



Release Notes for StarOS™ Software Version 21.20.26

First Published: October 21, 2021

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Introduction

This Release Note identifies changes and issues related to this software release. This MR is based on release 21.20.25. 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	21.20.26, build 82710

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

Feature and Behavior Changes

The following features and/or behavior changes have been introduced in this emergency release.

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 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>

Open Bugs in this Release

Operating System	SHA512 checksum calculation command examples
Linux	<p>Open a terminal window and type the following command</p> <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/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*
CSCwa01836	Pre-allocated calls are lost on standby CP while downgrading from 21.20.26.82710 to 21.20.10.78776	cups-cp
CSCvu70527	"Replay Errors" observed after perform switch over on CP	cups-cp
CSCvu88861	[BP-CUPS] huge number of session disconnects with reason sxfail-opr-get-usagereport	cups-cp
CSCvv03378	"[BP-CUPS]: 12241: sessmgr_ggsn_fill_sub_sess_recovery_info: sgsn gtpu addr NULL callid 99c0d4,"	cups-cp
CSCvy13010	CP Loses FUI-Redirect info and switches to QRT	cups-cp
CSCvu81900	[PLT-CUPS]: huge CRR recovery failures on back-to-back SRP-Switchover leading to call-drop	cups-cp

Open Bugs in this Release

Bug ID	Headline	Product Found*
CSCVu96189	"[BP-CUPS] After CP ICSR, USU is not encoded if there was no GSU for the MSCC"	cups-cp
CSCVy63380	CUPS CP Adds Null Value 0.0.0.0 as the servingNodeAddress in PGW-CDR (PERMANENT FIX)	cups-cp
CSCVv52658	[RCM] UP reboot didn't switchover to Stby. Instead RCM kept rebooting UPs(Act and Stby) cyclically	cups-up
CSCVy57179	Incorrect MEMIF - BIA mapping in the FIB Table	cups-up
CSCVv56994	[RCM] 2 Active PGW UP's reboot did not lead to Standby coming up for 1 Active UP	cups-up
CSCVv19288	MME: few Optional IEs need to be added / updated in messages over N26 interface	mme
CSCVz39725	DCN id is incorrectly sent in ATTACH ACCEPT	mme
CSCVv88515	DSReq for SOS bearers not triggered when cancel location is received	mme
CSCVx98833	[CP-MME] Session manager restart at mme_app_destroy_ue_ctxt	mme
CSCVu80679	MME doesn't handle the Exp Result Code 5511 when received from IWK-SCEF in CIA message	mme
CSCVu82139	[CP-MME]- Post unplanned card failure diamproxy/diactrl instances went to over state	mme
CSCVu37233	Multiple Sessmgr restarts seen while doing service card migration from active to standby	mme
CSCVy02570	Multiple sessmgr restart is seen in Function: sgsn_app_pmm_gtp_event_dispatch()	mme
CSCVw62681	MME does not respond to n/w initiated dedicated Bearer creation request after ERAB Modification Ind.	mme
CSCVu65266	Assertion failure while configuring "Diameter destination realm under mme-service" with context MME	mme
CSCVu81466	Sessmgr restart due to Erab Modification Indication collision with ERAB setup Procedure	mme
CSCVy79616	Notify-ue option is removed for 'sms-in-mme subscribe' while unconfiguring eps-only-attach	mme
CSCVy60246	Rulebase sent in In-Service AVP in CCA-I message should be informational purpose only	pdn-gw
CSCVw76775	Many sessmgr restarts seen on virtual PGW	pdn-gw
CSCVz38569	BP-ICUPS : Incorrect reporting of Time-First-Usage AVP in the RF records	pdn-gw
CSCVz41612	Session setup issue with PDN v4/v6 and fw-and-nat policy	pdn-gw
CSCVy09744	[CP-SGSN] sessmgr restart seen with function egtpc_handle_del_bearer_cmd_req_evt	sgsn
CSCVz34975	[S8HR LI] Message TLVs Endianness and Format corrections	sgw
CSCVx22943	Monitor DCH FIFO Discards in the FE600 health check	staros
CSCVw72152	Task Resources - Session Manager and bulkstats in Warn Status on UPF.	upf
CSCVw56143	UPF cpu utilization at 100% with 230K calls and close to 8Gbps throughput	upf
CSCVw65922	[UPF-SVI] Negative case - Removing "ip vrf <vrf-name>" cli --> huge no of continuous VPNMGR restarts	upf
* 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*
CSCvy34261	[BP-CUPS] VOGX accumulated octets are sent in CCR-U instead of in CCR-T for 3G Call	cups-cp
CSCvy78249	CCR-U does not have RSU when responding to a RAR	cups-cp
CSCvy98006	Incorrect timestamp in CDR after unplanned SF migration	cups-cp
CSCvy78310	FUI-Terminate 4012 issues on CUPS	cups-cp
CSCvz66432	gtp group decoding failure makes CDR impact for new calls	cups-up
CSCvz58987	[CUPS-UP] sessmgr restart is seen in sessmgr_uplane_process_sx_sess_modify_request()	cups-up
CSCvz79668	[BP-CUPS] common rollup for performnace-21.18.Px	cups-up
CSCvz53579	[BP-CUPS] IP chunk stat optimization from per clp timer and flow clear to call clear to debug cli	cups-up
CSCvz11048	user-plane-service statistics shows wrong counter value for Sxab interface-type PDNs	cups-up
CSCvz79104	Debug logs to enhance detection of subscriber issue when MME receives the MO SMS	mme
CSCvz56522	Connection Release from SCEF doesn't work for UE in IDLE mode	mme
CSCvz71291	Abnormal values of tai schema counters	mme
CSCvz69172	PLT-ICUPS : Name of bulkstats variables changes after mru_exceeded counter changes	pdn-gw
CSCvy99060	[CUPS UP] - UP not able to reach NTP Server	staros
CSCvx62133	Invalid content filtering policy id assigned to UE and potential sessmgr crash	upf
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

