



# Release Notes for StarOS™ Software Version 21.20.11

**First Published:** January 28, 2020

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## Introduction

This Release Note identifies changes and issues related to this software release. This emergency release is based on release 21.20.10. 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	21.20.11, build 79101

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  <pre>&gt; certutil.exe -hashfile &lt;filename&gt;.&lt;extension&gt; SHA512</pre>
Apple MAC	Open a terminal window and type the following command  <pre>\$ shasum -a 512 &lt;filename&gt;.&lt;extension&gt;</pre>

## Open Bugs in this Release

Operating System	SHA512 checksum calculation command examples
Linux	Open a terminal window and type the following command  <pre>\$ sha512sum &lt;filename&gt;.&lt;extension&gt;</pre> Or  <pre>\$ shasum -a 512 &lt;filename&gt;.&lt;extension&gt;</pre>
<b>NOTES:</b>  <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

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*
CSCvu81900	[PLT-CUPS]: huge CRR recovery failures on back-to-back SRP-Switchover leading to call-drop	cups-cp
CSCvv03378	"[BP-CUPS]: 12241: sessmgr_ggsn_fill_sub_sess_recovery_info: ggsn gtpu addr NULL callid 99c0d4,"	cups-cp
CSCvu45618	[BP-CUPS] huge number of session disconnects with reason sxfail-opr-get-usagereport	cups-cp
CSCvu96189	"[BP-CUPS] After CP ICSR, USU is not encoded if there was no GSU for the MSCC"	cups-cp
CSCvu38266	"[fapi 223801 error] fastpath_stream_delete(): Hash Delete, returned error 0x80005004"	cups-up
CSCvu37233	On VPC-DI Multiple Sessmgr restarts seen while doing SF card migration from active to standby	mme

## Resolved Bugs in this Release

Bug ID	Headline	Product Found*
CSCvu81405	Revert back CSCvr34106	mme
CSCvt53243	sessmgr restarts at mme_app_egtpc_abort_low_priority_trans()	mme
CSCvw74288	N26 - TAU Reject due to E-RAB Modification Indication - Collision	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 diamprox/diactrl instances went to over state	mme
CSCvw88515	DSReq for SOS bearers not triggered when cancel location is received	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	[MONTE Roaming] On VPC-DI while doing mmemgr restart seen 18K subs drop from total 1.4M	mme
CSCvw55120	bulkstats MME counter "TAU-PERIODIC-ATTEMPTED" is constantly ZERO after upgrade	mme
CSCvw56608	[CP-MME] Sessmgr resarts seen at mme_disp_handle_monte_request	mme
CSCvw30578	"[PLT-ICUPS] Partial failures observed for Fragmented ICMPv6 (EOP,MOP,SOP) request."	pdn-gw
CSCvg20133	Segmentation fault at PC: [0d8e2647/X] EZprmSER_CheckError()	staros
CSCvw72152	Task Resources - Session Manager and bulkstats in Warn Status on UPF.	upf
CSCvw48604	[UPF-SVI] Active UPF is losing IP Chunks allocated by SMF after ICSR Switchover but recovering later	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*
CSCvw99517	[CUPS] Unexpected combinations of CRBN value and PLMN value in CDRs	cups-cp
CSCvw94565	[BP-CUPS] Inconsistency behavior in handling Predefined Rule and Group-of-Ruledef at control plane	cups-cp
CSCvr99285	[CUPS] Counter in 'show radius counters summary' is not increment.	cups-cp

