Release Notes for the StarOS™ Software Version 2024.02.g0

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Introduction

This Release Notes identifies changes and issues related to the CUPS, MME, SGSN, ePDG, Legacy GW, 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.g0	21.28.m23.93622

Descriptions for the various packages provided with this release are available in the Release Package Descriptions section.

Verified Compatibility

Products	Version
ADC Plugin	2.74.0
RCM	20240429-160732Z
NED Package	ncs-6.1-rcm-nc.v21.28.mx_20240415-072244Z 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	3.5.2024.02.g0

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-22933	Verizon 5G CALEA N+K GR design changes – support up to 16 servers
FEAT-24393	M2M ACL configuration into the SRP Checkpointing
FEAT-25564	Cisco MME incorrectly handles 4G to 5G N26 -4G to 5G Mobility registration- N1Mode=Not Supported
FEAT-18778	CUPS: eDNS enrichment in CUPS with anti-spoofing
FEAT-23973	Mobility Function Pack validation with NSO 6.1
FEAT-24495	CUPS SAEGW-U Idle DDN Buffer increase

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.

Synchronizing Boot File for Service Function Cards

To synchronize the boot file for all the Service Function (SF) VPC-DI non-management cards, use the following:

CLI executable command:

```
[local] host_name# system synchronize boot
```

This assures that the changes in boot file are identically maintained across the SF cards.

Ensure that you execute this command before reload for version upgrade from any version less than mh14 to

mh14 or later.

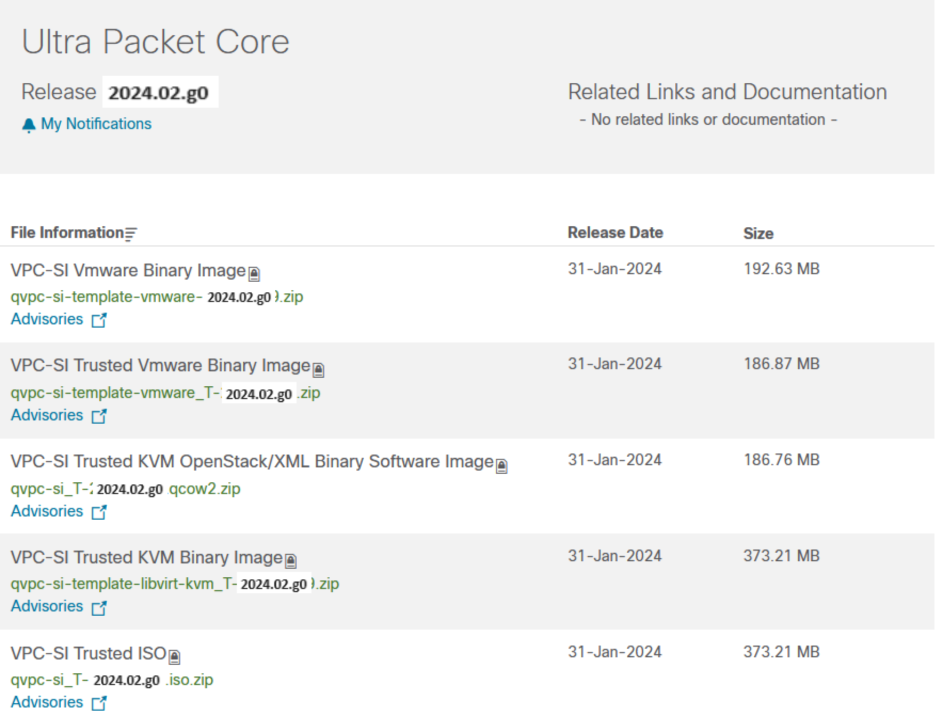
Firmware Updates

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.



