



# Release Notes for StarOS™ Software Version 21.9.2 and Ultra Service Platform Version N6.3.2

First Published: Oct 1, 2018

Last Updated: Oct 1, 2018

## Introduction

This Release Note identifies changes and issues related to this software release. This emergency release is based on release 21.9.1 and N6.3.1.

## Release Package Version Information

Software Packages	Version
StarOS packages	21.9.2, build 70356
Ultra Service Platform ISO	6_3_2, Epoch 6388
usp-em-bundle*	6.3.0, Epoch 3697
usp-ugp-bundle*	21.9.2, build 70356, Epoch 4417
usp-yang-bundle	1.0.0, Epoch 3587
usp-uas-bundle	6.3.0, Epoch 3770
usp-auto-it-bundle	5.8.0, Epoch 3794
usp-vnfm-bundle	4.2.0.74, Epoch 3689
USP RPM Verification Utilities	6.3.2
* These bundles are also distributed separately from the ISO.	

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

## Feature and Behavior Changes

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

## Related Documentation

For a complete list of documentation available for this release, go to:

- StarOS: <https://www.cisco.com/c/en/us/support/wireless/asr-5000-series/products-installation-and-configuration-guides-list.html>
- Ultra Gateway Platform (including the Ultra M Solution): <https://www.cisco.com/c/en/us/support/wireless/ultra-gateway-platform/products-installation-and-configuration-guides-list.html>
- Ultra Automation Services: <https://www.cisco.com/c/en/us/support/wireless/ultra-automation-services/products-installation-and-configuration-guides-list.html>
- Virtual Packet Core (including VPC-SI and VPC-DI): <https://www.cisco.com/c/en/us/support/wireless/virtual-packet-core/products-installation-and-configuration-guides-list.html>

## Installation and Upgrade Notes

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

## Ultra M Hyper-Converged Model Component Versions

HW	SW	6.3.0	6.3.1	6.3.2
	StarOS	21.9.0, Build 69977	21.9.0, Build 69977	21.9.2, Build 70356
	ESC	4.2.0.74	4.2.0.74	4.2.0.74
	RH Kernel	7.5	7.5	7.5
	OSP	10	10	10
UCS C240 M4S SFF (NFVI)	BIOS	3.0(4a)	3.0(4a)	3.0(4a)
	CIMC (BMC)	3.0(4d)	3.0(4d)	3.0(4d)
	MLOM	4.1(3f)	4.1(3f)	4.1(3f)
C2960XR-48TD-I (Management)	Boot Loader	15.2(3r)E1	15.2(3r)E1	15.2(3r)E1
	IOS	15.2.(2) E5	15.2.(2) E5	15.2.(2) E5

Installation and Upgrade Notes

HW	SW	6.3.0	6.3.1	6.3.2
C3850-48T-S (Management)	Boot Loader	3.58	3.58	3.58
	IOS	03.06.06E	03.06.06E	03.06.06E
Nexus 93180- YC-EX (Leafs)	BIOS	7.59	7.59	7.59
	NX-OS	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)
Nexus 9236C (Spines)	BIOS	7.59	7.59	7.59
	NX-OS	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)

