

To validate the information, calculate a SHA512 checksum using the information in [Table 2](#) and verify that it matches either the one provided on the software download page.

To calculate a SHA512 checksum on your local desktop please see the table below.

**Table 2 - Checksum Calculations per Operating System**

| Operating System  | SHA512 checksum calculation command examples  |
|-------------------|---|
| Microsoft Windows | Open a command line window and type the following command<br><br>> certutil.exe -hashfile <filename>.<extension> SHA512 |
| Apple MAC         | Open a terminal window and type the following command<br><br>\$ shasum -a 512 <filename>.<extension>                    |

## Open Bugs in this Release

|   |  |
|---|--|
| Operating System  | SHA512 checksum calculation command examples   |
| Linux   | <p>Open a terminal window and type the following command</p> <pre>\$ sha512sum &lt;filename&gt;.&lt;extension&gt;</pre> <p>Or</p> <pre>\$ shasum -a 512 &lt;filename&gt;.&lt;extension&gt;</pre> |
| <p><b>NOTES:</b></p> <p>&lt;filename&gt; is the name of the file.</p> <p>&lt;extension&gt; is the file extension (e.g. .zip or .tgz).</p> |  |

If the SHA512 checksum matches, you can be sure that no one has tampered with the software image or the image has not been corrupted during download.

If the SHA512 checksum does not match, we advise you to not attempt upgrading any systems with the corrupted software image. Download the software again and verify the SHA512 checksum again. If there is a constant mismatch, please open a case with the Cisco Technical Assistance Center.

## Certificate Validation

In 21.12.0 and later releases, software images for StarOS, VPC-DI, and VPC-SI, and the companion software packages for StarOS and VPC are signed via x509 certificates. In pre-21.12.0 releases, image signing is not supported for VPC-DI and VPC-SI images, and for StarOS and VPC companion software packages.

USP ISO images are signed with a GPG key.

For more information and instructions on how to validate the certificates, refer to the README file available with the respective software packages.

## Open Bugs in this Release

The following table lists the known bugs that were found in, and/or that remain open in this software release.

**NOTE:** This software release may contain open bugs first identified in other releases. Additional information for all open bugs for this release are available in the [Cisco Bug Search Tool](#).

**Table 3 - Open Bugs in this Release**

| Bug ID     | Headline  | Product Found* |
|------------|---|----------------|
| CSCvu81900 | [PLT-CUPS]: huge CRR recovery failures on back-to-back SRP-Switchover leading to call-drop              | cups-cp        |
| CSCvr98212 | "sessmgr 12241 error Misc Error3: PDN connection list length is not 1:, error code 1"                   | cups-cp        |
| CSCvs99620 | aaamgr in warn state on CP with 205 APN confiuration  | cups-cp        |
| CSCvr40500 | AssertFail smgr_callline_fsm() sessmgr_app_svr_event_control_dispatch()<br>snx_pgw_driver_event_control | cups-cp        |
| CSCvs91113 | Fatal Signal 6: 6 [0618736c/X] sgwdrv_egtpc_event_dispatch()  | cups-cp        |
| CSCvr46679 | [BP-CUPS] sx_send_cfm_evt() (pureP)   | cups-cp        |

