



# Release Notes for the StarOS™ Software Version 2024.01.ga0

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## Introduction

This Release Notes identifies changes and issues related to the CUPS, RCM, and MME software release.

## Release Lifecycle Milestones

Release Lifecycle Milestone	Milestone	Date
First Customer Ship	FCS	29-Feb-2024
End of Life	EoL	29-Feb-2024
End of Software Maintenance	EoSM	29-Aug-2025
End of Vulnerability and Security Support	EoVSS	29-Aug-2025
Last Date of Support	LDoS	31-Aug-2026

## Release Package Version Information

Software Packages	Version	Build Number
StarOS Package	2024.01.ga0	21.28.9.92933

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

[Release Package](#) Descriptions section.

## Verified Compatibility

Products	Version	Build Number
RCM	2024.01.ga0	20240214-085404Z
NSO-MFP	2024.01.ga0	3.4.3
NED Package	ncs-5.7.5.1-cisco-rcm-nc-1.6	Not Applicable
	ncs-5.8.13-cisco-staros-5.52	
	ncs-5.7.11-etsi-sol003-1.13.18	
	ncs-5.7.10-openstack-cos-4.2.30	
	ncs-5.7.13-cisco-etsi-nfvo-4.7.3	
	ncs-5.7.13-esc-5.10.0.97	
ADC Plugin	2.73.8	Not Applicable

**NOTE:** Use only the compatible versions of p2p.

## 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.

There are no new features or enhancements for 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.

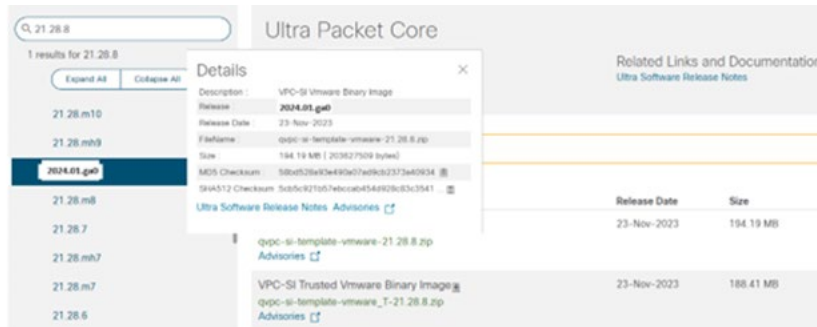
## Firmware Updates

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.



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>&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>
Linux	Open a terminal window and type the following command  <code>\$ sha512sum &lt;filename&gt;.&lt;extension&gt;</code>  Or  <code>\$ shasum -a 512 &lt;filename&gt;.&lt;extension&gt;</code>
<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.

Open Bugs for this Release

**NOTE:** Only RCM and NSO will have the new file naming convention, remaining images will have the existing file naming convention.

## 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.

**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	Behavior Change
<a href="#">CSCwi94768</a>	Documentation to update the max entries supported in Gx local-policy-service	cups-cp
<a href="#">CSCwi09524</a>	Sx Failure seen when service port 1/10 goes down	cups-up
<a href="#">CSCwi69056</a>	VPP buffer leak caused a VPP crash	cups-up
<a href="#">CSCwi35960</a>	Huge amount of "ICMP packet parse failure" logs in 21.28.m15 with NAT	cups-up
<a href="#">CSCwi71670</a>	X3 Lawful Intercept is marked as wrong EBI when using ipv6 session over dedicated bearer	cups-up
<a href="#">CSCwi52632</a>	egtpu_process_update_req_evt()egtpu_handle_user_sap_event()sessmgr_uplane_gtpu_tx_update()	cups-up
<a href="#">CSCwh58126</a>	Fatal Signal 11: 11 PC: [0495e396/X] uplane_find_app_data_flow()	cups-up
<a href="#">CSCwh03670</a>	Downlink total fp packets not shown correctly in case of http out of order packet	cups-up
<a href="#">CSCwi68424</a>	Observing Sxdemux in warn/over state in Volte ICSR Standby UP nodes	cups-up
<a href="#">CSCwi55030</a>	Observed multiple sessmgr went to warn/over state in 21.28.m18.92419 during regression	mme
<a href="#">CSCwd25108</a>	DNS Failure - TCP READ, Kernel Closed - req_read_len = 0	mme
<a href="#">CSCwi88706</a>	ADC detection accuracy is low for Telegram	pdn-gw
<a href="#">CSCwi69314</a>	Planned swo gives incorrect message in ops-centre	rcm
<a href="#">CSCwi65948</a>	Format of date and time used by RCM does not comply to snmpv2	rcm
<a href="#">CSCwi07101</a>	CF dual active caused by CF DI Internal duplex failure	staros
<a href="#">CSCwi26817</a>	VPC DI keeps rebooting with ESC 6.0	staros
<a href="#">CSCwi59036</a>	Port redundancy Failed in 4-port deployment VPC SI	staros
<a href="#">CSCwd99519</a>	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**

