



Release Notes for the StarOS™ Software Version 2024.01.I1

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Introduction

This Release Notes identifies changes and issues related to the Legacy Gateway (ASR 5500) software release.

Release Lifecycle Milestones

Release Lifecycle Milestone	Milestone	Date
First Customer Ship	FCS	14-Mar-2024
End of Life	EoL	14-Mar-2024
End of Software Maintenance	EoSM	30-Sep-2025
End of Vulnerability and Security Support	EoVSS	30-Sep-2025
Last Date of Support	LDoS	30-Sep-2026

Release Package Version Information

Software Packages	Version	Build Number
StarOS Package	2024.01.I1	21.28.m20.93061

Descriptions for the various packages provided with this release are available in the

[Release Package](#) Descriptions section.

What's New in this Release

This version of Release Notes includes a new section titled **What's New in this Release** comprising all new features, enhancements, and behavior changes applicable for the release.

Features and Enhancements

None in this 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 general 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 **Cisco.com Software Download Details**. To find the checksum, hover the mouse pointer over the software image you have downloaded.

ASR 5500

Release 2024.01.10

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Related Links and Documentation
- No related links or documentation -

File Information

- ASR5500 Binary Software Image
asr5500-21.28.m19.zip
[Advisories](#)
- ASR5500 Trusted Binary Software Image
asr5500_T-21.28.m19.zip
[Advisories](#)
- StarOS SNMP MIBs, RADIUS dictionaries, companion-21.28.m19.zip
[Advisories](#)

Details ASR5500 Binary Software Image

Description :	ASR5500 Binary Software Image
Release :	2024.01.10
Release Date :	31-Jan-2024
FileName :	asr5500-21.28.m19.zip
Size :	263.27 MB (276056351 bytes)
MD5 Checksum :	fc9fc530eb5db10d7dcbd2d44311fb9d
SHA512 Checksum :	57b0d50ca6408acd4df5b443d0aaff8a ...

[Advisories](#)

Open Bugs for this Release

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.

To validate the information, calculate a SHA512 checksum using the information in Table 1 and verify that it matches either the one provided on the software download page.

To calculate a SHA512 checksum on your local desktop see Table 1

Table 1 - 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>> certutil.exe -hashfile <filename>.<extension> SHA512</code>
Apple MAC	Open a terminal window and type the following command <code>\$ shasum -a 512 <filename>.<extension></code>
Linux	Open a terminal window and type the following command <code>\$ sha512sum <filename>.<extension></code> Or <code>\$ shasum -a 512 <filename>.<extension></code>
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 2024.01 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.

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 for this Release

The following table lists the open bugs in this specific software release.

Open Bugs for this 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 2 - Open Bugs in this Release

Bug ID	Headline	Product Found
CSCwi68916	CUPS SU with "send-ccri session-start" - Traffic stops after first interim time	cups-cp
CSCwi94768	Documentation to update the max entries supported in Gx local-policy-service	cups-cp
CSCwj23372	sessmgr restart on CUPS UP at - sessmgr_uplane_prepare_gtpu_udpip_hdr_and_send_pkt	cups-up
CSCwi69056	VPP buffer leak caused a VPP crash	cups-up
CSCwi35960	Huge amount of "ICMP packet parse failure" logs in 21.28.m15 with NAT	cups-up
CSCwi71670	[CUPS UP] X3 Lawful Intercept is marked as wrong EBI when using ipv6 session over dedicated bearer	cups-up
CSCwj21736	CUPS UP sessmgr crash in uplane_handle_recvd_tcp_OOO_packet()	cups-up
CSCwj24130	Inconsistency in counters in gtpu bulkstats for UP	cups-up
CSCwh03670	Downlink total fp packets not shown correctly in case of http out of order packet	cups-up
CSCwi68424	Observing Sxdemux in warn/over state in Volte ICSR Standby UP nodes	cups-up
CSCwi17440	VPC-SI EPDG : Ipsecmgr mem leak during longevity and Higher MB	epdg
CSCwi91038	ePDG-VPC-DI-21.28.mh14.92736-Session loss and data loss observed post unplanned active SF reboot	epdg
CSCwj29750	Crash after SW upgrade to 21.28.m19, mme_auth_awt_hss_hss_resp()	mme
CSCwi24901	Empty APN list in "show s8hr config" after node reload	pdn-gw
CSCwi88706	ADC detection accuracy is low for Telegram	pdn-gw
CSCwi65948	Format of dateandtime used by RCM does not comply to snmpv2	rcm
CSCwi69314	Planned swo gives incorrect message in ops-centre	rcm
CSCwi68538	RCM-Checkpointmgr crash due to fatal error concurrent map read and map write	rcm