## Open Bugs in this Release

| Bug ID     | Headline   | Product Found* |
|------------|--|----------------|
| CSCvr98098 | CP error logs sessmgr 12241 error Misc Error3: Internal Failure Request API to get NTSR State Failed   | cups-cp        |
| CSCvs61091 | [BP CUPS]: sgwdrv_send_epsb_status_to_smgr()   | cups-cp        |
| CSCvs62126 | [BP-CUPS]: Function restart at egtpc_handle_abort_proc_cmd_evt   | cups-cp        |
| CSCvt32883 | "No ruledef and PFD_MGMT_Request get succeeds only in 1st UP, but failure in rest UPs with Call fail"  | cups-cp        |
| CSCvs99467 | AF at sess/egtp/egtpc/egtpc_evt_handler_func.c:346 egtpc_handle_flush_pb_msg_cmd_evt()                 | cups-cp        |
| CSCvr20261 | "[BP-CUPS] chckpt/call recovery failure logs on standbyUP, sessmgr 12343,12008,10396,11967,12988 logs" | cups-up        |
| CSCvs03933 | [URR] crash @ sn_slist_lookup_by_key   | cups-up        |
| CSCvs87128 | Assertion failure @ sn_evlgd_accs_evt_proc   | cups-up        |
| CSCvu21615 | Fatal signal at uplane_handle_itc_processing() after push config from CP                               | cups-up        |
| CSCvs46850 | [PLT-CUPS]: Assertion failure at vpnmgr_rcm_create_peer malloc_acct vpnmgr_process_upf_registration    | cups-up        |
| CSCvs76135 | "VPP restart is seen on standby UP, when configured with 150 VRF"                                      | cups-up        |
| CSCvu54295 | [BP-CUPS] UP sessmgr reload uplane_decode_tcp_options  | cups-up        |
| CSCvu71847 | [BP-CUPS]: Sessmgr restart was observed on P2P Plugin Update   | cups-up        |
| CSCvw07036 | incorrect APN FQDN by ePDG for in-roamer subscribers in local break-out scenario                       | epdg           |
| CSCvv64138 | sessmgr restart in function: egtpc_allocate_new_bearers  | mme            |
| CSCvw82191 | Multiple paging/CS serv notific from MME after receiving Ext Serv Req with cause CSFB Reject from UE   | mme            |
| CSCvr98793 | MME static GW selection when 'both' keyword used in s5-s8-protocol parameter                           | mme            |
| CSCvs21028 | "EPC: MME, MEMORY OVERUSAGE during longevity testing with various call types."                         | mme            |
| CSCvr18094 | Sessmgr restart when handling extended PCO during create bearer response                               | mme            |
| CSCvt20542 | sessmgr restarted on MME: mme_app_fill_update_bearer_rsp   | mme            |
| CSCvq71949 | Task restart while handling li session   | mme            |
| CSCvv49652 | EIA3/EEA3 broken   | mme            |
| CSCvv49151 | DNS snooping: unexpectedly p_hentry is NULL  | sae-gw         |
| CSCvs62416 | [SGSN]- sessmgr restarts at egtpc_handle_user_sap_event s4_smn_egtp_send_modify_bearer_command         | sgsn           |
| CSCvs09909 | Routing Area List instance mapping to SRNS cli needs to remove   | sgsn           |
| CSCvt67507 | Non fatal dhmgr crash is seen on multiple SF and SF demux card migration on active CP                  | staros         |

## Resolved Bugs in this Release

| Bug ID  | Headline   | Product Found* |
|---|--|----------------|
| CSCvg20133  | Segmentation fault at PC: [0d8e2647/X] EZprmSER_CheckError()     | staros         |
| CSCvv61902  | [SVI-UPF] VPP crash observed followed by continuous smgr resets. | upf            |
| * Information in the "Product Found" column identifies the product in which the bug was initially identified. |  |                |

## Resolved Bugs in this Release

The following table lists the known bugs that are resolved in this specific software release.

**NOTE:** This software release may contain bug fixes first introduced in other releases. Additional information for all resolved bugs for this release are available in the [Cisco Bug Search Tool](#).

**Table 4 - Resolved Bugs in this Release**

| Bug ID  | Headline  | Product Found* |
|---|---|----------------|
| CSCvs73921  | CUPS SGWCDR reporting higher volume traffic comparing with non-CUPS                             | cups-cp        |
| CSCvw28706  | sx-reassociation changed to enable after adding another peer node in user-plane-group           | cups-cp        |
| CSCvv59148  | vpp restart during monitor subscriber   | cups-up        |
| CSCvw60016  | Intermittent AF charging identifier write in the CDR for QCI-1 (Vowifi/Volte).                  | pdn-gw         |
| CSCvs09553  | [BP-ICUPS]: Monsub pcap file's call id not changed after context replacement                    | pdn-gw         |
| CSCvq31796  | [BP-ICUPS] Incorrect session count under "show gtpu stat"                                       | pdn-gw         |
| CSCvt47005  | [BP-Legacy] Traffic allowed despite CCR failure with FHT continue discard traffic post recovery | pdn-gw         |
| CSCvv46037  | [Legacy-GW] :Sessmgr restarted at sessmgr_ipv4_process_user_pkt_pgw_ggsn.isra.288()             | pdn-gw         |
| CSCvw45493  | [BP-ICUPS]: Interception of UL/DI packets is not happening for Rule Based "Gx-LI" Dynamic Rule  | sae-gw         |
| CSCvw51050  | 21.14: Port speed OID changes after port up/down  | staros         |
| * Information in the "Product Found" column identifies the product in which the bug was initially identified. |   |                |

