



Release Notes for StarOS™ Software Version 21.18.6

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Introduction

This Release Note identifies changes and issues related to this software release. This emergency release is based on release 21.18.5. 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	21.18.6, build 76716

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	Open a terminal window and type the following command <pre>\$ sha512sum <filename>.<extension></pre> Or <pre>\$ shasum -a 512 <filename>.<extension></pre>
NOTES: <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*
CSCvt18818	CUPS - limit packet size gives full packet after changing size	cups-cp
CSCvt56799	IPSEC: SX is in Non-Configured state when more than 14 apns are configured	cups-cp
CSCvt66503	LI configuration not pushed completely through Sx	cups-cp
CSCvu87236	"[BP-CUPS]AF, reload at sess/egtp/egtpc/egtpc_evt_handler_func.c:756 egtpc_handle_abort_proc_cmd_evt()"	cups-cp
CSCvu89327	[sol test] Multiple SM Err messages seen on SAEGW-CP with IMS PDN and Active sessions	cups-cp
CSCvu14812	[CUPS-CP] UPF without chunks triggered even if other UPF with chunks are available	cups-cp
CSCvu48207	[sol test] SM task restart with Faulty address: (nil)	cups-cp

Resolved Bugs in this Release

Bug ID	Headline	Product Found*
CSCvu04887	CP: sessmgr restart at sx_deallocate_instance_peer_rec when ports were shutdown	cups-cp
CSCvu37700	[CUPS-CP] Mismatch between the number of subscribers and the number of Sx session	cups-cp
CSCvu48212	[sol test] SM task resart with function: snx_saegwdrv_request_control_dispatch()	cups-cp
CSCvr46679	[BP-CUPS] sx_send_cfm_evt() (pureP)	cups-cp
CSCvt15349	Recovery failed on 10:2 testbed after RCM VM reload	cups-up
CSCvt49488	In Monsub fastpath packets are captured twice in vpp pcap	cups-up
CSCvt21096	[PLT-CUPS-VPP] vpp crashes at vlib_worker_thread_barrier_sync_int	cups-up
CSCvu18163	Recovery mechanism is not working as expected for CIOT calls after session manager restart	mme
CSCvt53996	MME returns DIAMETER_ERROR_USER_UNKNOWN for Mon even Number of UE's case	mme
CSCvu68945	Evaluation of staros for Treck ip stack vulnerabilities	staros
CSCvu38194	ICSR Standby instance come back as Active after reload in new version	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*
CSCvt46557	"[BP-CUPS]: Assertion failure at egtpc_handle_delete_sess_rsp_evt, lost 50% subs in 2 hours"	cups-cp
CSCvt88855	AF sess/egtp/egtpc/egtpc_evt_handler_func.c:7432 egtpc_handle_delete_bearer_req_evt()	cups-cp
CSCvu64755	Session manager restart at sn_memblock_cache_block_flush()	cups-cp
CSCvu78077	Assertion failure observed on Active saegw cp node at sess/ggsn/app/ggsnapp_db	cups-cp
CSCvu68921	Assertion failure at sess/smgr/sessmgr_gp_handoff on cups control-plane node	cups-cp
CSCvu24007	[CUPS-CP] CP rejecting calls due to "lpool-ip-validation-failed"	cups-cp
CSCvu25996	[BP_CUPS]Assertion failure at sessmgr_app_svr_event_control_dispatch()	cups-cp
CSCvu50670	Assertion failure at sess/smgr/sessmgr_sxu on Active control-plane	cups-cp
CSCvu99351	SGW-UP going down leading to outage	cups-up
CSCvs92760	[CUPS] smgr_uplane_config_rule_options()	cups-up
CSCvt14477	[sol test] sessmgr task restart with fn: sn_memblock_memcache_free()	cups-up

