



Release Notes for StarOS™ Software Version 21.15.47 and Ultra Service Platform Version 6.9.8

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Introduction

This Release Notes identify changes and issues related to this software release. This emergency release is based on release 6.9.7 and StarOS 21.15.46. 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	21.15.47 build 76955
Ultra Service Platform ISO	6_9_8-11657
usp-em-bundle*	6.9.0, Epoch 9181
usp-ugp-bundle*	21.15.47, build 76955, Epoch 9267
usp-yang-bundle	1.0.0, Epoch 9145
usp-uas-bundle	6.9.0, Epoch 9247
usp-auto-it-bundle	5.8.0, Epoch 9371
usp-vnfm-bundle	4.5.0.112, Epoch 9147
ultram-manager*	2.7.4, Epoch 2344
* These bundles are also distributed separately from the ISO.	

Descriptions for the various packages provided with this release are located in [Table 4](#) and [Table 5](#).

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	10 or 13	10 or 13	10 or 13	10 or 13
				NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments	NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments	NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments	NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments	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)

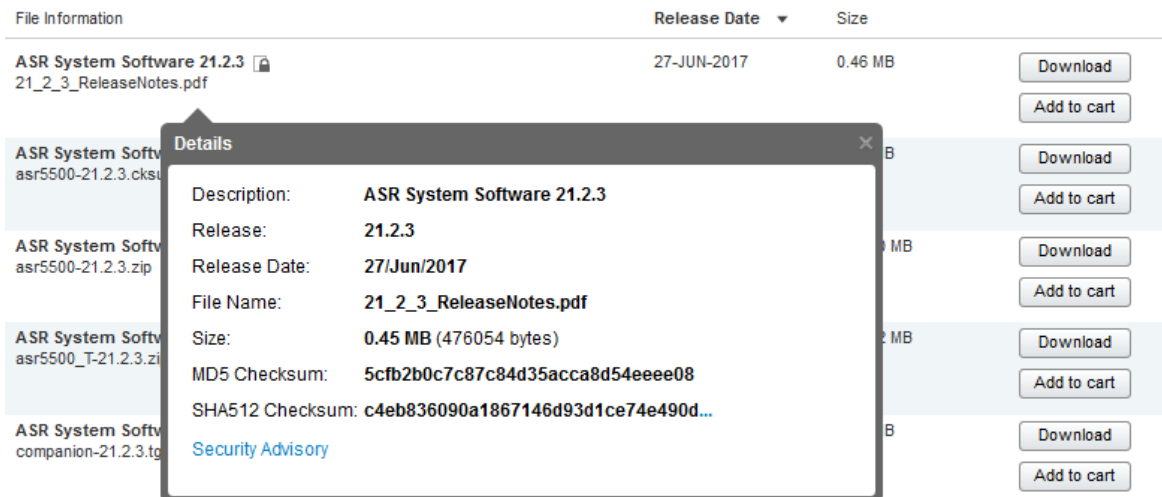
Firmware Updates

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.



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 > 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>

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

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*
CSCvt37365	Fatal Signal 6: Aborted pgw_drv_handle_events_from_smgr() snx_pgw_driver_request_control_dispatch()	cups-cp
CSCvr21882	BP CUPS:PC: sgx_update_install_rule_def_list()	cups-cp
CSCvu89327	[sol test] Multiple SM Err messages seen on SAEGW-CP with IMS PDN and Active sessions	cups-cp
CSCvu89561	[sol test] AAAmgr restart with function aaamgr_sessmgr_send_instance_level_uchkpts on stby SAEGW-CP	cups-cp
CSCvt30239	[BP-CUPS] Session Manager restart while processing URR node cache	cups-cp
CSCvu89558	[sol test] SM restart with function sn_msg_chunk_rz_allocator_alloc_block() on stby SAEGW-CP	cups-cp
CSCvr40668	"[BP-CUPS] [sessmgr 12241 error] Request API to get Sxa Information Failed, error code 0"	cups-cp
CSCvu89563	[sol test] SM restart with function sn_memblock_memcache_alloc() seen on stby SAEGW-CP	cups-cp
CSCvs03936	CUPS: Segmentation fault at vpn_deregister_user_plane	cups-cp
CSCvs62126	[BP-CUPS]: Function restart at egtpc_handle_abort_proc_cmd_evt	cups-cp

