

# Release Notes for StarOS™ Software Version 21.23.yn14

First Published: December 06, 2022 Last Updated: December 06, 2022

#### Introduction

This Release Note identifies changes and issues related to this software release. These Release Notes identify changes and issues based on 21.23.n13

#### **Release Package Version Information**

Table 1 - Release Package Version Information

Version
21.23.yn14, build 87904
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Descriptions for the various packages provided with this release are located in Release Package Descriptions.

## Feature and Behavior Changes

Please contact the Account team for the documentation related to 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 <a href="http://www.cisco.com/c/en/us/support/wireless/asr-5000-series/products-installation-and-configuration-guides-list.html">http://www.cisco.com/c/en/us/support/wireless/asr-5000-series/products-installation-and-configuration-guides-list.html</a>.

# Installation and Upgrade Notes

This Release Note does not contain 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.

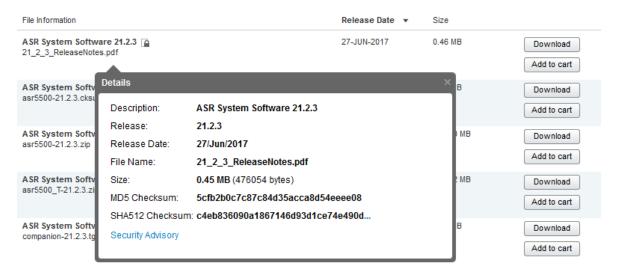
Installation and Upgrade Notes

## 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 the following mechanisms:

 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.

 .cksums file: A file containing software image checksum information is distributed with the image files. The naming convention for this file is:

 $<\!product>-<\!version>$ .cksums

Example: asr5500-21.4.0.cksums

To validate the information, calculate a SHA512 checksum using the information in <u>Table 2</u> and verify that it matches either the one provided on the software download page.

To calculate a SHA512 checksum on your local desktop please see the table below.

Table 2 - 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</extension></filename>	
Apple MAC	Open a terminal window and type the following command	
	<pre>\$ shasum -a 512 <filename>.<extension></extension></filename></pre>	

Operating System	SHA512 checksum calculation command examples	
Linux	Open a terminal window and type the following command	
	\$ sha512sum <filename>. <extension></extension></filename>	
	Or	
	\$ shasum -a 512 <filename>. <extension></extension></filename>	

#### **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 21.12.0 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. In pre-21.12.0 releases, image signing is not supported for VPC-DI and VPC-SI images, and for StarOS and VPC companion software packages.

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 in this Release

The following table lists the known bugs that were found in, and/or that 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.

Table 3 - Open Bugs in this Release

Bug ID	Headline	Product Found*
CSCvz44140	[BP-CPUS] mostly all aaamgr goes in warn state while running call model	cups-cp
CSCwb26190	session manager crash at sess/smgr/sessmgr_snx.c	cups-cp
CSCvz46195	sessmgr restart seein in Function: sessmgr_pgw_handle_pcc_intf_evt_modify_rsp()	cups-cp
CSCwd51827	CUPS CP sessmgr crash in sessmgr_app_svr_event_control_dispatch - 21.23.26	cups-cp
CSCwd60402	CUPS-CP: Low Throughput - CRBN=Fallback. [project: auto-fallback to local policy]	cups-cp
CSCvv13409	[BP-CUPS]URR node not found at CP for URR-id: 0x82 received in Usage Report	cups-cp
CSCvz92617	[BP-CUPS]:Huge number of error logs observed acsmgr_populate_chrg_info_from_urr failure	cups-cp

