Release Notes for StarOS™ Software Version 21.23.n11

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Introduction

This Release Note identifies changes and issues related to this software release. These Release Notes identify changes and issues based on 21.23.n10

Release Package Version Information

Table 1 - Release Package Version Information

Software Packages	Version
StarOS packages	21.23.n11, build 86370

Descriptions for the various packages provided with this release are located in Release Package Descriptions.

Feature and Behavior Changes

Please contact the Account team for the documentation related to 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

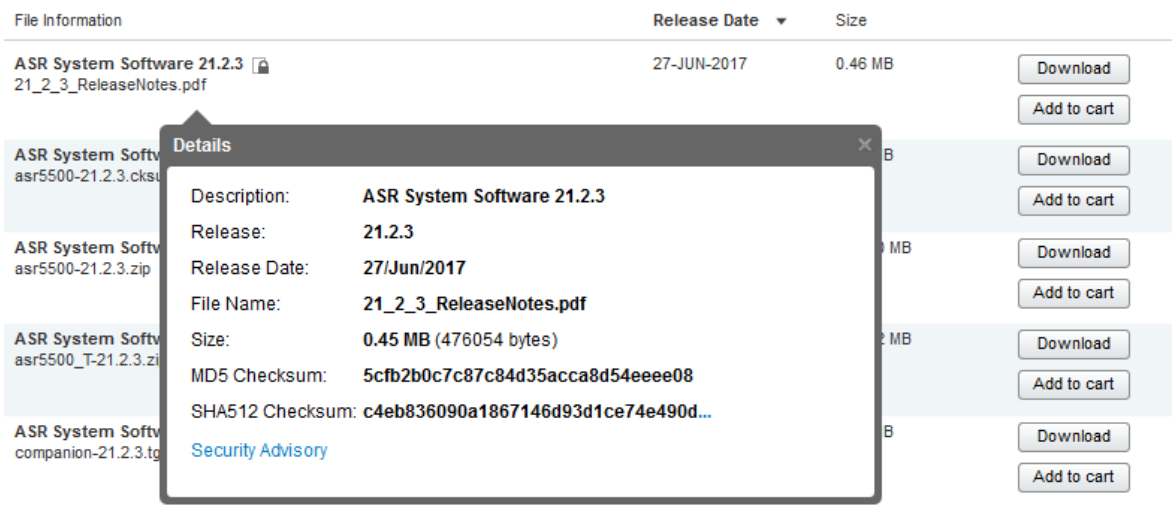
There are no firmware upgrades required for this release.

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.



  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 > certutil.exe -hashfile *<filename>.<extension>* SHA512
Apple MAC	Open a terminal window and type the following command $ shasum -a 512 *<filename>.<extension>*

Operating System	SHA512 checksum calculation command examples

Linux	Open a terminal window and type the following command
	
	$ sha512sum *<filename>.<extension>*
	
	Or
	
	$ shasum -a 512 *<filename>.<extension>*

NOTES: *<filename>* is the name of the file. *<extension>* is the file extension (e.g. .zip or .tgz).	

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*
CSCwa83375	[BP-CUPS] Observed sessmgr restart : snx_sgw_driver_handle_modify_rsp on CP in Longevity setup	cups-cp
CSCvv13409	[BP-CUPS]URR node not found at CP for URR-id: 0x82 received in Usage Report	cups-cp
CSCvz92617	[BP-CUPS]:Huge number of error logs observed acsmgr_populate_chrg_info_from_urr failure	cups-cp
CSCwc21399	[BP-CUPS][sx 221332error][<sessmgr:23>sx_db.c:1238]Tunnel_record local seid and Packet seid does not	cups-cp
CSCvz90294	smgr_uplane_handle_config_timedef() restart is seen on ICSR UP	cups-up
CSCwb87382	[BP-CUPS]: AF at Func: sn_memblock_cache_get_mcblock_by_addr()	cups-up
CSCvz41620	Assertion failure at sess/sctrl/sessctrl_uplane_cfg_sync	cups-up