Ultra Packet Core

Release 2024.02.g0

My Notifications

Related Links and Documentation

- No related links or documentation -

File Information	Release Date	Size
VPC-SI Vmware Binary Image qvpc-si-template-vmware- 2024.02.g0).zip Advisories	31-Jan-2024	192.63 MB
VPC-SI Trusted Vmware Binary Image qvpc-si-template-vmware_T-: 2024.02.g0 .zip Advisories	31-Jan-2024	186.87 MB
VPC-SI Trusted KVM OpenStack/XML Binary Software Image qvpc-si_T-: 2024.02.g0 .qcow2.zip Advisories	31-Jan-2024	186.76 MB
VPC-SI Trusted KVM Binary Image qvpc-si-template-libvirt-kvm_T- 2024.02.g0).zip Advisories	31-Jan-2024	373.21 MB
VPC-SI Trusted ISO qvpc-si_T- 2024.02.g0 .iso.zip Advisories	31-Jan-2024	373.21 MB

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
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:

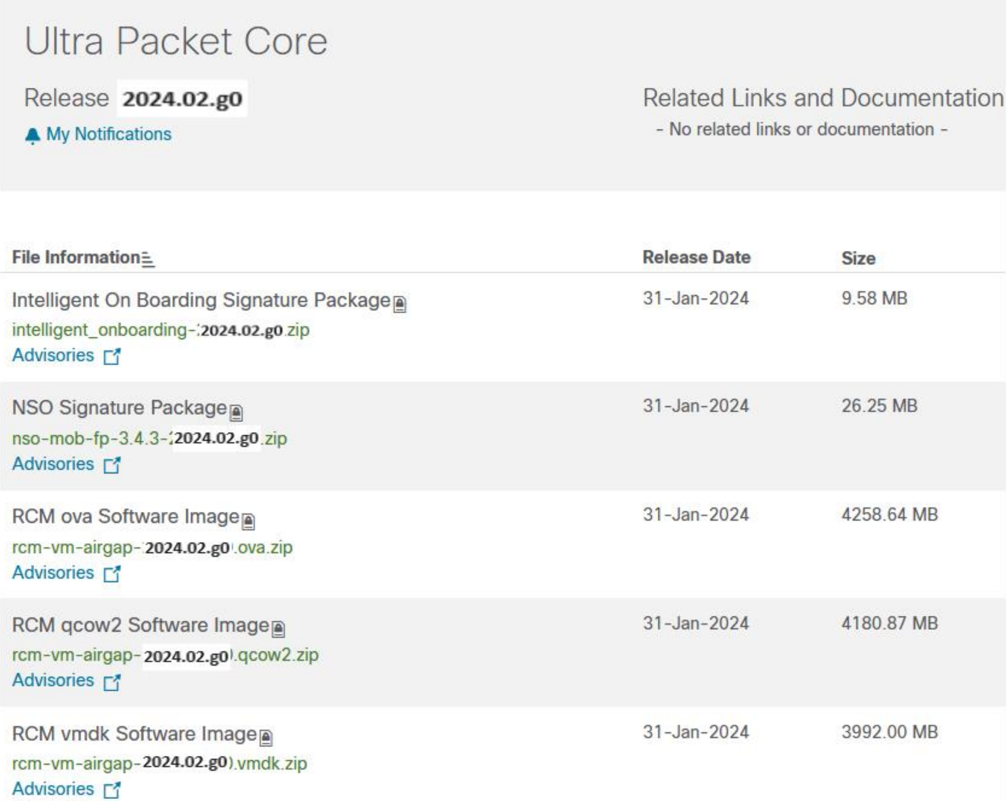
<filename> is the name of the file.

<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.

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



Ultra Packet Core

Release 2024.02.g0

Related Links and Documentation

- No related links or documentation -

File Information	Release Date	Size
Intelligent On Boarding Signature Package intelligent_onboarding-2024.02.g0.zip Advisories	31-Jan-2024	9.58 MB
NSO Signature Package nso-mob-fp-3.4.3-2024.02.g0.zip Advisories	31-Jan-2024	26.25 MB
RCM ova Software Image rcm-vm-airgap-2024.02.g0.ova.zip Advisories	31-Jan-2024	4258.64 MB
RCM qcow2 Software Image rcm-vm-airgap-2024.02.g0.qcow2.zip Advisories	31-Jan-2024	4180.87 MB
RCM vmdk Software Image rcm-vm-airgap-2024.02.g0.vmdk.zip Advisories	31-Jan-2024	3992.00 MB