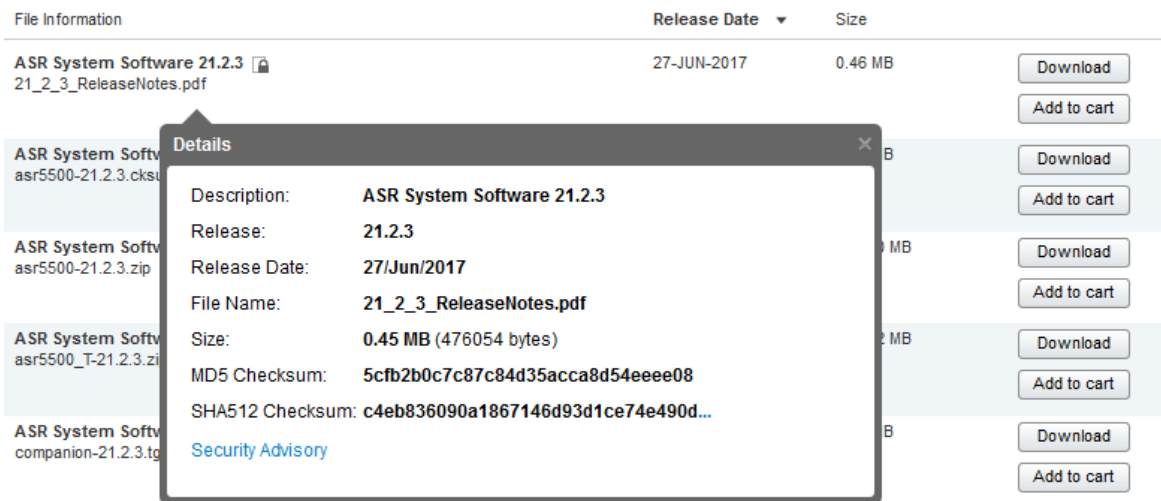
## Firmware Updates

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 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.

To validate the information, calculate a SHA512 checksum using the information in [Table 1](#) 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 1 - Checksum Calculations per Operating System

Operating System	SHA512 checksum calculation command examples
------------------	----------------------------------------------

Open Bugs for this Release

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>
Linux	Open a terminal window and type the following command  \$ sha512sum <filename>.<extension>  Or  \$ shasum -a 512 <filename>.<extension>
<p>NOTES:</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

StarOS software images are signed via x509 certificates. USP ISO images are signed with a GPG key. Please view the .README file packaged with the software for information and instructions on how to validate the certificates.

NOTE: Image signing is not currently supported for VPC-SI and/or VPC-DI software packages.

## Open Bugs for 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](#).

Bug ID	Headline	Product Found*
CSCvk13379	[BP-CUPS]Sessmgr reload is observed on PGW Control Plane while sending Sx Session Reporting Request	cups-cp
CSCvk13391	[BP-CUPS] Sessmgr in over state with dedicated bearer	cups-cp

Open Bugs for this Release

Bug ID	Headline	Product Found*
CSCvk48006	[BP-CUPS]: Behaviour on Sx PFD messages timeout - UP stuck in Not configured state	cups-cp
CSCvk17716	[BP-CUPS] On UBRes failure for Dynamic rule modification URRs getting removed for default Bearer	cups-cp
CSCvk42558	[BP-CUPS-VPP] Facility sessctrl restart: sn_msg_call_internal()	cups-cp
CSCvj90659	[BP-CUPS]sponsorIdentity parameter not populated in GTPP Custom35 CDR.	cups-cp
CSCvj93186	BP-CUPS: AFCID not seen in CDR for custom35 dictionary	cups-cp
CSCvk54440	StarOS 21.9 release does not contain the unittest for the traps with ifIndexes from 1357 to 1360	cups-cp
CSCvi53376	[BP-CUPS]: Session Manager reload at smgr_uplane_config_rule_options on Cisco PGW	cups-up
CSCvk21427	[BP-CUPS-VPP] Seg Fault at sessmgr_up_fapi_handle_stats_update()	cups-up
CSCvk27851	[BP-CUPS-VPP]: sxdemux process restarts every 6 mins	cups-up
CSCvk29167	[PLT-CUPS-VPP]: vpp stops on UP with 24 sessmgr	cups-up
CSCvk39591	[BP-CUPS-VPP] Segmentation fault at uplane_reset_saved_pdr_match_info on VPP Testbed	cups-up
CSCvk47500	[BP-CUPS-VPP] RS packet handling is incorrect in VPP fastpath.	cups-up
CSCvj76251	[PLT-CUPS-VPP]: vpp_main in 'over' state with single subscriber 8Mbps data	cups-up
CSCvj77802	[BP-CUPS]: "show subscriber data-rate" not showing correct values	cups-up
CSCvj81306	[BP-CUPS]: [sessmgr 12341 error] [SXAB] Update PDR not found with PDR ID 0x7	cups-up
CSCvj90571	[BP-CUPS] USAGE REPORT not sent in SxModResp even if QUERY URR is received in SxModReq	cups-up
CSCvk05490	[PLT-CUPS-VPP]: [sessmgr0 error] Timeout Processing: Time out, MSG ID: 8790, wheel Slot Id: 68	cups-up
CSCvk37888	[BP-CUPS-VPP] Post rule modification all packets come to smu, stream is passive.	cups-up
CSCvk39031	[BP-CUPS-VPP] TOS not getting applied on d/l inner packet from qci qos mapping table.	cups-up
CSCvk40097	[BP-CUPS]: Sessmgr restarted with sn_slist_remove_by_key	cups-up
CSCvk42806	[BP-CUPS-VPP] Drop stream is not getting onloaded on installing high priority rule.	cups-up
CSCvk46857	[PLT-CUPS-VPP]: vppmgr restart while removing crp config	cups-up
CSCvj93176	BP-CUPS: packetCount is not incremented for R10 ULI change or Qos change	cups-up
CSCvk53594	mmemgr Restart at free_acct	mme

