



Release Notes for StarOS™ Software Version 21.20.31

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Introduction

This Release Note identifies changes and issues related to this software release. This ER is based on release 21.20.30. Excluding CUPS, this release note is applicable to all other products on the ASR5500, VPC-SI and VPC-DI platforms.

Release Package Version Information

Table 1 - Release Package Version Information

| Software Packages | Version |
|-------------------|-----------------------|
| StarOS packages | 21.20.31, build 84447 |

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* |
|------------|---|----------------|
| CSCvu70527 | "Replay Errors" observed after perform switch over on CP | cups-cp |
| CSCvv03378 | "[BP-CUPS]: 12241: sessmgr_ggsn_fill_sub_sess_recovery_info:sgsn gtpu addr NULL callid 99c0d4," | cups-cp |
| CSCvu81900 | [PLT-CUPS]: huge CRR recovery failures on back-to-back SRP-Switchover leading to call-drop | cups-cp |
| CSCvv13409 | [BP-CUPS]URR node not found at CP for URR-id: 0x82 received in Usage Report | cups-cp |
| CSCvy13010 | CP Loses FUI-Redirect info and switches to QRT | cups-cp |
| 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 |

Open Bugs in this Release

| Bug ID | Headline | Product Found* |
|------------|---|----------------|
| CSCvz90294 | smgr_uplane_handle_config_timedef() restart is seen on ICSR UP | cups-up |
| CSCvz30527 | [BP-CUPS]AF at at snutil/sn_memblock.c:310 sn_memblock_memcache_free()uplane_sfw_nat_release_nat_ip | cups-up |
| CSCvz50778 | CUPS UP - Packets stuck in VPP queue under unknown conditions | cups-up |
| 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 |
| CSCvw62681 | MME does not respond to n/w initiated dedicated Bearer creation request after ERAB Modification Ind. | mme |
| CSCvu37233 | Multiple Sessmgr restarts seen while doing service card migration from active to standby | 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 |
| CSCwa24695 | MME not triggering SGS location update request for Attach WOPDN with for SMS only update type | mme |
| CSCvy02570 | Multiple sessmgr restart is seen in Function: sgsn_app_pmm_gtp_event_dispatch() | 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 |
| CSCvz50232 | sessmgr restart with mme_app_do_sgw_dns_query() | mme |
| CSCvv19288 | MME: few Optional IEs need to be added / updated in messages over N26 interface | mme |
| CSCvu65266 | Assertion failure while configuring "Diameter destination realm under mme-service" with context MME | mme |
| CSCvy79616 | Notify-ue option is removed for 'sms-in-mme subscribe' while unconfiguring eps-only-attach | mme |
| CSCvz41612 | Session setup issue with PDN v4/v6 and fw-and-nat policy | pdn-gw |
| CSCvy60246 | Rulebase sent in In-Service AVP in CCA-I message should be informational purpose only | pdn-gw |
| CSCvz88360 | Proper handling of log message - ?Send Custom PCO update sent without PCO information? | pdn-gw |
| 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 |
| CSCvz34975 | [S8HR LI] Message TLVs Endianness and Format corrections | sgw |
| CSCvx22943 | Monitor DCH FIFO Discards in the FE600 health check | staros |
| CSCvx35930 | Port bitrate default to 10G for virtual ethernet with iftask | staros |
| CSCvw56143 | UPF cpu utilization at 100% with 230K calls and close to 8Gbps throughput | upf |
| CSCvw72152 | Task Resources - Session Manager and bulkstats in Warn Status on UPF. | upf |

Open Bugs in this Release

| Bug ID | Headline | Product Found* |
|---|--|-----------------------|
| 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* |
|------------|--|----------------|
| CSCvz92880 | vpp thread/memif mapping issue after (double) sessmgr restart | cups-up |
| CSCwa83584 | Assertion failure at sess/mme/mme-app/app/mme_egtp_fw.c:1078 | mme |
| CSCwa54994 | BP-ICUPS: sm reload at sn_memblock_cache_block_flush.part.1() | pdn-gw |
| CSCwa37651 | SGW CDR not containing all RANSecondaryRATUsageReport - underbilling | sgw |
| CSCwa26249 | StarOS SNMP file starent.my file fails to load in Wireshark due to missing information | staros |
| CSCwa60130 | [UPF]Uplink stream in preactive state leading to packets stuck in vpp. | upf |