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
CSCwj33154	sessmgr reload at uplane_sfw_create_nat_realm_info()	cups-up
CSCwi52632	egtpu_process_update_req_evt()egtpu_handle_user_sap_event()sess-mgr_uplane_gtpu_tx_update()	cups-up
CSCwj24130	Inconsistency in counters in gtpu bulkstats for UP	cups-up
CSCwj36352	Assertion failure at sess/mme/mme-app/app/mme_tau_proc.c:1701	mme
CSCwj72131	Improper output for PDN GW Name in 'show mme-service db record ' is a display issue.	mme
CSCwj66981	Sessmgr crash-egtpc_send_ind_evt()	pdn-gw
CSCwj52492	While triggerring the interim CDR, there is no aaa_sess_handle and sessmgr restart	pdn-gw
CSCwj25382	UDP flows are not getting blocked when 0 quota is received from OCS	pdn-gw
CSCwj78838	Assertion failure at "sit_api_rct_task_death_req" on 21.28.m23.93362	pdn-gw
CSCwj70487	Assertion failure at sess/snx/drivers/sgw/sgw_drv.c:374	sgw
CSCwj68378	ASR5500 SPGW Assertion failure at sgwdrv_send_tx_setup_to_egtpu	sgw
CSCwj68218	Assert observed at sgwdrv_collect_pdn_info	sgw
CSCwj17471	Planned srp switchover is succeeded though bgp monitor in stby upf is down	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
CSCwj51924	VPCDI // 21.28.m15 (91862) //h Assertion failure at sess/snx/drivers/saegw/saegw_recovery.c:35	cups-cp
CSCwj00472	sessmgr 12341 error when HO between SGWs	cups-cp
CSCwj50864	Assertion failure at sess/smgr/sessmgr_pgw.c:9924	cups-cp
CSCwi71670	X3 Lawful Intercept is marked as wrong EBI when using ipv6 session over dedicated bearer	cups-cp
CSCwi94768	Documentation to update the max entries supported in Gx local-policy-service	cups-cp
CSCwi28946	[BP-CUPS] Lot of error logs - [SXAB] Failed to remove Traffic Endpoint with Traffic Endpoint ID	cups-cp
CSCwj38556	In roaming scenraio - MCC-only feature rejects the bearer after 4G3G mobility d	cups-cp
CSCwi53552	sessmgr Fatal Signal 11: 11 uplane_free_nat_binding_info()uplane_free_app_data_flow()	cups-up
CSCwc99110	Assertion failure at sess/smgr/sessmgr_gtpu.c sessmgr_egtpu_signalling_routine()	cups-up
CSCwi35960	huge amount of "ICMP packet parse failure" logs in 21.28.m15 with NAT	cups-up
CSCwi69056	VPP buffer leak caused a VPP restart	cups-up
CSCwj85083	CUPS UP : npumgr crashes after upgrade to 21.28.m22	cups-up
CSCwj44782	MME wrongly selecting s2b PGW record (x-3gpp-pgw:x-s2b-gtp+nc-smf) for 5G capable UE's	mme
CSCwi85182	Sessmgr restart due to Assertion failure at function sn_gt_release_mm_teid()	mme
CSCwi55030	Observed multiple sessmgr went to warn/over state in 21.28.m18.92419 during regression	mme
CSCwd25108	DNS Failure - TCP READ, Kernel Closed - req_read_len = 0	mme
CSCwi48857	Sessmgr Assertion failure at egtpc_send_req_msg()	mme
CSCwc83863	Assertion failure at sess/mme/mme-app/app/mme_app_util.c:18558	mme