Resolved Bugs for this Release

Bug ID	Headline	Product Found*
CSCvk13327	SRP service not working when traffic is routed via two default route, 2nd default not reachable	pdn-gw
CSCvk34087	NAT IPs lost after session recovery when port-chunk-size is configured with higher values	pdn-gw
CSCvm19671	[PGW-NSA] PRA-Info received in MBReq is not sent in CCRU in WiFi to LTE HO case	pdn-gw
CSCvm67581	sessmgr restart at tftcpCompleteClose during Callmodel run testing	pdn-gw
<b>CSCvm63606</b>	VPNmgr restarts observed when TACACS is not reachable.	Sae-gw
CSCvk36855	Sessmgr Restart at access_get_nw_to_ms_gmm_stats_type	sgsn
CSCvk05521	21.9_69629_5GNSA: Activate DCNR counters incrementing for Non-5GNSA PDP contexts	sgsn
CSCvk07083	21.9.69633 Assertion Failure in Function: s4_sessmgr_gprs_fsm_pdp_cleanup_with_egtp_abort	sgsn
CSCvk54113	Assertion failure at sess/sgsn/sgsn-app/gtp_c/gtapp_enc_ie	sgsn
CSCvk43563	Indirect Data tunnelling stats not updating after call is cleared on SGW.	sgw
CSCvj77813	show active-chargingedr-udr-file statistics causing cli task restart	staros
CSCvk60364	Deactivation failure due to timeout at AutoVNF	usp-uas
CSCvk56974	CUPS: Simultaneous undeployment for multiple vnfds leaves vnf in Stopping state.	usp-usf
CSCvm03898	VnfDiags not working correctly	usp-usf
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

## Resolved Bugs for 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](#).

Bug ID	Headline	Product Found*
CSCvm41218	Manual Scaling of SF cards additions and removal issue on VPC-DI	staros
CSCvk53069	VPC-DI: iftask counter fixes	staros
CSCvm17620	BGP/BFD neighbors bounce after MIO switchover on Active/Active LAG	staros

Bug ID	Headline	Product Found*
CSCvk72440	[VPC] MCDMA interface drops	staros
CSCvk72491	[VPC] Stagger iftask NIC hardware tx queue assignments	staros
CSCvm19430	NAT64 ipv6 fragment header identification field always zero	pdn-gw
CSCvk64084	Around 6% degradation in sessmgr CPU in 21.9.M0.69905 wrt 21.8.M0.69182 statistics in smoke Run	pdn-gw
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

