



Release Notes for StarOS™ Software Version 21.15.25 and Ultra Service Platform Version 6.9.5

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Introduction

This Release Notes identify changes and issues related to this software release. This emergency release is based on release 6.9.4 and StarOS 21.15.24. This Release Notes is applicable to the ASR5500, VPC-SI, VPC-DI and Ultra Service platforms.

Release Package Version Information

Table 1: Release Package Version Information

| Software Packages | Version |
|---|-----------------------------------|
| StarOS packages | 21.15.25 build 74632 |
| Ultra Service Platform ISO | 6_9_5-10669 |
| usp-em-bundle* | 6.9.0, Epoch 7775 |
| usp-ugp-bundle* | 21.15.25, build 74632, Epoch 8393 |
| usp-yang-bundle | 1.0.0, Epoch 7290 |
| usp-uas-bundle | 6.9.0, Epoch 8456 |
| usp-auto-it-bundle | 5.8.0, Epoch 7502 |
| usp-vnfm-bundle | 4.5.0.112, Epoch 7387 |
| ultram-manager* | 2.7.3, Epoch 1836 |
| * These bundles are also distributed separately from the ISO. | |

Descriptions for the various packages provided with this release are located in [Table 4](#) and [Table 5](#).

Feature and Behavior Changes

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:

- StarOS: <https://www.cisco.com/c/en/us/support/wireless/asr-5000-series/products-installation-and-configuration-guides-list.html>
- Ultra Gateway Platform (including the Ultra M Solution): <https://www.cisco.com/c/en/us/support/wireless/ultra-gateway-platform/products-installation-and-configuration-guides-list.html>
- Ultra Automation Services: <https://www.cisco.com/c/en/us/support/wireless/ultra-automation-services/products-installation-and-configuration-guides-list.html>
- Virtual Packet Core (including VPC-SI and VPC-DI): <https://www.cisco.com/c/en/us/support/wireless/virtual-packet-core/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.

Ultra M Hyper-Converged Model Component Versions

Table 2 - Ultra M Hyper-Converged Model Component Version Information

| HW | SW | 6.3 | 6.4 | 6.5 | 6.6 | 6.7 | 6.8 | 6.9 |
|----|-----------|----------|-----------|--|--|--|--|--|
| | StarOS | 69977 | 70597 | 70741 | 71244 | 71540 | 72257 | 72729 |
| | ESC | 4.2.0.74 | 4.3.0.121 | 4.3.0.121 | 4.4.0.88 | 4.4.0.88 | 4.5.0.112 | 4.5.0.112 |
| | RH Kernel | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 | 7.5 |
| | OSP | 10 | 10 | 10 or 13 | 10 or 13 | 10 or 13 | 10 or 13 | 10 or 13 |
| | | | | NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments | NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments | NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments | NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments | NOTE: OpenStack Platform 13 with RHEL 7.5 is validated only for standalone AutoVNF-based deployments |

Installation and Upgrade Notes

| HW | SW | 6.3 | 6.4 | 6.5 | 6.6 | 6.7 | 6.8 | 6.9 |
|-----------------------------|-------------|-------------|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | | | | of the UGP VNF. | of the UGP VNF. | of the UGP VNF. | of the UGP VNF. | of the UGP VNF. |
| UCS C240 M4S SFF (NFVI) | BIOS | 3.0(4a) | 3.0(4a) | 3.0(4a) | 3.0(4a) | 3.0(4a) | 3.0(4a) | 3.0(4a) |
| | CIMC (BMC) | 3.0(4d) | 3.0(4d) | 3.0(4d) | 3.0(4d) | 3.0(4d) | 3.0(4d) | 3.0(4d) |
| | MLOM | 4.1 (3f) | 4.1 (3f) | 4.1 (3f) | 4.1 (3f) | 4.1 (3f) | 4.1 (3f) | 4.1 (3f) |
| C2960XR-48TD-I (Management) | Boot Loader | 15.2(3r)E1 | 15.2(3r)E1 | 15.2(3r)E1 | 15.2(3r)E1 | 15.2(3r)E1 | 15.2(3r)E1 | 15.2(3r)E1 |
| | IOS | 15.2.(2) E5 | 15.2.(2) E5 | 15.2.(2) E5 | 15.2.(2) E5 | 15.2.(2) E5 | 15.2.(2) E5 | 15.2.(2) E5 |
| C3850-48T-S (Management) | Boot Loader | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 | 3.58 |
| | IOS | 03.06.06E | 03.06.06E | 03.06.06E | 03.06.06E | 03.06.06E | 03.06.06E | 03.06.06E |
| Nexus 93180-YC-EX (Leafs) | BIOS | 7.59 | 7.59 | 7.59 | 7.59 | 7.59 | 7.59 | 7.59 |
| | NX-OS | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) |
| Nexus 9236C (Spines) | BIOS | 7.59 | 7.59 | 7.59 | 7.59 | 7.59 | 7.59 | 7.59 |
| | NX-OS | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) | 7.0(3)I7(3) |