Bug ID	Headline	Product Found
CSCwj29750	Sessmgr restart after SW upgrade to 21.28.m19, mme_auth_awt_hss_hss_resp()	mme
CSCwj30320	vplmn-address option is not showing under call-control-profile	mme
CSCwj33658	sessmgr crash due to Fatal Signal 11: 11 PC: [06bbc47f/X] smgr_process_iri_hi2()	pdn-gw
CSCwj24901	Empty APN list in "show s8hr config" after node reload	pdn-gw
CSCwi54796	VPC-SI - bfd sometimes sending ipv6 packets with udp checksum 0x0 - which is invalid	pdn-gw
CSCwj24886	ipsecmgr restart seen after the rekeying process	pdn-gw
CSCwj15020	ASR5500 - [SPGW] - sessctrl failure	pdn-gw
CSCwj72598	user-plane traffic stops when sgw-u (Sxa) and pgw-u (Sxb) functions are hosted on the same UP	pdn-gw
CSCwi67492	For gtpu-schema , few bulkstat counters not incremented	pdn-gw
CSCwj24899	Few sessmgrs having TCP connect issues on Checkpointmgr	rcm
CSCwi68538	RCM-Checkpointmgr crash due to fatal error concurrent map read and map write	rcm
CSCwi79878	IP Pool flush enhancements for planned RCM UPF SWO	rcm
CSCwj36377	Help ? for rcm-config-ep write-timeout shows inconsistency not similar with other	rcm
CSCwi69314	Planned swo gives incorrect message in ops-centre	rcm
CSCwi87259	StandbySessmgrDisconnected trap is not generated when upf reload due to planned switchover fails	rcm
CSCwi65948	format of dateandtime used by RCM does not comply to snmpv2	rcm
CSCwi73027	Stale data in RCM post switchover	rcm
CSCwi74961	TCP hardening - Timeout observed during socket write during switchover	rcm
CSCwi23288	session manager restart at sn_dp_utran_process_purge_req_evt fucntion	sgsn
CSCwi70115	SNS-Add messages were not sent after adding new NSVL instance	sgsn
CSCwj26308	Assertion failure at sess/sgsn/sgsn-app/gtp_c/gtapp_tun_fsm.c:6936	sgsn
CSCwi63250	Despite "monitor system card-fail" config, switchover does not occur	staros
CSCwi59951	TCP length issue in DNS query causing time out	staros
CSCwi67402	Sessmgr restart at saegwdrv_ue_fsm_st_active_evt_snx_abortcall(),	staros

Bug ID	Headline	Product Found
CSCwi65052	[BP-CUPS] [connectedapps 203750 error CONNECTEDAPPS ERROR:Unable to open the btmp file /var/log/btmp	staros

Operator Notes

StarOS Version Numbering System

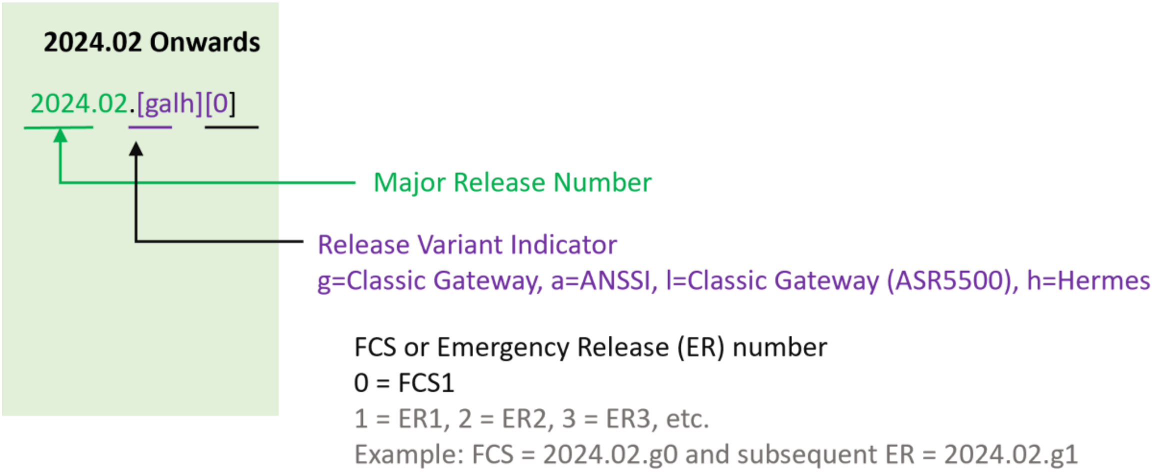
The output of the **show version** command displays detailed information about the version of StarOS currently running on the ASR 5500 or Cisco Virtualized Packet Core platform.

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


2024.02 Onwards
2024.02.[galh][0]
Major Release Number
Release Variant Indicator
g=Classic Gateway, a=ANSSI, l=Classic Gateway (ASR5500), h=Hermes
FCS or Emergency Release (ER) number
0 = FCS1
1 = ER1, 2 = ER2, 3 = ER3, etc.
Example: FCS = 2024.02.g0 and subsequent ER = 2024.02.g1

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.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.
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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