## Operator Notes

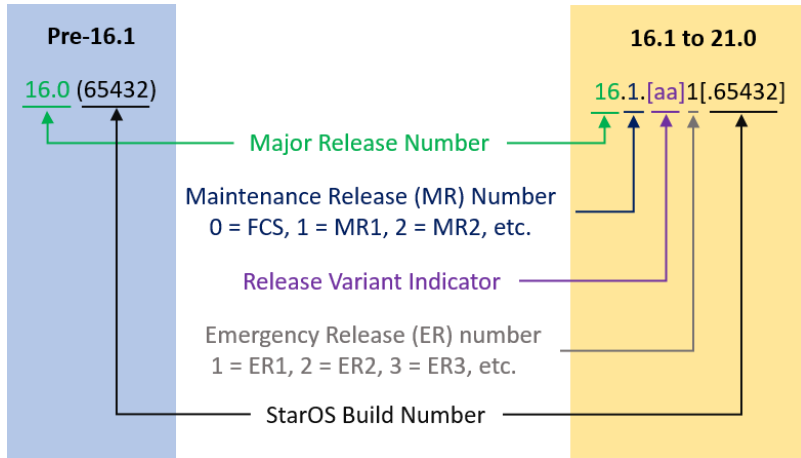
### StarOS Version Numbering System

The output of the **show version** command displays detailed information about the version of StarOS currently running on the ASR 5x00 or Cisco Virtualized Packet Core platform.

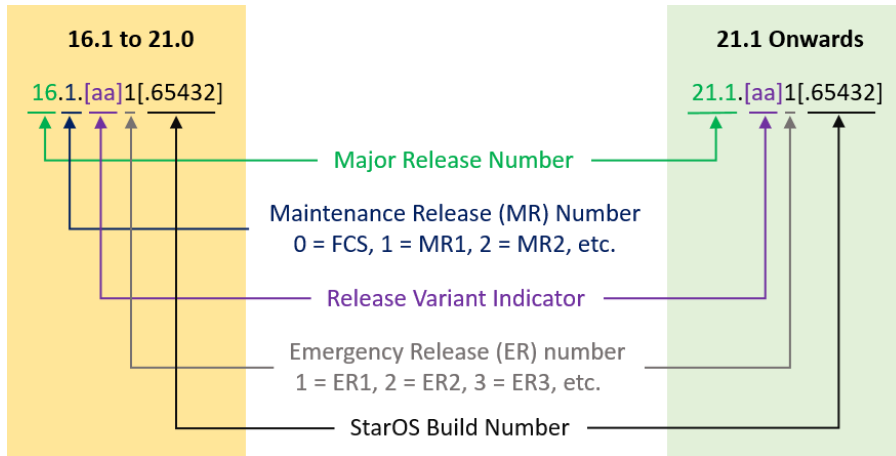
Prior to release 16.1, the *Image Version* field displayed a branch of software including the build number, for example "16.0 (55435)". Subsequent releases of software for the major release differed only in build number. Lab Quality/EFT releases versus deployment releases also differed only in build number.

From release 16.1 onwards, the output of the **show version** command, as well as the terminology used to describe the Build Version Number fields, has changed. Additionally, **show version** will display slightly different information depending on whether or not a build is suitable for deployment.

The Version Build Number for releases between 16.1 and 21.0 include a major, maintenance, and emergency release number, for example “16.1.2”.



The Version Build Number for releases 21.1 and later include a major and emergency release number, for example, “21.1.1”.



In either scenario, the appropriate version number field increments after a version has been released. The new version numbering format is a contiguous sequential number that represents incremental changes between releases. This format will facilitate identifying the changes between releases when using Bug Search Tool to research software releases.

## Release Package Descriptions

[Table 4](#) provides descriptions for the packages that are available with this release.

**Table 4 - Release Package Information**

| In 21.12.0 and later Releases | In pre-21.12.0 Releases | Description  |
|-------------------------------|-------------------------|--|
| <b>ASR 5500</b>               |                         |  |
| asr5500-<release>.zip         | asr5500-<release>.bin   | Contains the signed ASR 5500 software image, the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate. |

| In 21.12.0 and later Releases           | In pre-21.12.0 Releases                 | Description   |
|---|---|---|
| asr5500_T-<release>.zip                 | asr5500_T-<release>.bin                 | Contains the signed, trusted ASR 5500 software image, the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.   |
| <b>StarOS Companion Package</b>         |   |   |
| companion-<release>.zip                 | companion-<release>.tgz                 | <p>Contains numerous files pertaining to this version of the StarOS including SNMP MIBs, RADIUS dictionaries, ORBEM clients. These files pertain to both trusted and non-trusted build variants.</p> <p>In 21.12.0 and later releases, the StarOS companion package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p> |
| <b>VPC-DI</b>                           |   |   |
| qvpc-di-<release>.bin.zip               | qvpc-di-<release>.bin                   | <p>Contains the VPC-DI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>  |
| qvpc-di_T-<release>.bin.zip             | qvpc-di_T-<release>.bin                 | <p>Contains the trusted VPC-DI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>  |
| qvpc-di-<release>.iso.zip               | qvpc-di-<release>.iso                   | <p>Contains the VPC-DI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>   |
| qvpc-di_T-<release>.iso.zip             | qvpc-di_T-<release>.iso                 | <p>Contains the trusted VPC-DI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>   |
| qvpc-di-template-vmware-<release>.zip   | qvpc-di-template-vmware-<release>.tgz   | <p>Contains the VPC-DI binary software image that is used to on-board the software directly into VMware.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>   |
| qvpc-di-template-vmware_T-<release>.zip | qvpc-di-template-vmware_T-<release>.tgz | <p>Contains the trusted VPC-DI binary software image that is used to on-board the software directly into VMware.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>   |