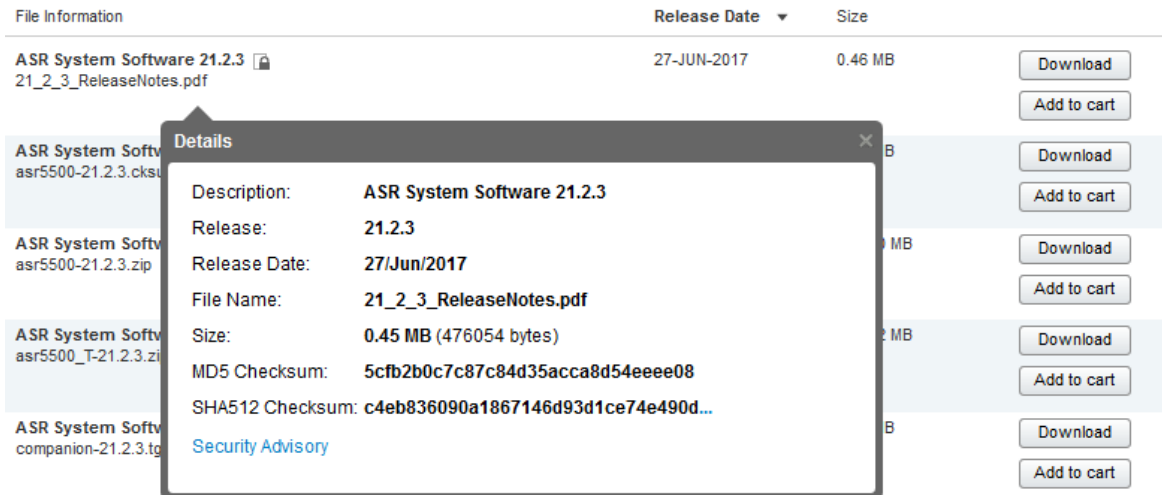
Firmware Updates

There are no firmware updates 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 3](#) and verify that it matches either the one provided on the software download page.

To calculate a SHA512 checksum on your local desktop, see the following table.

Table 3 – Checksum Calculations per Operating System

| Operating System | SHA512 checksum calculation command examples |
|---|--|
| Microsoft Windows | Open a command line window and type the following command <pre>> certutil.exe -hashfile <filename>.<extension> SHA512</pre> |
| Apple MAC | Open a terminal window and type the following command <pre>\$ shasum -a 512 <filename>.<extension></pre> |
| Linux | Open a terminal window and type the following command <pre>\$ sha512sum <filename>.<extension></pre> <p>Or</p> <pre>\$ shasum -a 512 <filename>.<extension></pre> |
| NOTES: | |
| <i><filename></i> is the name of the file. | |
| <i><extension></i> 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

StarOS software images are signed via x509 certificates. USP ISO images are signed with a GPG key. Please view the .README file packaged with the software for information and instructions on how to validate the certificates.

NOTE: Image signing is not currently supported for VPC-SI and/or VPC-DI software packages.

