



Release Notes for StarOS™ Software Version 21.23.11

First Published: October 25, 2021

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Introduction

This Release Note identifies changes and issues related to this software release. This emergency release is based on release 21.23.10. 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	21.23.11, build 82760

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 <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 general installation and upgrade instructions. Refer to the existing installation documentation for specific installation and upgrade considerations.

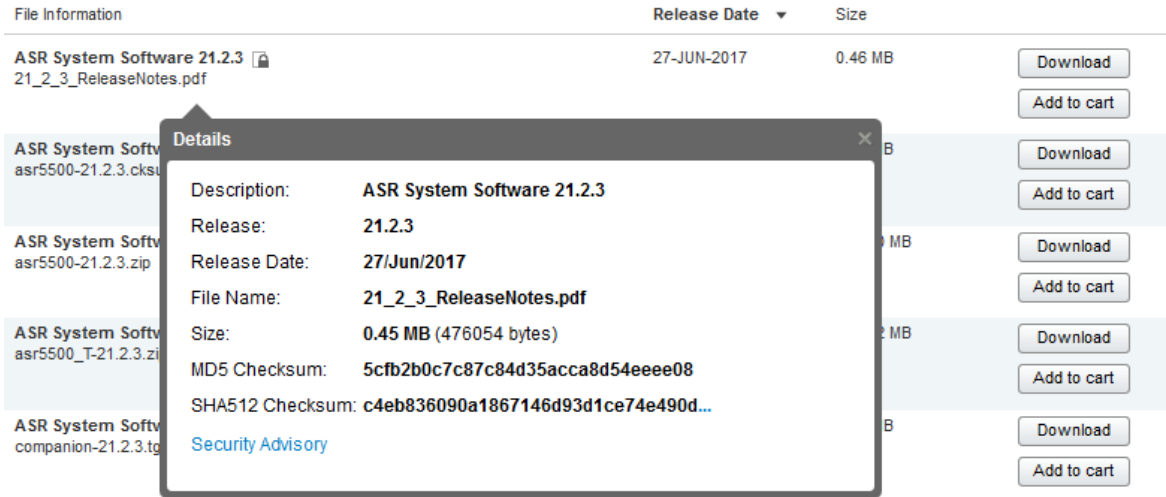
Firmware Updates

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 **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 2](#) and verify that it matches either the one provided on the software download page.

To calculate a SHA512 checksum on your local desktop see [Table 2](#).

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 <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>
<p>NOTES:</p> <p><filename> is the name of the file.</p> <p><extension> 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 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*
CSCvz29030	Multiple error logs observed	cups-cp
CSCvx28193	"Sessmgr restart in sn_memblock_memcache_alloc, sxmgr_allocate_pfcpeer_trans_entry on UP ICSR"	cups-up
CSCvz51704	[BP-CUPS]: Segmentation fault at VPP	cups-up
CSCvz41620	Assertion failure at sess/sctrl/sessctrl_uplane_cfg_sync	cups-up
CSCvz38208	sessmgr restart @ uplane_cleanup_freed_app_data_flow()	cups-up
CSCvz52114	[BP-CUPS] sessmgr assert @ sn_memblock_memcache_alloc()	cups-up
CSCvz44817	CUPS UP - sessmgr crash in uplane_p2p_update_stats	cups-up
CSCvz39850	[BP-CUPS]uplane_sfw_nat_allocate_port_chunk_from_recovery_list()uplane_sfw_nat_recover_nat_realm_	cups-up
CSCvu37233	Multiple Sessmgr restarts seen while doing service card migration from active to standby	mme
CSCvx66296	Assertion failure at mme_app_destroy_ue_sgw_pdn_ctxt()	mme
CSCvu81466	Sessmgr restart due to Erab Modification Indication collision with ERAB setup Procedure	mme
CSCvw76775	Many sessmgr restarts seen on virtual PGW	pdn-gw
CSCvy09744	[CP-SGSN] sessmgr restart seen with function egtpc_handle_del_bearer_cmd_req_evt	sgsn
CSCvz16012	GMPC event not triggering with reporting action for 3g Detach	sgsn
CSCvz58034	[S8HR-Legacy] BBIFF Intercepted details are cleared on sessmgr recovery	sgw
CSCvz67912	[S8HR-Legacy] Observed sessmgr crash on ICSR switchover and cli crash on executing S8HR show command	sgw
* 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*
CSCvz67952	sessmgr restart during PDN releasing connection procedure	cups-cp
CSCvz49537	[CUPS-CP] sessmgr restart is seen at Function: sgwdrv_allow_sm_event_in_assert_hit()	cups-cp
CSCvz07294	Gy servers-unreachable not working for CUPS - Use of after-timer-expiry does not create any SU_URR	cups-cp
CSCvz20062	CUPS CP/UP - Session manager reload during ECS configuration change	cups-cp
CSCvz58987	[CUPS-UP] sessmgr restart is seen in sessmgr_uplane_process_sx_sess_modify_request()	cups-up
CSCvz97923	No data browsing on IPv4 with NAT44 configured for Li Targeted subscribers.	cups-up
CSCvx69801	ruledef not getting removed in UP when "no ruledef" is configured and pushed to UP	cups-up
CSCvz83686	Session manager restart uplane_ftp_control_pkt_inspection()	cups-up
CSCvz58089	[CUPS UP] sessmgr restart is seen in uplane_decode_tcp_shallow()	cups-up
CSCvz11048	user-plane-service statistics shows wrong counter value for Sxab interface-type PDNs	cups-up
CSCvz64067	[BP-CUPS] Observed sessmgr restart "sx_tun_fsm_handle_sess_del_req_msg" in Longevity run	cups-up
CSCvu81466	Sessmgr restart due to Erab Modification Indication collision with ERAB setup Procedure	mme
CSCvy63363	MME responds with DIAMETER_UNABLE_TO_COMPLY(5012) after receiving IDR with pcscf-restoration bit set	mme
CSCvz29322	Authentucation failures between MME and UE after 3g-4g enablement on RADIO network	mme
CSCvz39725	DCN id is incorrectly sent in ATTACH ACCEPT	mme
CSCvz87431	DCN id is incorrectly sent in TAU Accept	mme
CSCvz22259	sessmgr restart seen in function egtpc_validate_modify_bearer_req_evt()	mme
CSCvz26204	NR restriction flag is lost after sessmgr restart	mme
CSCvz82295	BP-ICUPS: sm crashes at acsmgr_fp_get_gy_quota	pdn-gw
CSCvz38569	BP-ICUPS : Incorrect reporting of Time-First-Usage AVP in the RF records	pdn-gw
CSCvz41490	[BP-ICUPS] RAA returned with wrong error code in when RAR is received before CCA-T from PCRF	pdn-gw
CSCvz69172	PLT-ICUPS : Name of bulkstats variables changes after mru_exceeded counter changes	pdn-gw
CSCvz58034	[S8HR-Legacy] BBIFF Intercepted details are cleared on sessmgr recovery	sgw
CSCvy99060	[CUPS UP] - UP not able to reach NTP Server	staros