Bug ID	Headline	Product Found*
CSCvu87236	"[BP-CUPS]AF,reload at sess/egtp/egtpc/egtpc_evt_handler_func.c:756 egtpc_handle_abort_proc_cmd_evt()"	cups-cp
CSCvw38706	[STC CUPS] 4G to 3G Handover failed due to Failed to remove Traffic Endpoint	cups-cp
CSCvw74525	Non fatal vpnmgr restart on standby CP - seen every 24 hours	cups-cp
CSCvw55109	[BP-CUPS]: Assertion failure at ggsnapp_fill_pdp_info_from_egtpu while clearing the calls	cups-cp
CSCvw43171	[CUPS] [PFD Management] - Inconsistent rulebase configuration between CP & UP	cups-up
CSCvw83244	Uplink packet drops after 4g->3G handover on CUPS UP with this error: ADF UL TEID/QFI key mismatch	cups-up
CSCvw91153	[CUPS-UP] Source IP violation packet is counted twice in CUPS for an IPv6 session	cups-up
CSCvw76282	[CUPS-UPF] Multiple sessmgr crashes on UP	cups-up
CSCvt77029	sessmgr going into an Over state	ggsn
CSCvs72761	Assertion at mme_app_send_attach_reject	mme
CSCvw49771	Sessmgr restart while handling DELETE_SESSION_REQ received in CREATE_BEARER_PENDING state	mme
CSCvx09943	[PLT-ICUPS]: VPP Crash Observed on Non Demux PDC2 card	pdn-gw
CSCvx08359	WiFi to VoLTE handover failure cause as "CONTEXT_NOT_FOUND (0x40)" with different pdn types	pdn-gw
CSCvw84576	[21.15.48 FullVPP] PPTP-GRE Application protocol dropping Downlink packets towards UE	pdn-gw
CSCvw90925	PGWCDRs reported with higher volume than configured limit	pdn-gw
CSCvw95793	[Smoke2-ICUPS] In Monsub fastpath pcap files are not generated as expected.	pdn-gw
CSCvu12673	sessmgr restart while adding a new ruledef	pdn-gw
CSCvu30036	Segmentation fault due to sessmgr restart for downlink packets	pdn-gw
CSCvu85207	Incorrect Origin-State-Id value sent after SRP switchover or card switchover	pdn-gw
CSCvw47620	sessmgr restart seen after upgrade to 21.17.14 on acs_remove_learnt_cname_n_ip_addresses	pdn-gw
CSCvw58221	[BP_PCT PGW] Diameter data fragmentation not working as expected	pdn-gw
CSCvw95558	BP-ICUPS : ADC2.0 ML EDRs not generated though p2p traffic is simulated	pdn-gw
CSCvu55467	[BP-ICUPS] Session Controller restart observed during data_backup_read_abort	pdn-gw
CSCvw64306	PGW stops sending CCR/CCA when UBResp not received from previous PRA while new PRA is initiated.	pdn-gw
CSCvw73591	"ADC over Gx : Flow-description in CCR-U from PGW, sent ipv6 address with 0 prefix length."	pdn-gw
CSCvw79616	sessmgr restart at sn_memblock_cache_get_mcblock_by_addr()	pdn-gw
CSCvw94672	VPP restart leading to reload of node and ICSR switchover	upf

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

## Operator Notes

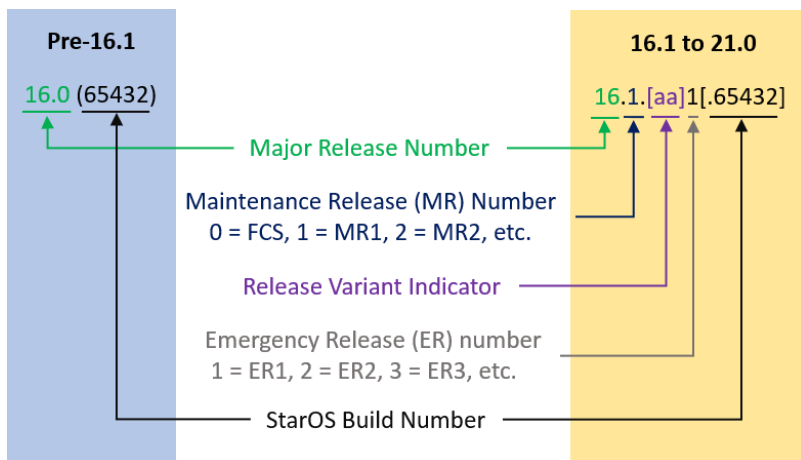
### StarOS Version Numbering System

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.

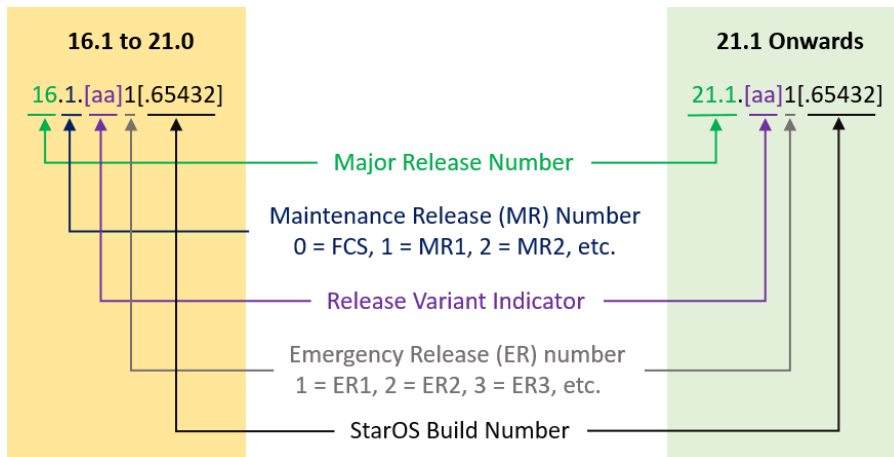
Prior to release 16.1, the *Image Version* field displayed a branch of software including the build number, for example “16.0 (55435)”. Subsequent releases of software for the major release differed only in build number. Lab Quality/EFT releases versus deployment releases also differed only in build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



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
<b>ASR 5500</b>		
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.
<b>StarOS Companion Package</b>		
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.
<b>VPC-DI</b>		
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.

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvmc-di_T-<release>.iso.zip	qvmc-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>
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>
<b>VPC-SI</b>		



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

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvmc-si- <release>.qcow2.zip	qvmc-si- <release>.qcow2.gz	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.  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.
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.
<b>VPC Companion Package</b>		
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.

## 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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