Open Bugs in this Release

Bug ID	Headline	Product Found*
CSCvs72210	CUPS CP: SM crash Assertion failure at sess/snx/drivers/sgw/sgw_pdn_fsm_util.c:3895 sgwdrv_send_crea	cups-cp
CSCvt15769	Assertion failure at sess/smgr/sessmgr_aaa_pgw.c:1347 sessmgr_pgw_get_trans_info_node	cups-cp
CSCvr46679	[BP-CUPS] sx_send_cfm_evt() (pureP)	cups-cp
CSCvs76192	Fatal Signal 11: SF PC: [0469f9e9/X] sessmgr_pgw_find_cb_trans_info_node_using_pgw_teid()	cups-cp
CSCvs99467	AF at sess/egtp/egtpc/egtpc_evt_handler_func.c:346 egtpc_handle_flush_pb_msg_cmd_evt()	cups-cp
CSCvt14956	[sol test] sessmgr task restart with fn: sn_memblock_cache_get_mcblock_by_addr_slow()	cups-up
CSCvq35024	sessmgr error: Misc Error:Callline invalid or in invalid state for sending checkpoints	cups-up
CSCvr79806	[BP-CUPS]:URL Blacklisting not taking place if URL BL RB cli is deleted and added again	cups-up
CSCvr20261	"[BP-CUPS] chckpt/call recovery failure logs on standbyUP, sessmgr 12343,12008,10396,11967,12988 logs"	cups-up
CSCvr33007	npumgr restart in UP when trying to scale number of VRFs	cups-up
CSCvq71873	sessmgr_uplane_cleanup_pdr()	cups-up
CSCvs40189	[BP-CUPS] vpnmgr over memory limits	cups-up
CSCvr39322	MME: SMGR Restart(Multi-fault) - mme_app_util_send_create_bearer_rsp().	mme
CSCvq93693	MME config update not happening on reload chasis applying enb-goup config	mme
CSCvr16715	MME selects PGW ip defined in "apn default-apn-profile" is configured ingoring specific APN config	mme
CSCvs09996	[BP-ICUPS]: mon sub on high speed UE causing sessmgr cpu hit 90%	pdn-gw
CSCvu34481	Usage mismatch across Rf/Gy due to new flow access for same RG when CCR-U pending for Quota Exhaust	pdn-gw
CSCvr67110	[PLT-ICUPS]: [vpn 5103 error] UDP Med received packet with non-udp protocol on DPC2 card migration	pdn-gw
CSCvv22764	[BP-ICUPS] LI Intercepted pkt for Active call stats are not working for rulebased Gx LI	pdn-gw
CSCvr16422	Session Manager restart during active-charging-service removal	pdn-gw
CSCvu36991	BP-ICUPS : Existing flows/throughput impacted when new flows/calls are made	pdn-gw
CSCvt43072	[PLT-ICUPS]:CUTO functionality getting affected when enabling CUSP	pdn-gw
CSCvq95469	[BP-ICUPS-VPP]: icmpv6/mppls-vpvn6 pkts not being delivered to sessmgr.	sae-gw
CSCvq63005	Gbmgr restart seen on gbmgr_rx_gns_pdu	sgsn

Resolved Bugs in this Release

Bug ID	Headline	Product Found*
CSCvr43658	[VPC-DI] SF iftask continually crashes when core 1 is configured in MCDMA mode	staros
CSCvs03366	[BP-ICUPS]: npumgr restart observed with call model run	staros
CSCvr40362	UAME - K8S Cluster Node Recovery Actions (Post VM recovery by ESC) - Cluster SYNC fails	usp-uas
CSCvt13387	On SMI-CM recovery (action redeploy) - post recovery events fail	usp-uas
CSCvt15429	"cluster name in ops-center shall be concatenation of nsd-id, vnfd-id, tenant-id"	usp-uas
CSCvr06501	Deactivate of PCRF NSD fails	usp-uas
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*
CSCvu73187	Memory Leakage in UAME causing / disk partition to be 100%	usp-uas
CSCvv32797	last-notification not seen in show vnfr after a recovery attempt by esc_nc_cli	usp-uas
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

Operator Notes

StarOS Version Numbering System

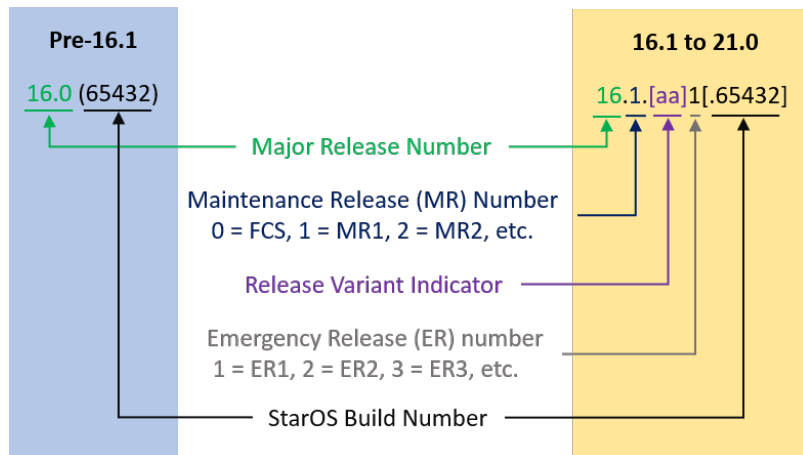
The output of the **show version** command displays detailed information about the version of StarOS currently running on the ASR 5x00 or Cisco Virtualized Packet Core platform.

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.

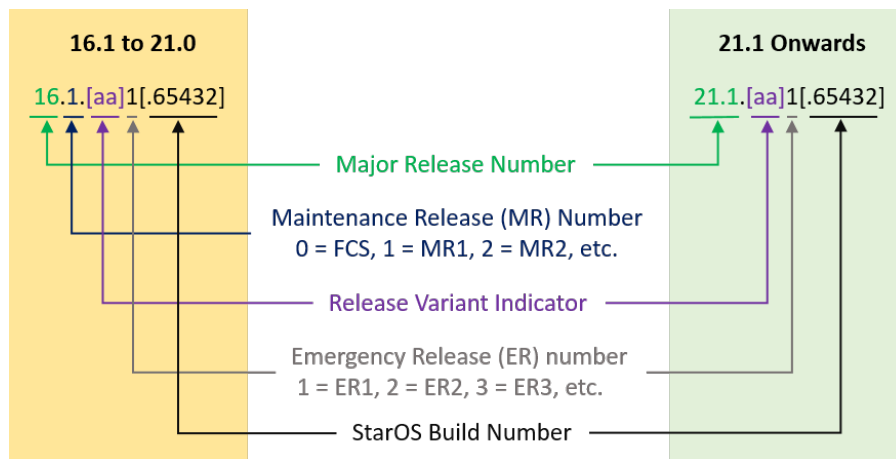
From release 16.1 onwards, the output of the **show version** command, as well as the terminology used to describe the Build Version Number fields, has changed. Additionally, **show version** will display slightly different information depending on whether or not a build is suitable for deployment.

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".

Operator Notes



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 - 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.

Operator Notes

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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