Open Bugs in this Release

The following table lists known bugs that were found in, and 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](#).

| Bug ID | Headline | Product Found* |
|------------|--|----------------|
| CSCvr21882 | BP CUPS:PC: sgx_update_install_rule_def_list() | cups-cp |
| CSCvr33007 | npumgr restart in UP when trying to scale number of VRFs | cups-up |
| CSCvs62126 | Function restart at egtpc_handle_abort_proc_cmd_evt | cups-cp |
| CSCvs91124 | Function Restart at sess/smgr/sessmgr_func.c:4628 sessmgr_deallocate_callline() | cups-cp |
| CSCvq35024 | sessmgr error: Misc Error:Callline invalid or in invalid state for sending checkpoints | cups-up |
| CSCvq64442 | Subscriber pkt drop stats not updated to sessmgr from VPP on call clear. | cups-up |
| CSCvq71873 | sessmgr_uplane_cleanup_pdr() | cups-up |
| CSCvr21683 | BP CUPS:free_acct() | cups-up |
| CSCvr79806 | [BP-CUPS]:URL Blacklisting not taking place if URL BL RB cli is deleted and added again | cups-up |
| CSCvs92102 | "[fapi 223801 error] fastpath_stream_delete(): , Hash Delete, seen on all UPs" | cups-up |
| CSCvr20261 | "[BP-CUPS] chckpt/call recovery failure logs on standbyUP, sessmgr 12343,12008,10396,11967,12988 logs" | cups-up |
| CSCvr08929 | sessmgr restart seen on mme_app_fill_delete_sess_req | mme |
| CSCvr16715 | MME selects PGW ip defined in "apn default-apn-profile" is configured ingoring specific APN config | mme |
| CSCvr39322 | MME: SMGR Restart(Multi-fault) - mme_app_util_send_create_bearer_rsp(). | mme |
| CSCvq93693 | MME config update not happening on reload chasis applying enb-goup config | mme |

Resolved Bugs in this Release

| Bug ID | Headline | Product Found* |
|---|---|----------------|
| CSCvr40741 | PLT-ICUPS : vppctl show errors incrementing "lookup drops" and "PAWS check failed"; | pdn-gw |
| CSCvr67110 | [PLT-ICUPS]: [vpn 5103 error] UDP Med received packet with non-udp protocol on DPC2 card migration | pdn-gw |
| CSCvr93031 | [PLT-ICUPS]: High call drop with reason graceful-cleanup-on-audit-fail on ICSR swtich-over | pdn-gw |
| CSCvs09996 | [BP-ICUPS]: mon sub on high speed UE causing sessmgr cpu hit 90% | pdn-gw |
| CSCvs18887 | [BP-ICUPS]: huge session disconnect with reason gtpu-err-ind and gtpc-path-failure | pdn-gw |
| CSCvs47774 | [BP-ICUPS]: VPP task reload and accel not happening after a limit | pdn-gw |
| CSCvs51881 | BP-ICUPS : Increase seen in num of flows not being accelled when current accel flows are beyond 500k | pdn-gw |
| CSCvs50167 | [PLT-BP-ICUPS] Observed sn_assert_signal_handler()+0x110e | pdn-gw |
| CSCvq95469 | [BP-ICUPS-VPP]: icmpv6/mpls-vpnv6 pkts not being delivered to sessmgr. | sae-gw |
| CSCvq63005 | Gbmgr restart seen on gbmgr_rx_gns_pdu | sgsn |
| CSCvr43658 | [VPC-DI] SF iftask continually crashes when core 1 is configured in MCDMA mode | staros |
| CSCvs12021 | [PLT-ICUPS] Inconsistency with respect to expected no. of LI connections after demux card migration | staros |
| CSCvs47582 | 21.15.12 - iVPP-5G-mcdmaN-Network-RX-Drop | staros |
| CSCvs68873 | ICUPS ip6_reass_walk_expired() Segmentation fault | staros |
| CSCvr00066 | [UPF]: VPP restart during application of day-1 config | upf |
| CSCvs66489 | [UPF SVI] vpn 5013 error Pool_name is not present in release req for ipv6 pdn after sx path fail | upf |
| CSCvs79861 | [SVI UPF] sessmgr 12341 error logs in overnight regression test | upf |
| CSCvr40362 | UAME - K8S Cluster Node Recovery Actions (Post VM recovery by ESC) - Cluster SYNC fails | usp-uas |
| * 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 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](#).