<b>Bug ID</b>	<b>Headline</b>	<b>Product Found</b>
<a href="#">CSCwh90706</a>	Invalid ARP value from PGW coming from the fix CSCwd32146	cups-cp
<a href="#">CSCwf58498</a>	UL Data packet getting drop while CBResponse is pending and UL data came	cups-cp
<a href="#">CSCwi37202</a>	Memory leak in function sessmgr_ggsn_sx_allocate_trans_info_node()	cups-cp
<a href="#">CSCwf12125</a>	CUPS: Discrepancy between the time SGW CDR and the time CGF log	cups-cp
<a href="#">CSCwi21602</a>	Error log for SGW CDR Duration in future	cups-cp
<a href="#">CSCwi50450</a>	HO failures due to invalid ARP value from PGW	cups-cp
<a href="#">CSCwi19980</a>	Incorrect gtpc teid format in s8hr ims media packets	cups-cp
<a href="#">CSCwi68808</a>	CCR-U request is not containing MSISDN information	cups-cp
<a href="#">CSCwh84055</a>	CDRs are not sent after unplanned SF card migration after fix of CSCwe81062	cups-cp
<a href="#">CSCwd66214</a>	Assertion failure at sess/snx/drivers/sgw/sgw_recovery.c:1277 on ICSR StandBY CP	cups-cp
<a href="#">CSCwh78561</a>	GWC rejects directly CSR for some IMSIs with "no resources available"	cups-cp
<a href="#">CSCwh51263</a>	CP does not create the Redirect-FAR for FUJ-redirect on the second time	cups-cp
<a href="#">CSCwh43745</a>	Assertion failure at sess/egtp/egtpc/egtpc_interface.c:280	cups-cp
<a href="#">CSCwh33064</a>	CP is not sending Outer Header Removal IE for SxA uplink PDR for default bearer	cups-cp
<a href="#">CSCwe81062</a>	CDRs are not sent after unplanned SF card migration	cups-cp
<a href="#">CSCwh12011</a>	Multiple sessmgr restarts sgwdrv_epsb_fsm_st_connected_evt_s5_disconnected()	cups-cp
<a href="#">CSCwh79709</a>	Error logs - ACS_SEF: CUPS SEF info allocation failed / PDR_ID crossed limit. 0, 0, 0	cups-cp
<a href="#">CSCwi61806</a>	vpp restart fastpath_executive_node_fn on 21.28.m18	cups-up
<a href="#">CSCwi16517</a>	VPP issues with 21.28.m14	cups-up
<a href="#">CSCwf34386</a>	VPP restart	cups-up
<a href="#">CSCwi59651</a>	VPP restart as /usr/sbin64/vpp(sn_assert_signal_handler	cups-up