## Operator Notes

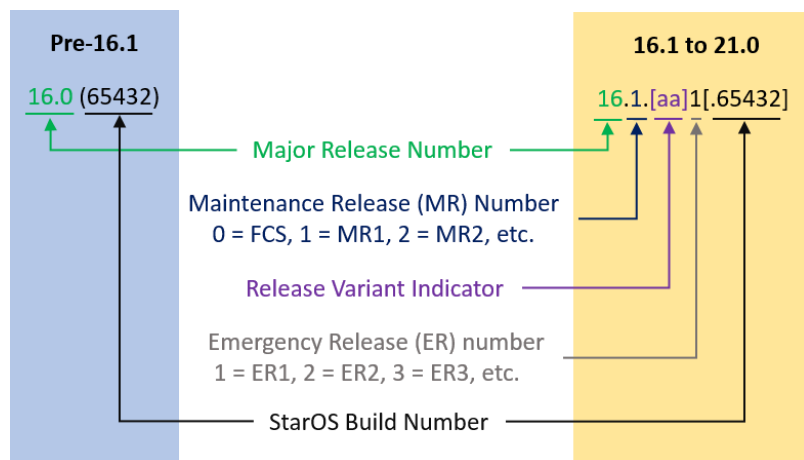
### StarOS Version Numbering System

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.

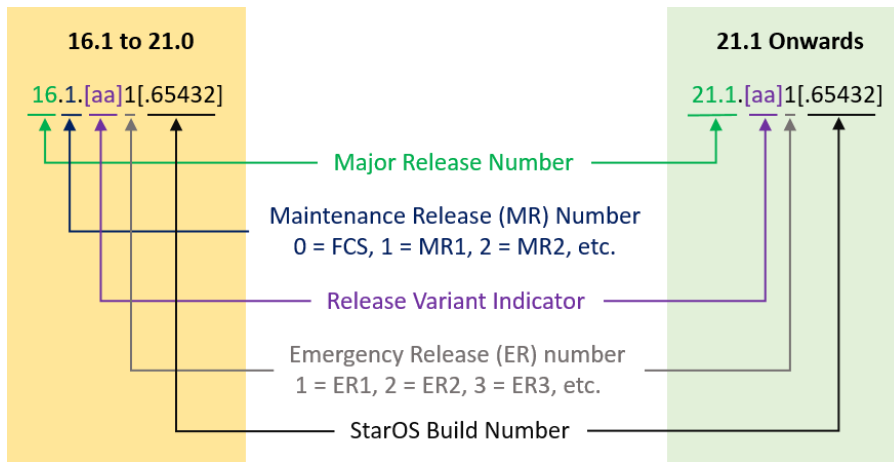
Prior to release 16.1, the *Image Version* field displayed a branch of software including the build number, for example "16.0 (55435)". Subsequent releases of software for the major release differed only in build number. Lab Quality/EFT releases versus deployment releases also differed only in build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

The following table provides descriptions for the packages that are available with this release.

Table 2 - Release Package Information

Package	Description
<b>ASR 5500</b>	
asr5500-<release>.bin	A zip file containing 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>.bin	A zip file containing 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>VPC-DI</b>	
qvpc-di-<release>.bin	The VPC-DI binary software image which is used to replace a previously deployed image on the flash disk in existing installations.
qvpc-di_T-<release>.bin	The trusted VPC-DI binary software image which is used to replace a previously deployed image on the flash disk in existing installations.
qvpc-di-<release>.iso	The VPC-DI ISO used for new deployments a new virtual machine is manually created and configured to boot from a CD image.
qvpc-di_T-<release>.iso	The trusted VPC-DI ISO used for new deployments a new virtual machine is manually created and configured to boot from a CD image.
qvpc-di-template-vmware-<release>.tgz	The VPC-DI binary software image that is used to on-board the software directly into VMware.