Operator Notes

| Bug ID | Headline | Product Found* |
|---|--|----------------|
| CSCvt13387 | On SMI-CM recovery (action redeploy) - post recovery events fail | usp-uas |
| CSCvt15057 | UAME support for NTP configuration in SMI ops-center config | usp-uas |
| CSCvt15429 | cluster name in ops-center shall be concatenation of nsd-id, vnfd-id, tenant-id | usp-uas |
| CSCvr06501 | Deactivate of PCRF NSD fails | usp-uas |
| CSCvq32311 | [BP-CUPS] SMC_SXA_PDN_FSM CBReq Modify-Failure for the state 5 | cups-cp |
| CSCvq77475 | [BP-CUPS]- egtpc_handle_user_sap_event() sgwdrv_pdn_fsm_st_handle_disconnecting_evt_delete_sess_cfm | cups-cp |
| CSCvq94571 | [BP-CUPS]-Invalid/unhandled PDN event <SGWDRV_PDN_EVT_ABORT_PROC_CMD> | cups-cp |
| CSCvq95227 | SX_MODIFY_REQ failed for Trans: for Current Proc Type: SMGR_PGW_SX_MODIFY_REQ | cups-cp |
| CSCvq95238 | "For a UE or Admin initiated Dedicaded bearer deletion, the PGW trans info is not valid" | cups-cp |
| CSCvq97012 | [BP-CUPS]-sgwdrv_fill_sess_info_from_egtpc_temp_pdn_ingress() | cups-cp |
| CSCvo50355 | [BP-CUPS-VPP] show subs output updated at random intervals for Pure-S call | cups-up |
| CSCvq48343 | [BP-CUPS] huge number of error logs seen on active and standby | cups-up |
| CSCvr20491 | MME unexpectedly send PUR | mme |
| CSCvr01030 | Do not capture code sections in full cores | staros |
| CSCvq82622 | [UPF SVI] user-plane-service stats total dropped byte count is 0 even though packets are dropped | upf |
| * Information in the "Product Found" column identifies the product in which the bug was initially identified. | | |

Operator Notes

StarOS Version Numbering System

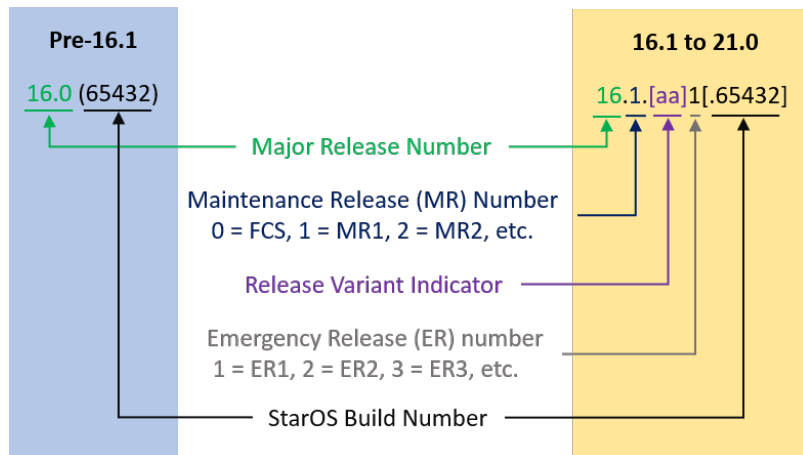
The output of the **show version** command displays detailed information about the version of StarOS currently running on the ASR 5x00 or Cisco Virtualized Packet Core platform.

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.