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

Operator Notes

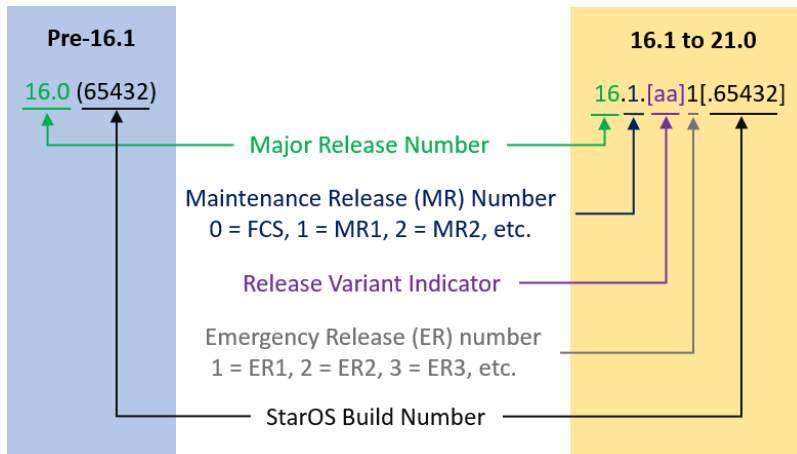
StarOS Version Numbering System

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.

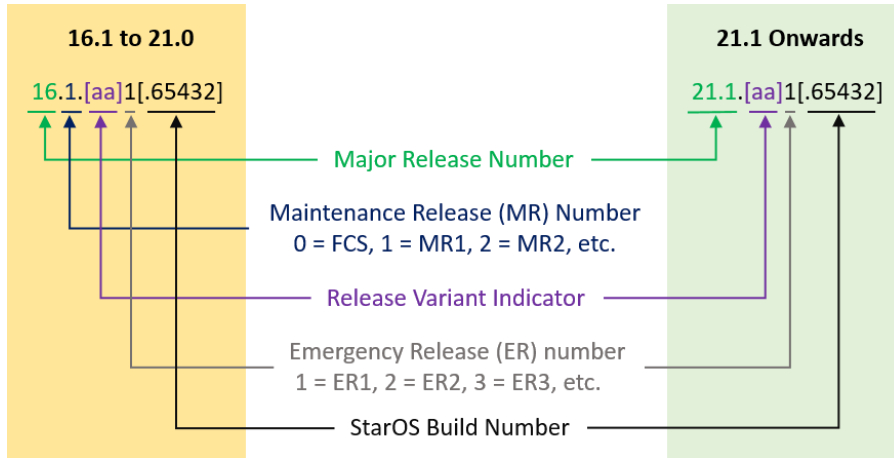
From release 16.1 onwards, the output of the **show version** command, as well as the terminology used to describe the Build Version Number fields, has changed. Additionally, **show version** will display slightly different information depending on whether or not a build is suitable for deployment.

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".



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 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 | | |

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

| In 21.12.0 and later Releases | In pre-21.12.0 Releases | Description |
|--|---|--|
| qvmc-di- <release>.qcow2.zip | qvmc-di- <release>.qcow2.tgz | 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. 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-di_T- <release>.qcow2.zip | qvmc-di_T- <release>.qcow2.tgz | 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. 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-SI | | |
| qvmc-si-<release>.bin.zip | qvmc-si-<release>.bin | Contains the VPC-SI 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. |
| qvmc-si_T- <release>.bin.zip | qvmc-si_T<release>.bin | Contains the trusted VPC-SI 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. |
| qvmc-si-<release>.iso.zip | qvmc-si-<release>.iso | Contains the VPC-SI 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. |
| qvmc-si_T- <release>.iso.zip | qvmc-si_T<release>.iso | 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. 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-template- vmware-<release>.zip | qvmc-si-template- vmware-<release>.ova | Contains the VPC-SI binary software image that is used to on-board the software directly into VMware. 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-template- vmware_T<release>.zip | qvmc-si-template- vmware_T- <release>.ova | Contains the trusted VPC-SI binary software image that is used to on-board the software directly into VMware. 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-si-template-libvirt-kvm-<release>.zip | qvmc-si-template-libvirt-kvm-<release>.tgz | Contains the same 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-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. |
| VPC Companion Package | | |
| 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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