Bug ID	Headline	Product Found*
CSCvy33441	sessmgr restart is seen in Function: mme_x2_ho_process_path_sw_req_msg()	mme
CSCwa92153	Corruption in vpnmgr when large amount of data gets dumped	mme
CSCwa36635	MME crashes after upgrade to v21.23.6_21_mme_fsm_event_handler()	mme
CSCvz90152	SessMgr restart during X2 Handover	mme
CSCwa93249	MME sessmgr restart seen in Function: mme_app_egtpc_abort_low_priority_trans()	mme
CSCwc25016	sessmgr restart when provisioned with IPv6 and LI Event Delivery type UDP ACK Format	mme
CSCvu37233	Multiple Sessmgr restarts seen while doing service card migration from active to standby	mme
CSCwb34009	Fatal Signal 11 in acsmgr_destroy_recorded_adc_flows_list()	pdn-gw
CSCwb81718	CCR-U/CCR-T for Non-WPS session going through WPS channel	pdn-gw
CSCwa49484	RCM workaround for unreliable alert-forwarder	rcm
CSCwb12055	CLI to prevent multiple config push notifications towards NSO	rcm
CSCwa58920	sessmgr process restarted at egtpc_handle_user_sap_event	sae-gw
CSCwa54898	Sessmgr restart - Fatal Signal 6: PC: [09ed1233/X] acsmgr_adc_dispatch_event()	sae-gw
CSCwa23914	sessmgr restart due Fatal Sig PC: [09fd165b/X] acsmgr_sess_sr_uchkpt_delete_all_accnt_mscc_bucket()	sae-gw
CSCwb58656	sessmgr restart due to Assertion failure at sess/smgr/sessmgr_hlcom.c:467	sae-gw
CSCvy78942	With WPS3B configuration GW use secondary PAS during mid-session	sae-gw
CSCvz16012	GMPC event not triggering with reporting action for 3g Detach	sgsn
CSCvy09744	[CP-SGSN] sessmgr restart seen with function egtpc_handle_del_bearer_cmd_req_evt	sgsn
CSCwb41992	MACs algorithm configuration does not operate as expected	staros
CSCwa40585	Vpnmgr restart @ vpnmgr_check_addr_conflict()	staros

***** 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*
CSCwc39963	[Smoke2-Legacy] S8HR Intercepted calls not established after bbiff_trigger	cups-cp
CSCwc18836	[CUPS-CP] CP losing VoGx URR 0x8000000a after ICSR switchover.	cups-cp

Bug ID	Headline	Product Found*
CSCwb95670	[CUPS] Uplane received invalid far id in PDU	cups-cp
CSCwc20916	[CUPS CP] Assertion Failure @ sn_slist_lookup_by_key()	cups-cp
CSCwc15578	[CUPS CP] Sx Mod for Li Dup FAR missing when using GGSN Service and Selective LI Encryption	cups-cp
CSCwc20048	Data browsing issue faced after CSFB	cups-cp
CSCwc13887	Multiple sessmgr having high memory utilization	cups-cp
CSCwc12794	[BP-CUPS] Observed sessmgr restart : snx_sgw_driver_handle_modify_rsp on CP in Longevity setup	cups-cp
CSCwb41247	[BP-CUPS] Observed smgr restart “smgr_fsm_newstate” on CP on Longevity execution	cups-cp
CSCwc00858	CP is not sending CCR-U during QHT expiry	cups-cp
CSCwa19731	UP in busyout state get sessions assigned	cups-cp
CSCwa92055	Session is established on busy-out UP under UP re-selection algorithm.	cups-cp
CSCwb53858	ACSMGR 91432 Error	cups-cp
CSCwb89829	[CUPS-CP] Incorrect counting of rejected handovers	cups-cp
CSCwb99604	Assertion at Function: sessmgr_pgw_reject_intertech_ho_without_stats	cups-cp
CSCwb94772	session manager restart due to forwarding epsb request	cups-cp
CSCwb87081	[CUPS-CP] Discrepancy between Gy and Gz reporting when “exclude-packet-causing-trigger” configured	cups-cp
CSCwb94932	Sessmgr task restart on egtpc_release_pdn_conn_rec()	cups-cp
CSCwb57352	[CUPS] Sx-Modify containing Usage-Report failed. Cause=64 OffendingIE Type=131	cups-cp
CSCwb63921	sessmgr crash - Assertion failure at sess/smgr/sessmgr_sgw.c:11881	cups-cp
CSCwc26563	[CUPS-UP] standby SessMgr memory leak at sessmgr_uplane_allocate_dupl_param	cups-up
CSCwc30341	[CUPS UP] quota-exhausted pass is not applied if UP sessmgr has other session with other cc group	cups-up
CSCwc07936	CUPS “pending-traffic-treatment quota-exhausted pass” is not working after back to back pfd push	cups-up
CSCwc25704	[CUPS-UP] Some UP does not activate VPP correctly after upgrade or reload	cups-up
CSCwb89743	[CUPS-UP] Task restart due to memory exhaustion at sessmgr_handle_get_global_smgr_stats()	cups-up
CSCwa33605	[CUPS] Error logs DNS snooping: unexpectedly p_hentry is NULL observed (even after fix in 21.23.11)	cups-up
CSCwb45809	CUPS: sessmgr restart in sn_slist_comp_xheader_field	cups-up
CSCwa85071	sessmgr restart while parsing uplane http header	cups-up
CSCwb65384	pre-allocated calls becomes 0 in standby UP after user plane service restart	cups-up
CSCwb70785	"CUPS-UP: hatsystem crash due to VPP timeout, Assertion failure at hat/hatsystem_fail.c:2115"	cups-up
CSCwb88792	Fatal Signal 11 for sessmgr_uplane_generate_edr	cups-up
CSCwb34949	[CUPS UP]: sessmgr restart seen in uplane_populate_nbr_field_edr_charging_id()	cups-up