Operator Notes

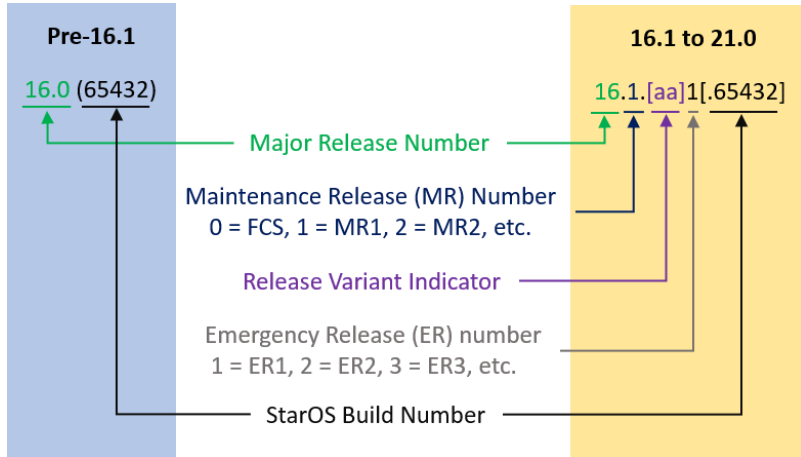
StarOS Version Numbering System

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.

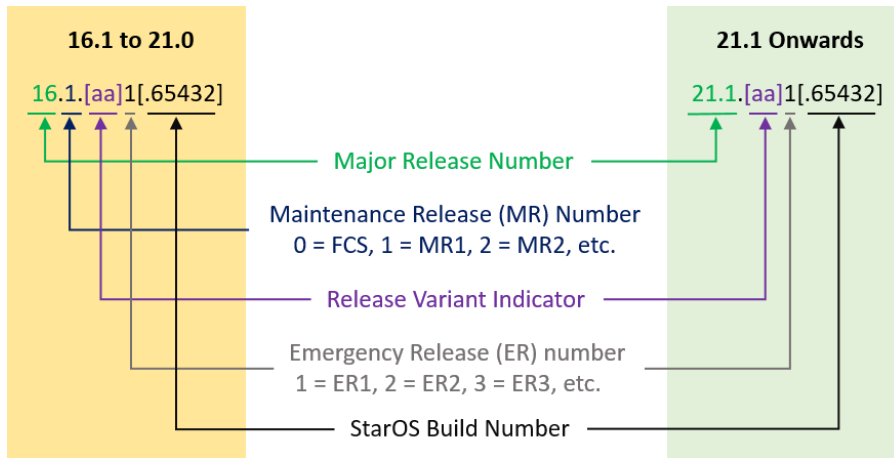
Prior to release 16.1, the *Image Version* field displayed a branch of software including the build number, for example "16.0 (55435)". Subsequent releases of software for the major release differed only in build number. Lab Quality/EFT releases versus deployment releases also differed only in build 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 number ing format is a contiguous sequential number that represents incremental changes between n 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		

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In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
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	<p>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.</p> <p>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.</p>
VPC-DI		
qvpc-di-<release>.bin.zip	qvpc-di-<release>.bin	<p>Contains the VPC-DI 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>
qvpc-di_T-<release>.bin.zip	qvpc-di_T-<release>.bin	<p>Contains the trusted VPC-DI 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>
qvpc-di-<release>.iso.zip	qvpc-di-<release>.iso	<p>Contains the VPC-DI 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>
qvpc-di_T-<release>.iso.zip	qvpc-di_T-<release>.iso	<p>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.</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>
qvpc-di-template-vmware-<release>.zip	qvpc-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>

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

Operator Notes

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
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>
qvmc-si_T-<release>.qcow2.zip	qvmc-si_T-<release>.qcow2.gz	<p>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.</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 Companion Package		

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
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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