



Release Notes for the StarOS™ Software Version 2024.02.ga0

First Published: April 30, 2024

Introduction

This Release Notes identifies changes and issues related to the CUPS, Legacy GW, MME, SGSN, and RCM software releases.

Release Lifecycle Milestones

Release Lifecycle Milestone	Milestone	Date
First Customer Ship	FCS	30-April-2024
End of Life	EoL	29-Oct-2024
End of Software Maintenance	EoSM	29-Oct-2025
End of Vulnerability and Security Support	EoVSS	29-Oct-2025
Last Date of Support	LDoS	31-Oct-2026

Release Package Version Information

Software Packages	Version	Build Number
StarOS Package	2024.02.ga0	21.28.10.93624

Descriptions for the various packages provided with this release are available in the [Release](#) Package Descriptions section.

Verified Compatibility

Products	Version	Build Number
NED Package	ncs-6.1-rcm-nc.v21.28.mx_20240415-072244Z	Not Applicable
	ncs-6.1.6-cisco-staros-5.52.4	
	ncs-6.1.1-etsi-sol003-1.13.18	
	ncs-6.1-openstack-cos-4.2.30	
	ncs-6.1.2.1-cisco-etsi-nfvo-4.7.3	
	ncs-6.1.2.1-esc-5.10.0.97	
NSO-MFP	2024.02.ga0	3.5
RCM	2024.02.ga0	20240430-112301Z
ADC Plugin	2.74.0	2084

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.

Features and Enhancements

This section covers a brief description of the features and enhancements introduced in this release.

Feature ID	Feature Name
FEAT-25020	Backport MME feature on 21.28 to ANSSI train: Dynamic S-GW Selection for Interworking-5GC
FEAT-25023	Backport MME feature on 21.28 to ANSSI train: Fetching the Target eNB based on the Target en-gNB ID without TAC
FEAT-25021	Backport MME feature on 21.28 to ANSSI train: Handling 5G to 4G TAU when n1-mode is not Supported

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.

File Information	Release Date
Intelligent On Boarding Signature Package intelligent_onboarding-2024.02.ga0.zip Advisories	29-Feb-2024
NSO Signature Package nso-mob-fp-3.4.3-;2024.02.ga0.zip Advisories	29-Feb-2024
RCM ova Software Image rcm-vm-airgap-;2024.02.ga0;.qcow2.zip Advisories	29-Feb-2024
RCM qcow2 Software Image rcm-vm-airgap-;2024.02.ga0;.ova.zip Advisories	29-Feb-2024
RCM vmdk Software Image rcm-vm-airgap-;2024.02.ga0;.vmdk.zip Advisories	29-Feb-2024

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 > certutil.exe -hashfile <filename>.<extension> SHA512

Open Bugs for this Release

Apple MAC	Open a terminal window and type the following command \$ shasum -a 512 <filename>.<extension>
Linux	Open a terminal window and type the following command \$ sha512sum <filename>.<extension> Or \$ shasum -a 512 <filename>.<extension>
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.

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
CSCwi33154	sessmgr reload at uplane_sfw_create_nat_realm_info()	cups-up
CSCwi52632	egtpu_process_update_req_evt()egtpu_handle_user_sap_event()sessmgr_uplane_gtpu_tx_update()	cups-up
CSCwj24130	Inconsistency in counters in gtpu bulkstats for UP	cups-up

Resolved Bugs for this Release

Bug ID	Headline	Product Found
CSCwj17471	Planned srp switchover is succeeded though bgp monitor in stby upf is down	staros
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
CSCwe61003	Unexpected "URR node not found at CP for URR-id" logs observed	cups-cp
CSCwf59908	SAEGW does NOT send CSResp even if SAEGW receives CCA-i with DIAMETER_AUTHORIZATION_REJECTED (5003)	cups-cp
CSCwi19980	Incorrect gtpc teid format in s8hr ims media packets	cups-cp
CSCwi28946	Lot of error logs - [SXAB] Failed to remove Traffic Endpoint with Traffic Endpoint ID	cups-cp
CSCwc99110	Assertion failure at sess/smgr/sessmgr_gtpu.c sessmgr_egtpu_signalling_routine()	cups-up
CSCwj09524	Sx Failure seen when service port 1/10 goes down	cups-up
CSCwi69056	VPP buffer leak caused a VPP restart	cups-up
CSCwe54541	mmedemux recovery is not supported for ENDC SON feature	mme
CSCwd25108	DNS Failure - TCP READ, Kernel Closed - req_read_len = 0	mme
CSCwe40765	GNodeB Lookup fails for the connected gnb received in config update message	mme
CSCwi55030	Observed multiple sessmgr went to warn/over state in 21.28.m18.92419 during regression	mme
CSCwi24901	Empty APN list in "show s8hr config" after node reload	pdn-gw
CSCwi59951	TCP length issue in DNS query causing time out	staros

Operator Notes

StarOS Version Numbering System

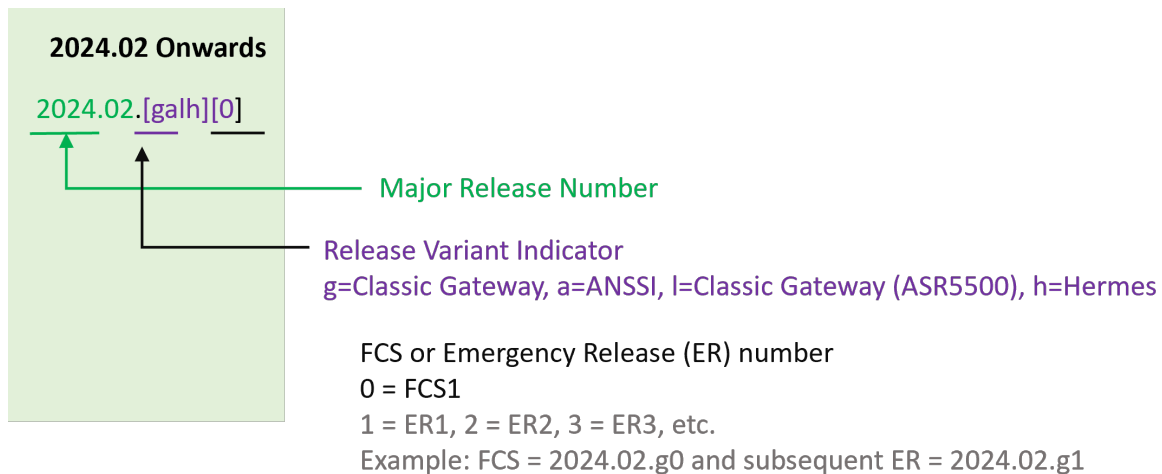
The output of the **show version** command displays detailed information about the version of StarOS currently running on the ASR 5500 or Cisco Virtualized Packet Core platform.

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
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.
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>.

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright ©1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at www.cisco.com/go/offices.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <http://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

© 2024 Cisco Systems, Inc. All rights reserved.