Bug ID	Headline	Product Found*
CSCwc00980	[CUPS-CP] Task restart at acs_bb_req_cache_alloc()	cups-cp
CSCwd37844	[BP-CUPS]Multiple occurrence sessmgr_nlp_gtpu_sess_abort_hndler()sessmgr_nlp_mqueue_timer_handler	cups-cp
CSCwd76879	Sessmgr process restarted at function sessmgr_compress_call_info()	cups-cp
CSCwa83375	[BP-CUPS] Observed sessmgr restart : snx_sgw_driver_handle_modify_rsp on CP in Longevity setup	cups-cp
CSCwd73366	"CUPS: When VT timeout, PGW sent two CCR-U"	cups-cp
CSCvx73208	[BP-CUPS] SessMgr restart at acs_cups_fill_bucket_id_type() while recovering null variable	cups-cp
CSCwc34314	[CUPS UP] Firewall NAT port release behaviour change between legacy and CUPS	cups-cp
CSCwd44023	SGW incorrectly handling collision between MBR & DR during N26 handover	cups-cp
CSCvy80968	[BP-CUPS]:[N-1][N-2]Downgraded new standBy UP leads to all call loss once performed UP switchover	cups-up
CSCwc17339	show ssd npu-vpn in UP leaves cli session in unusable state	cups-up
CSCwb07879	LCI/OCI changes CUPS-UP	cups-up
CSCvz41620	Assertion failure at sess/sctrl/sessctrl_uplane_cfg_sync	cups-up
CSCwb52197	"[CUPS UP] VPP/hatsystem restart clib_memcpy_fast() during IP routes consolidation in BGP,"	cups-up
CSCwb78943	[CUPS] Fatal signal 11 - sess_get_next_pdr_info() - smgr_match_pdr	cups-up
CSCwc54584	[CUPS][npumgr-drv 185001 error vpp_tcp_conn_bind_cb_v6_v4: VPP-LI: Fail to add socket with dhost	cups-up
CSCwc55681	CUPS CP Usage Report Failure. Received URR: 0x80000xxx not requested	cups-up
CSCwc63061	sessmgr restart during egtp signalling procedure	cups-up
CSCwd72712	[CUPS UP] gtpumgr shows memory warn in standby UP	cups-up
CSCwd40057	"After all sessmgr restart, sx-peer-node info is lost on standby chassis"	cups-up
CSCwd16366	LI IPSec tunnel flaps intermittently due to SA Collision	epdg
CSCwc69907	ePDG sessmgr crash on Assertion failure at sess/egtp/egtpc/egtpc_evt_handler_func.c:7048	epdg
CSCvy33441	sessmgr restart is seen in Function: mme_x2_ho_process_path_sw_req_msg()	mme
CSCwb53675	[MME] release-due-to-pre-emption (39) S1AP radio network cause not implemented	mme
CSCvy67528	[MME Admin guide] Typo in SRVCC config	mme
CSCvz97127	Session manager restart due to an Resource temporarily unavailable onkernel_vsyscall()	mme
CSCwc43059	sessmgr restart at mme_hss_get_user_data	mme
CSCwc66208	Assertion failure at sess/egtp/egtpc/egtpc_validate_evt.c:1907	mme
CSCwa36635	MME crashes after upgrade to v21.23.6_21_mme_fsm_event_handler()	mme
CSCwa51122	sessmgr restart seen in Function: egtpc_handle_delete_bearer_rsp_evt()	mme
CSCwc83863	Assertion failure at sess/mme/mme-app/app/mme_app_util.c:18558	mme
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Bug ID	Headline	Product Found*
CSCwd15146	Additional logging to find reason for S6a notify req with wrong realm	mme
CSCvz90152	SessMgr restart during X2 Handover	mme
CSCwb58470	Clear subscriber not working with service still running	mme
CSCwc80299	"CBC , MME send Write Replace Warning Indication before Write Replace Warning Response"	mme
CSCwa31319	sessmgr restart mme_app_fill_delete_sess_req()	mme
CSCwc65963	sessmgr restart is seen when configuring and unconfiguring Lawful intercept CLIs multiple times	mme
CSCwa92153	Corruption in vpnmgr when large amount of data gets dumped	mme
CSCwc51275	Assertion failure at snutil/sn_memblock.c:310 on vMME	mme
CSCwc59471	sessmgr in warn/over state due to mme_app_allocate_s1nas_msg and SN_cmAlloc()	mme
CSCwa93249	MME sessmgr restart seen in Function: mme_app_egtpc_abort_low_priority_trans()	mme
CSCwd73793	Assertion failure at sess/mme/mme-app/app/mme_pdn_fsm.c:829	mme
CSCwa55894	sessmgr restart at egtpc_handle_abort_suspended_proc_cmd_evt	mme
CSCwa36871	ADC detection degraded for Youtube	pdn-gw
CSCwa39302	sessmgr crashes sessmgr_rf_fill_service() Assertion failure at sess/smgr/sessmgr_rf.c	pdn-gw
CSCwb81718	CCR-U/CCR-T for Non-WPS session going through WPS channel	pdn-gw
CSCvz36326	qci arp-priority-level not updated in config	pdn-gw
CSCwa52583	ICUPS : Session Manager restarts on PGW	pdn-gw
CSCwa59860	Sessmgr crashes after p2p plugin update v2.67.1490	pdn-gw
CSCwc26728	Final cdr with wrong timeOfFirst/LastUsage when "egcdr final-record include-content-ids all"	
CSCwd44164	sessmgr task unexpected restarted occurred on PGW acs_http_accel_check	pdn-gw
CSCvx61024	sessmgr restart observed at "sn_ext_process_packet"	
CSCvz02641	Card migration causing BGP failure	pdn-gw
CSCwa52782	82 Node reloaded after LAG group port reconfiguration	
CSCwc53423	Sessmgr task restart on sess/egtp/egtpc/egtpc_evt_handler_func	pdn-gw
CSCwb06949	sessmgr restart on sessmgr_clp_filter function	pdn-gw
CSCwa50873	Many session disconnect reasons are not documented	pdn-gw
CSCwb23785	Corrupted values of total/output octets displayed in CDR for Ga interface	pdn-gw
CSCwb42809	Nat call object list length going wrong when Insertion failed on NAT call obj list	pdn-gw
CSCwd32146	""Update Bearer Request" is send PGW->SGW without EPS Bearer QoS, which is not aligned with 3GPP"	pdn-gw
CSCwb34009	Fatal Signal 11 in acsmgr_destroy_recorded_adc_flows_list()	pdn-gw