Resolved Bugs for this Release

Bug ID	Headline	Product Found
CSCwi87259	StandbySessmgrDisconnected trap is not generated when upf reload due to planned switchover fails	rcm
CSCwi08070	intermittent rmmgr task failures on Hermes branch	staros
CSCwi59036	Port redundancy Failed in 4-port deployment VPC SI	staros
CSCwd99519	Error logs seen on UPF PDR not found with PDR ID 0x149 and Remove PDR PDR with ID 0x2ce	upf

Resolved Bugs for this Release

The following table lists the resolved bugs 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 3 - Resolved Bugs in this Release

Bug ID	Headline	Product Found
CSCwh90706	Invalid ARP value from PGW coming from the fix CSCwd32146	cups-cp
CSCwi22226	'show sx peers' output provides incorrect value for 'Current Sessions' counter	cups-cp
CSCwi03400	DBRsp with NO_RESOURCES_AVAILABLE after 3 ways call is ended	cups-cp
CSCwf12125	CUPS: Discrepancy between the time SGW CDR and the time CGF log	cups-cp
CSCwi50450	HO failures due to invalid ARP value from PGW	cups-cp
CSCwi19980	Incorrect gtpc teid format in s8hr ims media packets	cups-cp
CSCwh79709	Error logs - ACS_SEF: CUPS SEF info allocation failed / PDR_ID crossed limit. 0, 0, 0	cups-cp
CSCwi21677	CUPS CP ICSR - 2G/3G -> WLAN HO fails after CP switchover/sessmgr recovery occurred	cups-cp
CSCwi13323	Incorrect END MARKER handling during eNB path switchover for multi-bearer PDNs	cups-cp
CSCwh51263	CP does not create the Redirect-FAR for FUJ-redirect on the second time	cups-cp
CSCwh84055	CDRs are not sent after unplanned SF card migration after fix of CSCwe81062	cups-cp
CSCwe81062	CDRs are not sent after unplanned SF card migration	cups-cp

Resolved Bugs for this Release

Bug ID	Headline	Product Found
CSCwi53552	sessmgr Fatal Signal 11: 11 uplane_free_nat_binding_info()uplane_free_app_data_flow()	cups-up
CSCwi61806	vpp restart fastpath_executive_node_fn on 21.28.m18	cups-up
CSCwi70108	VPP restart observed in CUPS-UP	cups-up
CSCwi09524	Sx Failure seen when service port 1/10 goes down	cups-up
CSCwh74031	Observed vpp crash in CUPs UP	cups-up
CSCwi16517	VPP issues with 21.28.m14	cups-up
CSCwf34386	VPP restart	cups-up
CSCwd67633	[BP-CUPS]libvnet.so.19.08.1/vlan_ip4_qos_mark_node_fn_avx2() with vpp restart	cups-up
CSCwc87274	CUPS,VPP restart in vlan_ip4_qos_mark_node_fn_avx2	cups-up
CSCwd76695	Assersion failure @ PC: [044c4ef3/X] sessmgr_uplane_fill_qosgroup_info()	cups-up
CSCwj01753	CLI gtpc update-pdp-resp reject uli-mismatch mcc-only cli is not working as expected	ggsn
CSCwi51909	mmemgr restart at sbSqDeliver	mme
CSCwi48857	Sessmgr Assertion failure at egtpc_send_req_msg()	mme
CSCwi23379	sessmgr failure at sess/egtp/egtpc/egtpc_interface.c:280	mme
CSCwi58326	mmemgr restarted at SNMME_PtLiHitUDatReq with PWS failure or Restart indication message from eNB	mme
CSCwi83811	QoS Validation Failure in Web authentication with LBO test case on 21.28.m19 Image	pdn-gw
CSCwh84412	User-Location-Information Avp is not changed for GGSN after Handoff	pdn-gw
CSCwi26694	RTP stream is wrongly linked to Default bearer in LI reporting	pdn-gw
CSCwi54796	VPC-SI - bfd sometimes sending ipv6 packets with udp checksum 0x0 - which is invalid	pdn-gw
CSCwi47682	Gy Credit Control Request AVP for Subscription-ID (e.164) contains IMSI instead of MSISDN	pdn-gw
CSCwi71868	Usage Report Not Updating During Local Fallback	pdn-gw
CSCwi02791	sessmgr restart occurs when session moves to assume positive state	pdn-gw
CSCwd32146	“Update Bearer Request” is send PGW->SGW without EPS Bearer QoS, which is not aligned with 3GPP	pdn-gw
CSCwi40532	sessmgr unexpected restart sess/ggsn/gtpc/gtp_enc_ie.c:4570	pdn-gw

