



# Release Notes for StarOS™ Software Version 21.12.14

**First Published:** Nov 28, 2019

**Last Updated:** Nov 28, 2019

## Introduction

This Release Note identifies changes and issues related to this software release. This emergency release is based on release 21.12.13. 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	21.12.14, build 73672

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 the software release on which this emergency release is based.

## 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

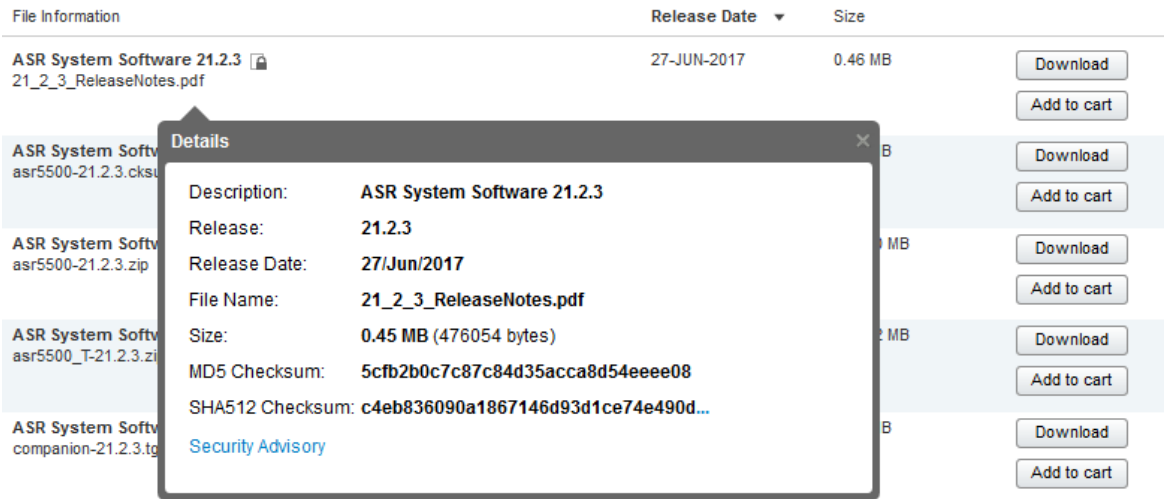
There are no firmware upgrades required for this release.

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

## 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*
CSCvm83524	[BP-CUPS] Assert failure at egtpc_handle_user_sap_event()	cups-cp
CSCvn80152	[BP-CUPS] Observing new IE Interface: SXa wrongly sent in PFCP Heartbeat Request/Response	cups-cp
CSCvo13488	[BP-CUPS] Sessctrl in 'Over' state with 10k calls	cups-up
CSCvn75110	[BP-CUPS] High memory utilization by sessmgr - probable memory leak	cups-up

## Open Bugs in this Release

Bug ID	Headline	Product Found*
CSCvo01375	[CUPS] VPP restart observed with stack libvlib.so.0/unix_cli_file_welcome_timer()	cups-up
CSCvo48775	MME: MEC - Inter-MME S1 HO trigger unexpected detach	mme
CSCvo55100	clear mme-service statistics not clearing Dual Connectivity with NR Subscribers stats	mme
CSCvr23734	[mme]- congestion-actions triggers not applied during congestion_post reload	mme
CSCvs15514	[MME]- Bulkstats_tai timeout traps not generating	mme
CSCvo15422	mmemgr task restart due to a segmentation in S1ap	mme
CSCvq93693	MME config update not happening on reload chasis applying enb-goup config	mme
CSCvo85261	[BP-ICUPS]:sessmgr restart observed at acsmgr_fp_handle_stream_state_change()	pdn-gw
CSCvo20908	[PLT-ICUPS-VPP]:VPP Main in memory over state	pdn-gw
CSCvo31100	[BP-ICUPS]X3 table entries absent post DMX migration	pdn-gw
CSCvo32237	[BP-ICUPS]: some UDP streams going to passive post ICSR switchover	pdn-gw
CSCvp05331	[BP-ICUPS] PGWCDR is not generated with dynamic DDL config	pdn-gw
CSCvp37370	[BP-ICUPS]: After enabling VPP the ttl-excd KPI rate of change spiked.	pdn-gw
CSCvn75072	[BP-ICUPS]:Sessmgr restart@fapi_tp_process_incoming_local_row_req on DPC2 card reboot.	pdn-gw
CSCvo30174	[BP-ICUPS]Unable to get over 4.3 Gbps on HSLI without fifo Q full on threads	pdn-gw
CSCvo37441	wrong firewall Ruledef stats shown in 'show active-charging ruledef statistics all firewall wide'.	pdn-gw
CSCvo49917	[BP-ICUPS] sessctrl in Over state on 21.12.0.71244 EFT	sae-gw
CSCvo32889	"[BP-ICUPS]:sessmgr 0 error fastpath_stream_add(): Stream [Ver: 0, locus: 2, client_id: 8, stats_tabl"	sae-gw