Bug ID	Headline	Product Found*	
CSCwa69995	"Duplicated CLI logs with 'user unknown' when CLI is level debug, and grep is being used"	pdn-gw	
CSCvy05622	Missing documenation on RCM - host-id	rcm	
CSCwa49484	RCM workaround for unreliable alert-forwarder	rcm	
CSCvy86141	Add timeout for NSOSim HTTP POST notification [BEMS01305755]	rcm	
CSCwb12055	CLI to prevent multiple config push notifications towards NSO	rcm	
CSCvz70919	RCM OVF deployment for 21.25.x image is not succeeding		
CSCwa58920	sessmgr process restarted at egtpc_handle_user_sap_event	sae-gw	
CSCwa99907	sessmgr process restarted at acsmgr_dcca_send_ccr_terminate()	sae-gw	
CSCwa23914	sessmgr restart due Fatal Sig PC: [09fd165b/X] acsmgr_sess_sr_uchkpt_delete_all_accnt_mscc_bucket()	sae-gw	
CSCwb58656	sessmgr restart due to Assertion failure at sess/smgr/sessmgr_hlcom.c:467	sae-gw	
CSCwb58018	Description of IDFT-support in sgw-service configuration document missing	sae-gw	
CSCwd17939	"In sGWRecord, changeTime appearing as before time from recordOpeningTime and duration showing zero"	sae-gw	
CSCwd55745	Facility Mpls_sig is in over state continously	sae-gw	
CSCvy78942	With WPS3B configuration GW use secondary PAS during mid-session		
CSCwa54898	Sessmgr restart - Fatal Signal 6: PC: [09ed1233/X] acsmgr_adc_dispatch_event()		
CSCwb55423	[VPC-DI] Sessmgr process restart at sessmgr_pgw_fill_event_record_csr		
CSCvz16012	GMPC event not triggering with reporting action for 3g Detach		
CSCvy09744	[CP-SGSN] sessmgr restart seen with function egtpc_handle_del_bearer_cmd_req_evt		
CSCwc42261	SGW is rejecting the attach even it is emergency apn/subscriber.		
CSCwc95110	[RCM-VM]: Nessus scan vulnerabilities on RCM-VM build 21.23.27 (20220825-090648Z)		
CSCvw48686	k8s-ss-mismatch	smi	
CSCvz94977	Maximum number of NTP servers		
CSCwa37867	GRE Tunnel with KA not coming up after Card Migration		
CSCwb41992	MACs algorithm configuration does not operate as expected		
CSCwd07968	aaamgr going to warn/over state again and again		
CSCvy44932	DPC2 card may be marked offline following DDF2 FPGA reporting an error		
CSCwa40585	Vpnmgr restart @ vpnmgr_check_addr_conflict()		
CSCwb90690	Doc for "show subscribers summary apn 'apn-name' connected-time " to be added staros		
CSCwb21297	Sx TX HB Request count not increasing on CNDP DATA UPFs	upf	

