



Release Notes for StarOS™ Software Version 21.15.8 and Ultra Service Platform Version 6.9.4

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Introduction

This Release Notes identify changes and issues related to this software release. This emergency release is based on release 6.9.3 and StarOS 21.15.7. This Release Notes is applicable to the ASR5500, VPC-SI, VPC-DI and Ultra Service platforms.

Release Package Version Information

Table 1: Release Package Version Information

Software Packages	Version
StarOS packages	21.15.8 build 73367
Ultra Service Platform ISO	6_9_4-9917
usp-em-bundle*	6.9.0, 7775
usp-ugp-bundle*	21.15.8, 7717
usp-yang-bundle	1.0.0, 7290
usp-uas-bundle	6.9.0, 7508
usp-auto-it-bundle	5.8.0, 7502
usp-vnfm-bundle	4.5.0.112, 7387
Ultram Manager	2.7.2, 969
* These bundles are also distributed separately from the ISO.	

Descriptions for the various packages provided with this release are located in [Table 2](#).

Feature and Behavior Changes

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:

- 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

Table 2 - Ultra M Hyper-Converged Model Component Version Information

HW	SW	6.3	6.4	6.5	6.6	6.7	6.8	6.9
	StarOS	69977	70597	70741	71244	71540	72257	72729
	ESC	4.2.0.74	4.3.0.121	4.3.0.121	4.4.0.88	4.4.0.88	4.5.0.112	4.5.0.112
	RH Kernel	7.5	7.5	7.5	7.5	7.5	7.5	7.5
	OSP	10	10	10 or 13 NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments	10 or 13 NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments	10 or 13 NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments	10 or 13 NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments	10 or 13 NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments

Installation and Upgrade Notes

HW	SW	6.3	6.4	6.5	6.6	6.7	6.8	6.9
				of the UGP VNF.	of the UGP VNF.	of the UGP VNF.	of the UGP VNF.	of the UGP VNF.
UCS C240 M4S SFF (NFVI)	BIOS	3.0(4a)	3.0(4a)	3.0(4a)	3.0(4a)	3.0(4a)	3.0(4a)	3.0(4a)
	CIMC (BMC)	3.0(4d)	3.0(4d)	3.0(4d)	3.0(4d)	3.0(4d)	3.0(4d)	3.0(4d)
	MLOM	4.1 (3f)	4.1 (3f)	4.1 (3f)	4.1 (3f)	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	15.2(3r)E1	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	15.2.(2) E5	15.2.(2) E5	15.2.(2) E5	15.2.(2) E5
C3850-48T-S (Management)	Boot Loader	3.58	3.58	3.58	3.58	3.58	3.58	3.58
	IOS	03.06.06E	03.06.06E	03.06.06E	03.06.06E	03.06.06E	03.06.06E	03.06.06E
Nexus 93180-YC-EX (Leafs)	BIOS	7.59	7.59	7.59	7.59	7.59	7.59	7.59
	NX-OS	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)	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	7.59	7.59	7.59	7.59
	NX-OS	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)	7.0(3)I7(3)

Firmware Updates

There are no firmware updates 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.

The screenshot shows a table of software files with columns for 'File Information', 'Release Date', and 'Size'. A 'Details' popup window is open over the first row, displaying the following information:

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.

To validate the information, calculate a SHA512 checksum using the information in [Table 3](#) and verify that it matches either the one provided on the software download page.

To calculate a SHA512 checksum on your local desktop, see the following table.

Table 3 – Checksum Calculations per Operating System

Operating System	SHA512 checksum calculation command examples
Microsoft Windows	Open a command line window and type the following command <pre>> certutil.exe -hashfile <filename>.<extension> SHA512</pre>
Apple MAC	Open a terminal window and type the following command <pre>\$ shasum -a 512 <filename>.<extension></pre>
Linux	Open a terminal window and type the following command <pre>\$ sha512sum <filename>.<extension></pre> <p>Or</p> <pre>\$ shasum -a 512 <filename>.<extension></pre>
NOTES:	
<i><filename></i> is the name of the file.	
<i><extension></i> 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

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 in this Release

The following table lists known bugs that were found in, and 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*
CSCvo45414	sx-invalid-response seen when dynamic rule installed after predefined rule and sesMgr kill	cups-cp
CSCvr04110	[GGSN]- sessmgr_pgw_find_sx_trans_info_node()	cups-cp
CSCvr21882	BP CUPS:PC: sgx_update_install_rule_def_list()	cups-cp
CSCvq35024	sessmgr error: Misc Error:Callline invalid or in invalid state for sending checkpoints	cups-up
CSCvq64442	Subscriber pkt drop stats not updated to sessmgr from VPP on call clear.	cups-up
CSCvq71873	sessmgr_uplane_cleanup_pdr()	cups-up
CSCvr21683	BP CUPS:free_acct()	cups-up
CSCvo47244	[BP-CUPS] Discrepancy in dropped packet count statistics after Gy quota exhausted	cups-up
CSCvr08929	sessmgr restart seen on mme_app_fill_delete_sess_req	mme
CSCvr39322	MME: SMGR Restart(Multi-fault) - mme_app_util_send_create_bearer_rsp()	mme
CSCvq93693	MME config update not happening on reload chassis applying enb-goup config	mme
CSCvr40741	PLT-ICUPS : vppctl show errors incrementing "lookup drops" and "PAWS check failed"	pdn-gw
CSCvr67110	[PLT-ICUPS]: [vpn 5103 error] UDP Med received packet with non-udp protocol on DPC2 card migration	pdn-gw
CSCvr65974	[BP-ICUPS] MonSub Control packets missing in slowpath generated pcap	pdn-gw
CSCvq95469	[BP-ICUPS-VPP]: icmpv6/mps-vpnv6 pkts not being delivered to sessmgr.	sae-gw
CSCvq63005	Gbmgr restart seen on gbmgr_rx_gns_pdu	sgsn
CSCvr43658	[VPC-DI] SF iftask continually crashes when core 1 is configured in MCDMA mode	staros
CSCvr59632	[PLT-BP-ICUPS] MEH notification missing on ASR55k	staros
CSCvr40362	UAME - K8S Cluster Node Recovery Actions (Post VM recovery by ESC) - Cluster SYNC fails	usp-uas