## Resolved Bugs in this Release

Bug ID	Headline	Product Found*
CSCvo36105	[BP-ICUPS]: acsmgr 91369 error Error: Client-Server API: Add connecton request to Dhost failed	sae-gw
CSCvo45264	[BP-ICUPS]: Data is not proper for 5G UE of ipv6 pdntype	sae-gw
CSCvo82068	[BP-ICUPS]: 4G sub with NAT44 fragmented traffic NOT getting charged to Dynamic rule	sae-gw
CSCvi12541	bfdlc facility instances in warn state on active and standby chassis	sae-gw
CSCvo31408	saegw-service stats not updating for CSRsp denied due to license exceeded	sae-gw
CSCvo47301	[BP-ICUPS]Quota_Exhaust not triggered for pipelined request packet	sae-gw
CSCvs17393	Multiple Instances of sessmgr restart observed in egtpc_get_ebi_info_from_pdu()	sgsn
CSCvs18939	Multiple Instances of sessmgr restart observed in sgsn_app_allocate_svc_req_cb()	sgsn
CSCvp10744	[BP-ICUPS] SGW CDR shows double value in dataVolumeGPRSDownlink for buffered data after Re-establish	sgw
CSCvn79019	[BP-ICUPS] Streams are not getting recovered after Planned DPC2 Migration with 5g calls	staros
CSCvo04967	StarOS cannot assign multiple IPv6 address for diameter peer	staros
CSCvo20944	[BP-ICUPS]: starOS CLI commands are NOT getting logged into configured syslog	staros
CSCvp47435	ipv4 reassembly timeout - vpp restart	staros
CSCvr49515	ASR5500   21.12.9(72306)   PGW   Frequent Bulkstat Restart	staros
* 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*
CSCvq35918	Assertion failure at sess/smgr/sessmgr_hi_li.c	pdn-gw
CSCvp09529	Cisco SGW restart observed in case of HLCOM related IEs in DDN ack from MME	sae-gw
CSCvs16326	Multiple Sessmgr crashes due to Segmentation fault - PC: [093aa3d6/X] acsmgr_adc_dispatch_event()	staros
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

## Operator Notes

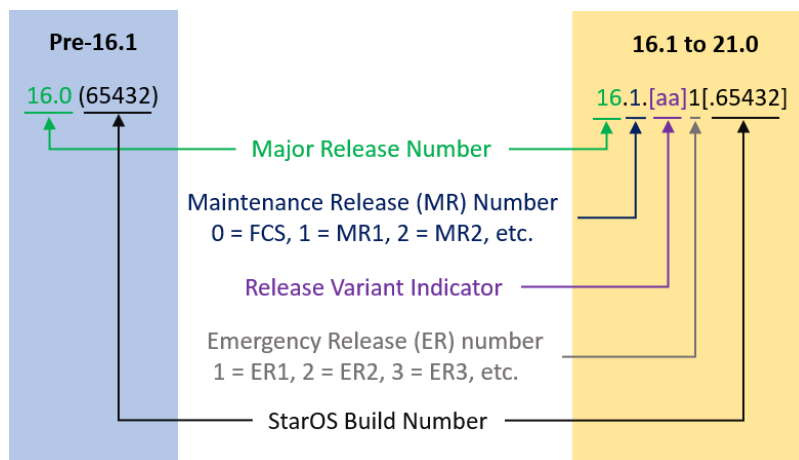
### StarOS Version Numbering System

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.

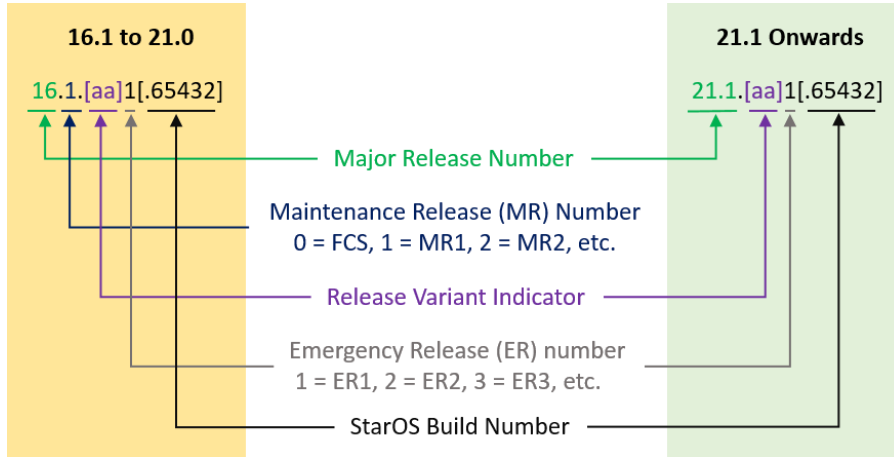
Prior to release 16.1, the *Image Version* field displayed a branch of software including the build number, for example "16.0 (55435)". Subsequent releases of software for the major release differed only in build number. Lab Quality/EFT releases versus deployment releases also differed only in build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

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvmc-di_T-<release>.bin.zip	qvmc-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>
qvmc-di-<release>.iso.zip	qvmc-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>
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>



In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvpc-di_T-<release>.qcow2.zip	qvpc-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>		
qvpc-si-<release>.bin.zip	qvpc-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>
qvpc-si_T-<release>.bin.zip	qvpc-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>
qvpc-si-<release>.iso.zip	qvpc-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>
qvpc-si_T-<release>.iso.zip	qvpc-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>
qvpc-si-template-vmware-<release>.zip	qvpc-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>
qvpc-si-template-vmware_T-<release>.zip	qvpc-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>
qvpc-si-template-libvirt-kvm-<release>.zip	qvpc-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>

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvmc-si-template-libvirt-kvm_T-<release>.zip	qvmc-si-template-libvirt-kvm_T-<release>.tgz	Contains the same trusted VPC-SI ISO identified above and additional installation files for using it on KVM.  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-<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-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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