Bug ID	Headline	Product Found*
CSCwb94113	CUPS: Active UP reload due to NPU-VPP keepalive timeout	cups-up
CSCwb83204	APN+TAC basic CLI for IMSI clearance.	mme
CSCwc40876	NPU Utilization unevenness after MIO switchover and sessmgr restarts	staros
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

Operator Notes

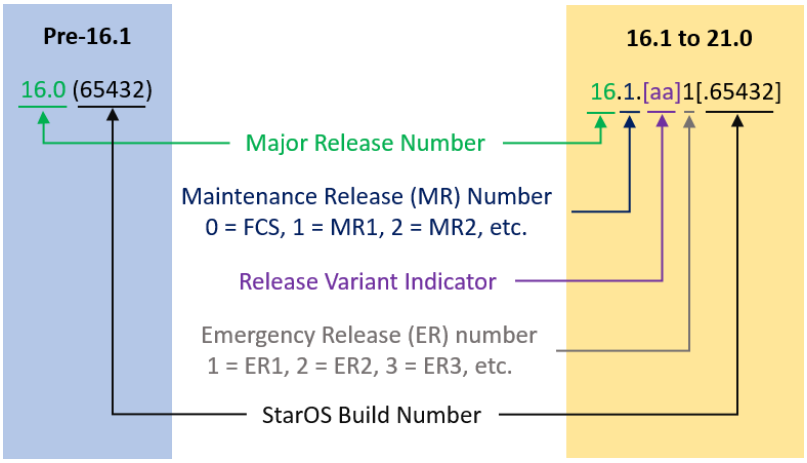
StarOS Version Numbering System

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.

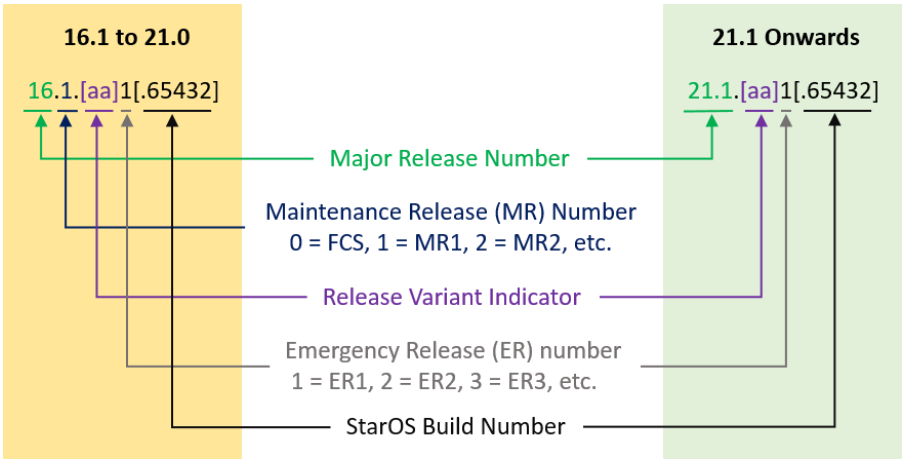
Prior to release 16.1, the *Image Version* field displayed a branch of software including the build number, for example "16.0 (55435)". Subsequent releases of software for the major release differed only in build number. Lab Quality/EFT releases versus deployme nt releases also differed only in build 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 identifyi ng the changes between releases when using Bug Search Tool to research software releases.