* 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 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*
CSCvr43201	PLT-ICUPS :CUTO Flows are not cleared up in VPP after sessmgr restart	pdn-gw
CSCvr49043	[BP-ICUPS] SMGR reload observed when partial pkt size is modified during active mon sub tracing.	pdn-gw
CSCvr66702	[BP-ICUPS] Monsub context replacement does not work	pdn-gw
CSCvr76251	[BP-ICUPS] MonSub Sessmgr Reload observed during context replacement for Pure-S Call	pdn-gw
CSCvr68410	[PLT-ICUPS-VPP] vpp reload seen while exercising mon sub on HS UE call	pdn-gw
CSCvr90685	[CUPS EM] parsing error for the VIP	usp-usf
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

Operator Notes

StarOS Version Numbering System

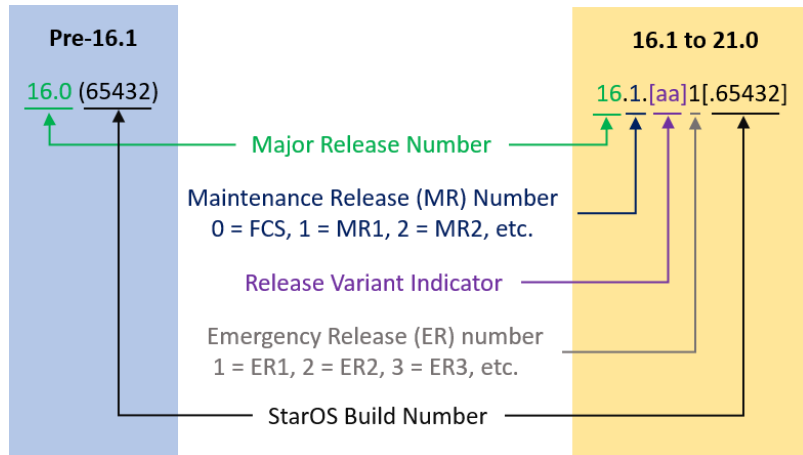
The output of the **show version** command displays detailed information about the version of StarOS currently running on the ASR 5x00 or Cisco Virtualized Packet Core platform.

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.

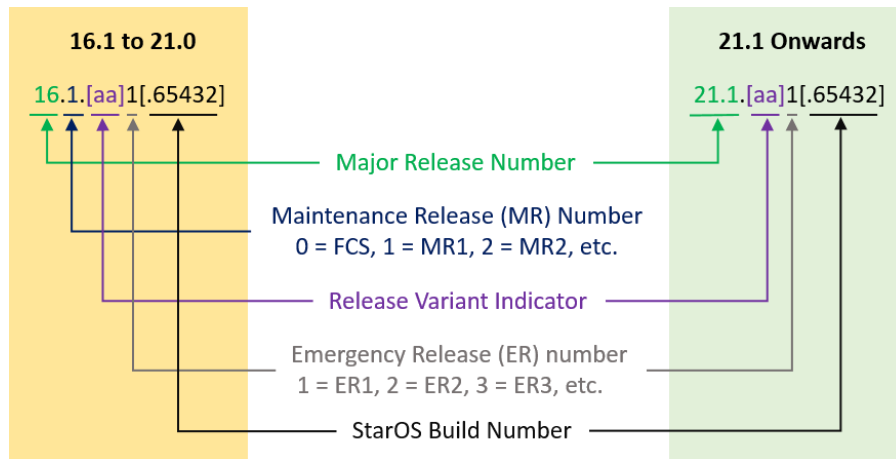
From release 16.1 onwards, the output of the **show version** command, as well as the terminology used to describe the Build Version Number fields, has changed. Additionally, **show version** will display slightly different information depending on whether or not a build is suitable for deployment.

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".

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

Table 4 - Release Package Information

Package	Description
ASR 5500	
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.
VPC-DI	
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.
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.
VPC-SI	
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.

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Package	Description
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.
StarOS Companion Package	
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 Table 5 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 Table 5 for descriptions of the specific bundles.
usp_rpm_verify_utils-<version>.tar	This package contains information and utilities for verifying USP RPM integrity.

Table 5 - 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>.

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