Operator Notes

Bug ID	Headline	Product Found
CSCwi80138	PGW - Diameter RF accounting archive handling error.	pdn-gw
CSCwi79878	IP Pool flush enhancements for planned RCM UPF SWO	rcm
CSCwi60684	Call loss during UP Manual Switchover by RCM for 21.28.x	rcm
CSCwh70845	"show apn statistics all" - huge increase of duration of command execution	sae-gw
CSCwf93799	session manager Assertion failure at sess/snx/drivers/sgw/sgw_epsb_fsm.c	sgw
CSCwi76266	SF/CF card reboots during VPC-DI system reboot on 21.28.mhx release	staros
CSCwd49072	Improve detection of invalid qem entry access	staros
CSCwi07101	CF dual active caused by CF DI Internal duplex failure	staros

Operator Notes

StarOS Version Numbering System

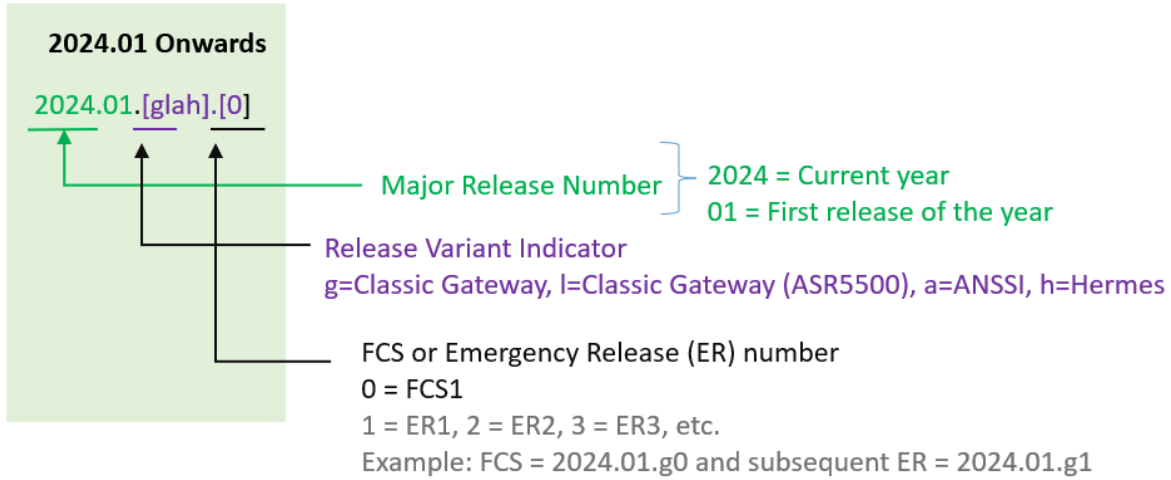
The output of the **show version** command displays detailed information about the version of StarOS currently running on the ASR 5500 or Cisco Virtualized Packet Core platform.

NOTE: Starting 2024.01.0 release (January 2024), Cisco is transitioning to a new release versioning scheme. The release version is based on the current year and product. Refer to [Figure 1](#) for more details.

During the transition phase, some file names will reflect the new versioning whereas others will refer to the 21.28.x-based naming convention. With the next release, StarOS-related packages will be completely migrated to the new versioning scheme.