Release Package Descriptions

Table 5 provides descriptions for the packages that are available with this release.

Table 5 - Release Package Information

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
ASR 5500		
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.
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.
StarOS Companion Package		
companion-<release>.zip	companion-<release>.tgz	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. 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.
VPC-DI		
qvpc-di-<release>.bin.zip	qvpc-di-<release>.bin	Contains the VPC-DI binary software image that is used to replace a previously deployed image on the flash disk in existing installations. 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.

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvpc-di_T-<release>.bin.zip	qvpc-di_T-<release>.bin	Contains the trusted VPC-DI binary software image that is used to replace a previously deployed image on the flash disk in existing installations. 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.
qvpc-di-<release>.iso.zip	qvpc-di-<release>.iso	Contains the VPC-DI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image. 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.
qvpc-di_T-<release>.iso.zip	qvpc-di_T-<release>.iso	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. 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.
qvpc-di-template-vmware-<release>.zip	qvpc-di-template-vmware-<release>.tgz	Contains the VPC-DI binary software image that is used to on-board the software directly into VMware. 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.
qvpc-di-template-vmware_T-<release>.zip	qvpc-di-template-vmware_T-<release>.tgz	Contains the trusted VPC-DI binary software image that is used to on-board the software directly into VMware. 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.
qvpc-di-template-libvirt-kvm-<release>.zip	qvpc-di-template-libvirt-kvm-<release>.tgz	Contains the same VPC-DI ISO identified above and additional installation files for using it on KVM. 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.
qvpc-di-template-libvirt-kvm_T-<release>.zip	qvpc-di-template-libvirt-kvm_T-<release>.tgz	Contains the same trusted VPC-DI ISO identified above and additional installation files for using it on KVM. 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.
qvpc-di-<release>.qcow2.zip	qvpc-di-<release>.qcow2.tgz	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. 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.

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvpc-di_T-<release>.qcow2.zip	qvpc-di_T-<release>.qcow2.tgz	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. 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.
VPC-SI		
qvpc-si-<release>.bin.zip	qvpc-si-<release>.bin	Contains the VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations. 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.
qvpc-si_T-<release>.bin.zip	qvpc-si_T-<release>.bin	Contains the trusted VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations. 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.
qvpc-si-<release>.iso.zip	qvpc-si-<release>.iso	Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image. 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.
qvpc-si_T-<release>.iso.zip	qvpc-si_T-<release>.iso	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. 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.
qvpc-si-template-vmware-<release>.zip	qvpc-si-template-vmware-<release>.ova	Contains the VPC-SI binary software image that is used to on-board the software directly into VMware. 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.
qvpc-si-template-vmware_T-<release>.zip	qvpc-si-template-vmware_T-<release>.ova	Contains the trusted VPC-SI binary software image that is used to on-board the software directly into VMware. 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.
qvpc-si-template-libvirt-kvm-<release>.zip	qvpc-si-template-libvirt-kvm-<release>.tgz	Contains the same VPC-SI ISO identified above and additional installation files for using it on KVM. 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.

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvpc-si-template-libvirt-kvm_T-<release>.zip	qvpc-si-template-libvirt-kvm_T-<release>.tgz	Contains the same trusted VPC-SI ISO identified above and additional installation files for using it on KVM. 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.
qvpc-si-<release>.qcow2.zip	qvpc-si-<release>.qcow2.gz	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. 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.
qvpc-si_T-<release>.qcow2.zip	qvpc-si_T-<release>.qcow2.gz	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. 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.
VPC Companion Package		
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. 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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