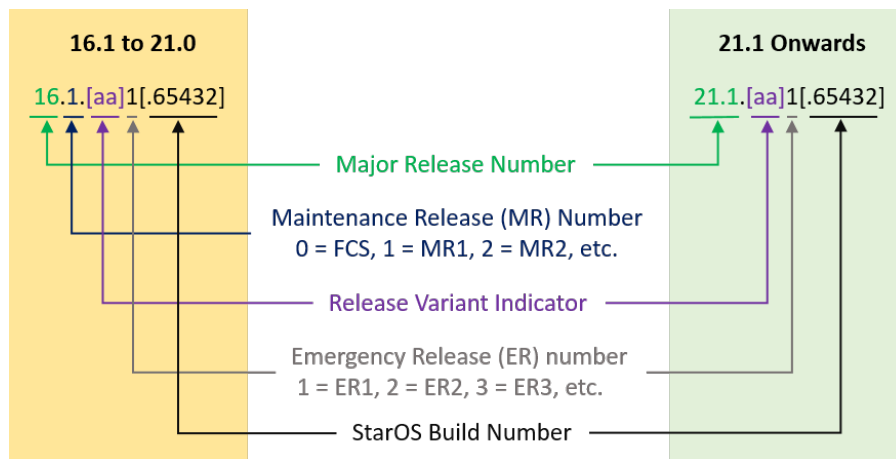
From release 16.1 onwards, the output of the **show version** command, as well as the terminology used to describe the Build Version Number fields, has changed. Additionally, **show version** will display slightly different information depending on whether or not a build is suitable for deployment.

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".

Operator Notes



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 4 - Release Package Information

| Package | Description |
|--|--|
| ASR 5500 | |
| asr5500-<release>.bin | A zip file containing 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>.bin | A zip file containing 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. |
| VPC-DI | |
| qvpc-di-<release>.bin | The VPC-DI binary software image which is used to replace a previously deployed image on the flash disk in existing installations. |
| qvpc-di_T-<release>.bin | The trusted VPC-DI binary software image which is used to replace a previously deployed image on the flash disk in existing installations. |
| qvpc-di-<release>.iso | 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 | 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>.tgz | The VPC-DI binary software image that is used to on-board the software directly into Vmware. |
| qvpc-di-template-vmware_T-<release>.tgz | The trusted VPC-DI binary software image that is used to on-board the software directly into Vmware. |
| qvpc-di-template-libvirt-kvm-<release>.tgz | This is an archive that includes the same VPC-DI ISO identified above, but additional installation files for using it on KVM. |
| qvpc-di-template-libvirt-kvm_T-<release>.tgz | This is an archive that includes the same trusted VPC-DI ISO identified above, but additional installation files for using it on KVM. |
| qvpc-di-<release>.qcow2.tgz | 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.tgz | 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 | The VPC-SI binary software image which is used to replace a previously deployed image on the flash disk in existing installations. |
| qvpc-si_T-<release>.bin | The trusted VPC-SI binary software image which is used to replace a previously deployed image on the flash disk in existing installations. |

Operator Notes

| Package | Description |
|--|--|
| qvpc-si-<release>.iso | 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 | 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>.ova | The VPC-SI binary software image that is used to on-board the software directly into Vmware. |
| qvpc-si-template-vmware_T-<release>.ova | The trusted VPC-SI binary software image that is used to on-board the software directly into Vmware. |
| qvpc-si-template-libvirt-kvm-<release>.tgz | This is an archive that includes the same VPC-SI ISO identified above, but additional installation files for using it on KVM. |
| qvpc-si-template-libvirt-kvm_T-<release>.tgz | This is an archive that includes the same trusted VPC-SI ISO identified above, but additional installation files for using it on KVM. |
| qvpc-si-<release>.qcow2.gz | 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.gz | 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. |
| StarOS Companion Package | |
| companion-<release>.tgz | An archive containing 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. |
| Ultra Service Platform | |
| usp-<version>.iso | The USP software package containing component RPMs (bundles). Refer to 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 Table 5 for descriptions of the specific bundles. |
| usp_rpm_verify_utils-<version>.tar | This package 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, 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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