Version Numbering for FCS, Emergency, and Maintenance Releases

Figure 1 – Version Numbering



Release Package Descriptions

Table 4 provides descriptions for the packages that are available with this release. For more information about the release packages up to 21.28.x releases, refer to the corresponding releases of the release note.

Table 4 - Release Package Information

Software Package	Description
ASR 5500	
asr5500-<release>.zip	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	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	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.
VPC-DI	
qvpc-di-<release>.bin.zip	Contains the VPC-DI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.
qvpc-di_T-<release>.bin.zip	Contains the trusted VPC-DI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.
qvpc-di-<release>.iso.zip	Contains the VPC-DI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.

Release Package Descriptions

qvpc-di_T-<release>.iso.zip	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.
qvpc-di-template-vmware-<release>.zip	Contains the VPC-DI binary software image that is used to on-board the software directly into VMware.
qvpc-di-template-vmware_T-<release>.zip	Contains the trusted VPC-DI binary software image that is used to on-board the software directly into VMware.
qvpc-di-template-libvirt-kvm-<release>.zip	Contains the same VPC-DI ISO identified above and additional installation files for using it on KVM.
qvpc-di-template-libvirt-kvm_T-<release>.zip	Contains the same trusted VPC-DI ISO identified above and additional installation files for using it on KVM.
qvpc-di-<release>.qcow2.zip	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.
qvpc-di_T-<release>.qcow2.zip	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.
VPC-SI	
qvpc-si-<release>.bin.zip	Contains the VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.
qvpc-si_T-<release>.bin.zip	Contains the trusted VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.
qvpc-si-<release>.iso.zip	Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.
qvpc-si_T-<release>.iso.zip	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.
qvpc-si-template-vmware-<release>.zip	Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.
qvpc-si-template-vmware_T-<release>.zip	Contains the trusted VPC-SI binary software image that is used to on-board the software directly into VMware.
qvpc-si-template-libvirt-kvm-<release>.zip	Contains the same VPC-SI ISO identified above and additional installation files for using it on KVM.
qvpc-si-template-libvirt-kvm_T-<release>.zip	Contains the same trusted VPC-SI ISO identified above and additional installation files for using it on KVM.
qvpc-si-<release>.qcow2.zip	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.
qvpc-si_T-<release>.qcow2.zip	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.
VPC Companion Package	

companion-vpc-<release>.zip	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.
Ultra Services Platform	
usp-<version>.iso	The USP software package containing component RPMs (bundles). Refer to the Table 5 for descriptions of the specific bundles.
usp_T-<version>.iso	The USP software package containing component RPMs (bundles). This bundle contains trusted images. Refer to the Table 5 for descriptions of the specific bundles.
usp_rpm_verify_utils-<version>.tar	Contains information and utilities for verifying USP RPM integrity.

Table 5 - USP ISO Bundles

USP Bundle Name	Description
usp-em-bundle-<version>-1.x86_64.rpm*	The Element Manager (EM) Bundle RPM containing images and metadata for the Ultra Element Manager (UEM) module.
usp-ugp-bundle-<version>-1.x86_64.rpm*	The Ultra Gateway Platform (UGP) Bundle RPM containing images for Ultra Packet core (VPC-DI). There are trusted and non-trusted image variants of this bundle.
usp-yang-bundle-<version>-1.x86_64.rpm	The Yang Bundle RPM containing YANG data models including the VNFD and VNFR.
usp-uas-bundle-<version>-1.x86_64.rpm	The Ultra Automation Services Bundle RPM containing AutoVNF, Ultra Web Services (UWS), and other automation packages.
usp-auto-it-bundle-<version>-1.x86_64.rpm	The bundle containing the AutoIT packages required to deploy the UAS.
usp-vnfm-bundle-<version>-1.x86_64.rpm	The VNFM Bundle RPM containing an image and a boot-up script for ESC (Elastic Service Controller).
ultram-manager-<version>-1.x86_64.rpm*	This package contains the script and relevant files needed to deploy the Ultra M Manager Service.
* These bundles are also distributed separately from the ISO.	

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, refer to <https://www.cisco.com/c/en/us/support/index.html>.

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