Resolved Bugs in this Release

Bug ID	Headline	Product Found*
CSCvu67676	npumgr restart followed by system reload	cups-up
CSCvt85580	VPP Restart and UP reload with rerunning "associate fast-path service" in user-plane-service	cups-up
CSCvu61269	npumgr restart followed by system reload	cups-up
CSCvu93349	[CUPS-UP] IPv6 Fragmented UL ESP packet gets dropped	cups-up
CSCvs55553	Smgr reload sessmgr_uplane_handle_inbound_data_packet sessmgr_egtpu_receive_gtpu_packet uplane_ipv6	cups-up
CSCvt12396	Smgr reload sessmgr_uplane_handle_inbound_data_packet sessmgr_egtpu_receive_gtpu_packet	cups-up
CSCvu11245	"[sol test] With P2P enabled for a subscriber, the VPP offload toggles between 50% offload and 100%,"	cups-up
CSCvu27887	suppress-nrupc didn't works after upgrade to 21.17.4	ggsn
CSCvu82604	SF port fluctuation & BFD session keeps on flap	pdn-gw
CSCvs38039	VPC-DI 21.12.0 (71244) Log rotation is not happening for the iftask_logs file	pdn-gw
CSCvt00941	[CUPS]Port flapping occurred continuously on SF node	staros
CSCvt12235	Some multihop BFD sessions stay in Down state though peer is reachable	staros
CSCvu00257	[VPC-DI] BFD sessions down following spine switch reboot.	staros
CSCvq19559	Wrong values on show port utilization table - StarOS VPC-DI	staros
CSCvq92035	[VPC-DI] Excessive packet receive latency on XL710 NICs under no/light load conditions.	staros
CSCvu96129	[VPC-DI/SI] Backport i40evf interrupt handler patch to iftask dpdk 16.07	staros
CSCvu14171	memif between vpp - sxdemux fails to handle 4K+ size pkt resulting in sx pkt burst	staros
CSCvt06102	DPC2 memory correctable errors over threshold causing fabric IFMA/Bs	staros
CSCvw01962	"Oakla UL packet Drops, User Plane Function (UPF)"	upf
CSCvt30501	Potential memory leak issue at function sessmgr_uplane_alloc_simple_buffer for TCP OOO	upf
CSCvs79861	[SVI UPF] sessmgr 12341 error logs in overnight regression test indicating N2HO failures	upf
CSCvt72076	[SVI UPF] Fatal signal 11 at sess_get_next_pdr_info during testing for F5141 ho with partial fail	upf
CSCvt92870	UPF: Enable ChargingParam IE in N4 Sess Establishment for N4	upf
CSCvu08935	[UPF-SVI]: Sessmgr restarted @ sessmgr_uplane_cleanup_pdr()	upf
CSCvu08963	[UPF-SVI]:multiple restarts@Function:sessmgr_uplane_process_sx_sess_modify_create_rulebase_pdr()	upf
CSCvu29774	[UPF]"tethering-detection bypass interface-id" is not working	upf
CSCvu51911	SX peering check point failure to standby UPF	upf
CSCvu58018	"UPF is holding IP chunks, resulting in more number of chunks in UPFs"	upf

Bug ID	Headline	Product Found*
CSCvu62892	[UPF]: IP pool chunks not relased on UPF when path-failure detected in “releasing” state	upf
* Information in the “Product Found” column identifies the product in which the bug was initially identified.		

Operator Notes

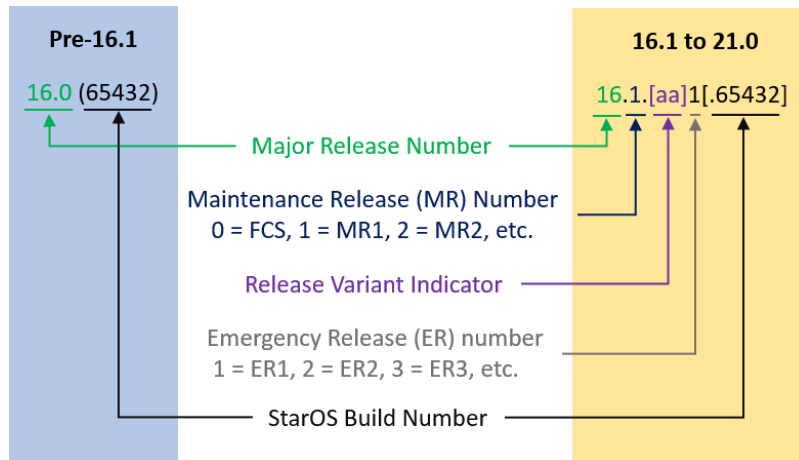
StarOS Version Numbering System

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.

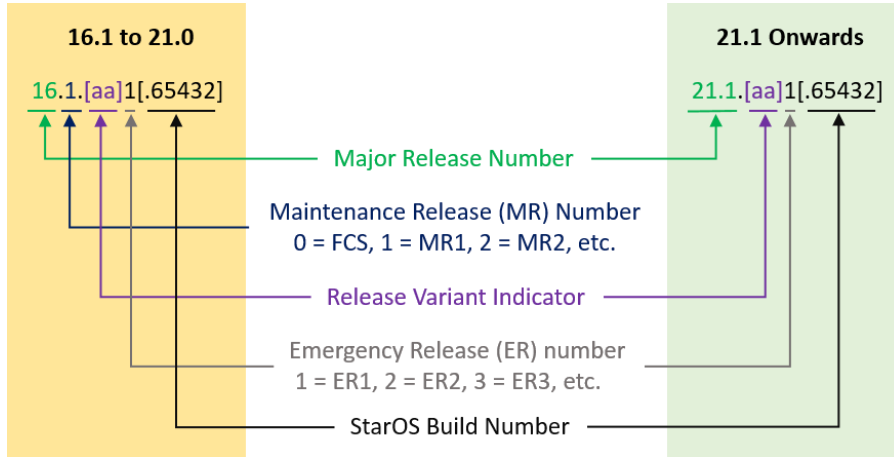
Prior to release 16.1, the *Image Version* field displayed a branch of software including the build number, for example “16.0 (55435)”. Subsequent releases of software for the major release differed only in build number. Lab Quality/EFT releases versus deployment releases also differed only in build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

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>
VPC-SI		
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.
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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