Operator Notes

Bug ID	Headline	Product Found*
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

Operator Notes

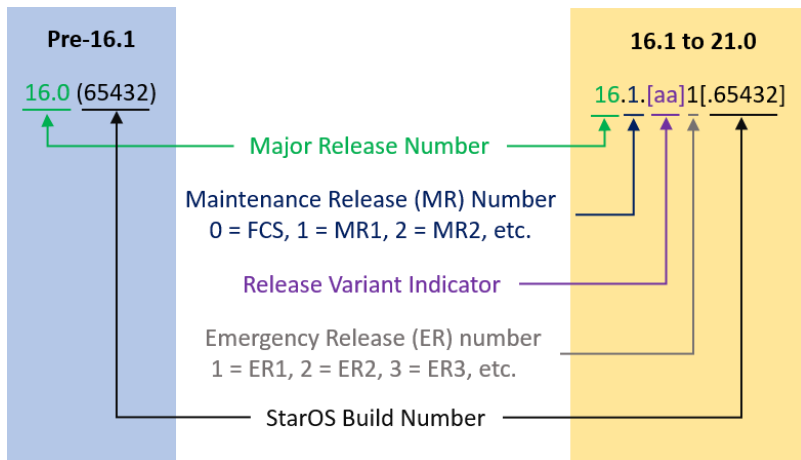
StarOS Version Numbering System

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.

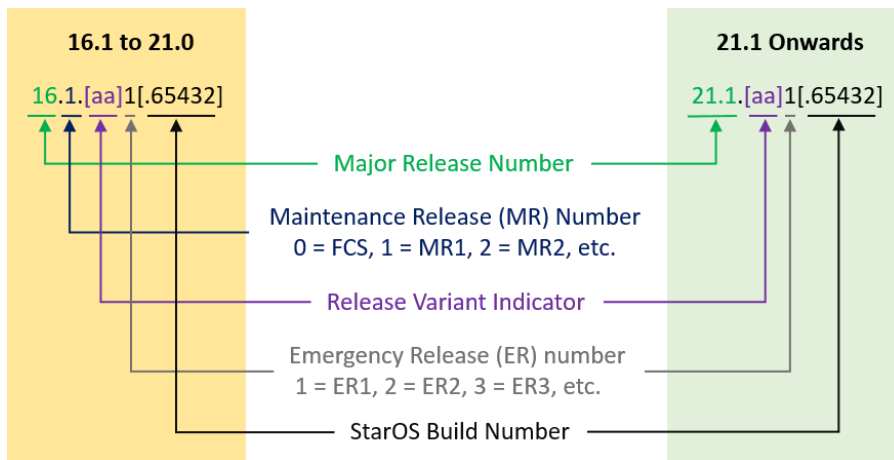
Prior to release 16.1, the *Image Version* field displayed a branch of software including the build number, for example "16.0 (55435)". Subsequent releases of software for the major release differed only in build number. Lab Quality/EFT releases versus deployment releases also differed only in build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



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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 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.
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.

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvmc-di-template-vmware-<release>.zip	qvmc-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>
qvmc-di-template-vmware_T-<release>.zip	qvmc-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>
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>
VPC-SI		
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>

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In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
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>
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>

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvmc-si_T- <release>.qcow2.zip	qvmc-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-vmc- <release>.zip	companion-vmc- <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.
Ultra Service Platform		
usp-<version>.iso		The USP software package containing component RPMs (bundles). Refer to Table 6 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 6 for descriptions of the specific bundles.
usp_rpm_verify_utils-<version>.tar		Contains information and utilities for verifying USP RPM integrity.

Table 6 - 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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