Operator Notes

Package	Description
qvpc-di-template-vmware_T-<release>.tgz	The trusted VPC-DI binary software image that is used to on-board the software directly into VMware.
qvpc-di-template-libvirt-kvm-<release>.tgz	This is an archive that includes the same VPC-DI ISO identified above, but additional installation files for using it on KVM.
qvpc-di-template-libvirt-kvm_T-<release>.tgz	This is an archive that includes the same trusted VPC-DI ISO identified above, but additional installation files for using it on KVM.
qvpc-di-<release>.qcow2.tgz	The VPC-DI binary software image in a format that can be loaded directly with KVM using an XML definition file, or with OpenStack.
qvpc-di_T-<release>.qcow2.tgz	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.
<b>VPC-SI</b>	
qvpc-si-<release>.bin	The VPC-SI binary software image which is used to replace a previously deployed image on the flash disk in existing installations.
qvpc-si_T-<release>.bin	The trusted VPC-SI binary software image which is used to replace a previously deployed image on the flash disk in existing installations.
qvpc-si-<release>.iso	The VPC-SI ISO used for new deployments a new virtual machine is manually created and configured to boot from a CD image.
qvpc-si_T-<release>.iso	The trusted VPC-SI ISO used for new deployments a new virtual machine is manually created and configured to boot from a CD image.
qvpc-si-template-vmware-<release>.ova	The VPC-SI binary software image that is used to on-board the software directly into VMware.
qvpc-si-template-vmware_T-<release>.ova	The trusted VPC-SI binary software image that is used to on-board the software directly into VMware.
qvpc-si-template-libvirt-kvm-<release>.tgz	This is an archive that includes the same VPC-SI ISO identified above, but additional installation files for using it on KVM.
qvpc-si-template-libvirt-kvm_T-<release>.tgz	This is an archive that includes the same trusted VPC-SI ISO identified above, but additional installation files for using it on KVM.
qvpc-si-<release>.qcow2.gz	The VPC-SI binary software image in a format that can be loaded directly with KVM using an XML definition file, or with OpenStack.
qvpc-si_T-<release>.qcow2.gz	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.
<b>StarOS Companion Package</b>	

Operator Notes

Package	Description
companion- <release>.tgz	An archive containing 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.
Ultra Service Platform	
usp-<version>.iso	The USP software package containing component RPMs (bundles).  Refer to <a href="#">Table 3</a> for descriptions of the specific bundles.
usp_T-<version>.iso	The USP software package containing component RPMs (bundles). This bundle contains trusted images.  Refer to <a href="#">Table 3</a> for descriptions of the specific bundles.
usp_rpm_verify_utils- <version>.tar	This package contains information and utilities for verifying USP RPM integrity.

Table 3 - USP ISO Bundles

USP Bundle Name	Description
usp-em-bundle- <version>- 1.x86_64.rpm*	The Element Manager (EM) Bundle RPM containing images and metadata for the Ultra Element Manager (UEM) module.
usp-ugp-bundle- <version>- 1.x86_64.rpm*	The Ultra Gateway Platform (UGP) Bundle RPM containing images for Ultra Packet core (VPC-DI). There are trusted and non-trusted image variants of this bundle.
usp-yang-bundle- <version>- 1.x86_64.rpm	The Yang Bundle RPM containing YANG data models including the VNFD and VNFR.
usp-uas-bundle- <version>- 1.x86_64.rpm	The Ultra Automation Services Bundle RPM containing AutoVNF, Ultra Web Services (UWS), and other automation packages.
usp-auto-it-bundle- <version>- 1.x86_64.rpm	The bundle containing the AutoIT packages required to deploy the UAS.
usp-vnfm-bundle- <version>- 1.x86_64.rpm	The VNFM Bundle RPM containing an image and a boot-up script for ESC (Elastic Service Controller).
ultram-manager- <version>- 1.x86_64.rpm	This package contains the script and relevant files needed to deploy the Ultra M Manager Service.
* These bundles are also distributed separately from the ISO.	

## 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>.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation, as an RSS feed and deliver content directly to your desktop using a reader application. The RSS feeds are a free service.

## Obtaining Documentation and Submitting a Service Request

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies are considered un-controlled copies and the original on-line version should be referred to for latest version.

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: [www.cisco.com/go/trademarks](http://www.cisco.com/go/trademarks). Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

© 2018 Cisco Systems, Inc. All rights reserved.