Bug ID	Headline	Product Found
<a href="#">CSCwi24925</a>	vppctl errors seen on UP after Traffic Steering is enabled	cups-up
<a href="#">CSCwi51909</a>	mmemgr restart at sbSqDeliver	mme
<a href="#">CSCwi37280</a>	DNS - MME is not handling dns response in CNAME format properly as expected by customer	mme
<a href="#">CSCwi48857</a>	Sessmgr Assertion failure at egtpc_send_req_msg()	mme
<a href="#">CSCwi23379</a>	sessmgr failure at sess/egtp/egtpc/egtpc_interface.c:280	mme
<a href="#">CSCwi58326</a>	mmemgr restarted at SNMME_PtLiHitUDatReq with PWS failure or Restart indication message from eNB	mme
<a href="#">CSCwi83811</a>	QoS Validation Failure in Web authentication with LBO test case on 21.28.m19 Image	pdn-gw
<a href="#">CSCwh84412</a>	User-Location-Information Avp is not changed for GGSN after Handoff	pdn-gw
<a href="#">CSCwi26694</a>	RTP stream is wrongly linked to Default bearer in LI reporting	pdn-gw
<a href="#">CSCwi54796</a>	VPC-SI - bfd sometimes sending ipv6 packets with udp checksum 0x0 - which is invalid	pdn-gw
<a href="#">CSCwi47682</a>	Gy Credit Control Request AVP for Subscription-ID (e.164) contains IMSI instead of MSISDN	pdn-gw
<a href="#">CSCwi71868</a>	Usage Report Not Updating During Local Fallback	pdn-gw
<a href="#">CSCwd32146</a>	"Update Bearer Request" is send PGW->SGW without EPS Bearer QoS, which is not aligned with 3GPP	pdn-gw
<a href="#">CSCwi40532</a>	sessmgr unexpected restart sess/ggsn/gtpc/gtp_enc_ie.c:4570	pdn-gw
<a href="#">CSCwh93900</a>	RCM should reload old active UP after BGP monitor failure	rcm
<a href="#">CSCwi60684</a>	Call loss during UP Manual Switchover by RCM for 21.28.x	rcm
<a href="#">CSCwh70845</a>	"show apn statistics all" - huge increase of duration of command execution	sae-gw
<a href="#">CSCwf93799</a>	session manager Assertion failure at sess/snx/drivers/sgw/sgw_epsb_fsm.c	sgw
<a href="#">CSCwh85618</a>	hd raid CF2 disk is not used or available when CF1 is down	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.

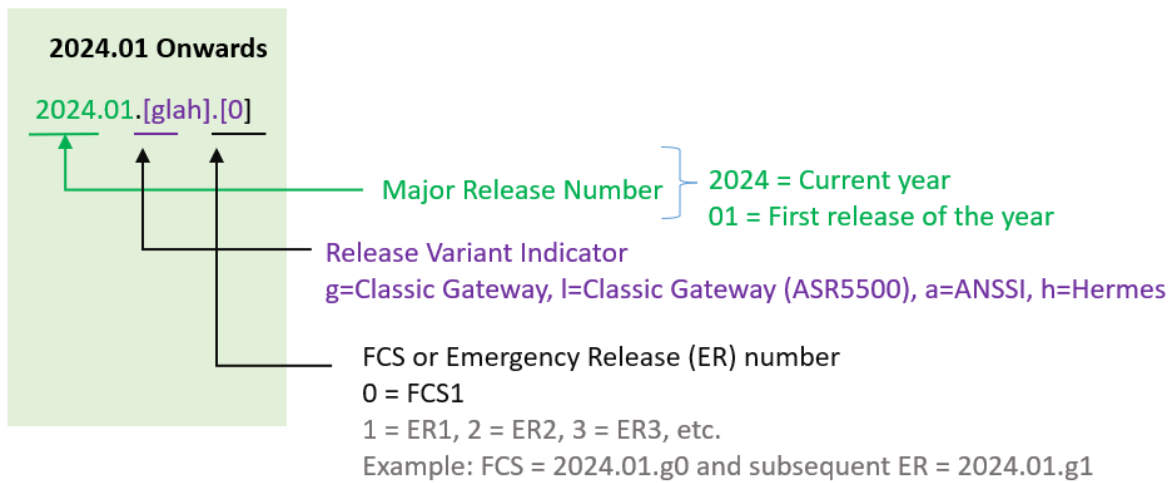
Operator Notes

**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
<b>ASR 5500</b>	
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.
<b>StarOS Companion Package</b>	

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.
<b>VPC-DI</b>	
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.s
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.
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.
<b>VPC-SI</b>	
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.



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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.
<b>VPC Companion Package</b>	
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.
<b>Ultra Services Platform</b>	
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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