| In 21.12.0 and later Releases                | In pre-21.12.0 Releases                      | Description   |
|--|--|---|
| qvmc-di-template-libvirt-kvm-<release>.zip   | qvmc-di-template-libvirt-kvm-<release>.tgz   | <p>Contains the same VPC-DI ISO identified above and additional installation files for using it on KVM.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>  |
| qvmc-di-template-libvirt-kvm_T-<release>.zip | qvmc-di-template-libvirt-kvm_T-<release>.tgz | <p>Contains the same trusted VPC-DI ISO identified above and additional installation files for using it on KVM.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>  |
| qvmc-di-<release>.qcow2.zip                  | qvmc-di-<release>.qcow2.tgz                  | <p>Contains the VPC-DI binary software image in a format that can be loaded directly with KVM using an XML definition file, or with OpenStack.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>         |
| qvmc-di_T-<release>.qcow2.zip                | qvmc-di_T-<release>.qcow2.tgz                | <p>Contains the trusted VPC-DI binary software image in a format that can be loaded directly with KVM using an XML definition file, or with OpenStack.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p> |
| <b>VPC-SI</b>                                |  |   |
| qvmc-si-<release>.bin.zip                    | qvmc-si-<release>.bin                        | <p>Contains the VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>          |
| qvmc-si_T-<release>.bin.zip                  | qvmc-si_T-<release>.bin                      | <p>Contains the trusted VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>  |
| qvmc-si-<release>.iso.zip                    | qvmc-si-<release>.iso                        | <p>Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>                 |



| In 21.12.0 and later Releases                | In pre-21.12.0 Releases                      | Description   |
|--|--|---|
| qvmc-si_T-<release>.iso.zip                  | qvmc-si_T-<release>.iso                      | <p>Contains the trusted VPC-SI ISO used for new deployments a new virtual machine is manually created and configured to boot from a CD image.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>          |
| qvmc-si-template-vmware-<release>.zip        | qvmc-si-template-vmware-<release>.ova        | <p>Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>   |
| qvmc-si-template-vmware_T-<release>.zip      | qvmc-si-template-vmware_T-<release>.ova      | <p>Contains the trusted VPC-SI binary software image that is used to on-board the software directly into VMware.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>                                       |
| qvmc-si-template-libvirt-kvm-<release>.zip   | qvmc-si-template-libvirt-kvm-<release>.tgz   | <p>Contains the same VPC-SI ISO identified above and additional installation files for using it on KVM.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>  |
| qvmc-si-template-libvirt-kvm_T-<release>.zip | qvmc-si-template-libvirt-kvm_T-<release>.tgz | <p>Contains the same trusted VPC-SI ISO identified above and additional installation files for using it on KVM.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>  |
| qvmc-si-<release>.qcow2.zip                  | qvmc-si-<release>.qcow2.gz                   | <p>Contains the VPC-SI binary software image in a format that can be loaded directly with KVM using an XML definition file, or with OpenStack.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p>         |
| qvmc-si_T-<release>.qcow2.zip                | qvmc-si_T-<release>.qcow2.gz                 | <p>Contains the trusted VPC-SI binary software image in a format that can be loaded directly with KVM using an XML definition file, or with OpenStack.</p> <p>In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.</p> |
| <b>VPC Companion Package</b>                 |  |   |

| In 21.12.0 and later Releases | In pre-21.12.0 Releases     | Description   |
|-------------------------------|-----------------------------|---|
| companion-vpc-<release>.zip   | companion-vpc-<release>.tgz | Contains numerous files pertaining to this version of the VPC including SNMP MIBs, RADIUS dictionaries, ORBEM clients. These files pertain to both VPC-DI and VPC-SI, and for trusted and non-trusted build variants.<br><br>In 21.12.0 and later releases, the VPC companion package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate. |

## 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*, at:

<http://www.cisco.com/c/en/us/td/docs/general/whatsnew/whatsnew.html>.

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