Resolved Bugs in this Release

Bug ID	Headline	Product Found*	
* Information i	* 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 the 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.

Table 4 - Resolved Bugs in this Release

Bug ID	Headline	Product Found*
CSCwd67633	CSCwd67633 [BP-CUPS]libvnet.so.19.08.1/vlan_ip4_qos_mark_node_fn_avx2() with vpp restart cups-cp	
* Information in the "Product Found" column identifies the product in which the bug was initially identified.		

## **Operator Notes**

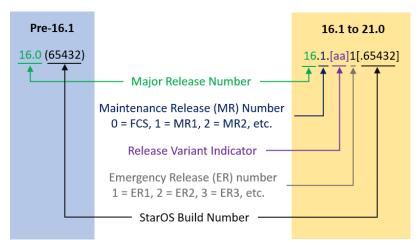
#### StarOS Version Numbering System

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.

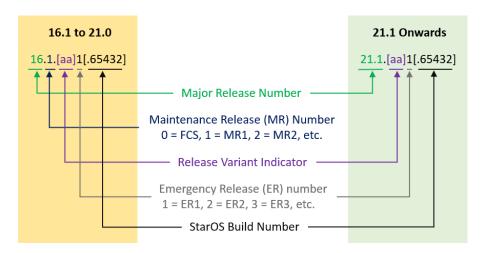
From release 16.1 onwards, the output of the **show version** command, as well as the terminology used to describe the Build Version Number fields, has changed. Additionally, **show version** will display slightly different information depending on whether or not a build is suitable for deployment.

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".



The Version Build Number for releases 21.1 and later include a major and emergency release number, for example, "21.1.1".

**Operator Notes** 



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**

<u>Table 5</u> provides descriptions for the packages that are available with this release.

**Table 5 - Release Package Information** 

In 21.12.0 and later	In pre-21.12.0 Releases	Description	
Releases			
ASR 5500			
asr5500- <release>.zip</release>	asr5500- <release>.bin</release>	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</release>	asr5500_T- <release>.bin</release>	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 Packag	ge		
companion- <release>.zip</release>	companion- <release>.tgz</release>	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.  In 21.12.0 and later releases, the StarOS companion package also includes 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.zip</release>	qvpc-di- <release>.bin</release>	Contains the VPC-DI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.	
		In 21.12.0 and later releases, this package also includes 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.	

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In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvpc-di_T- <release>.bin.zip</release>	qvpc-di_T- <release>.bin</release>	Contains the trusted VPC-DI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-di- <release>.iso.zip</release>	qvpc-di- <release>.iso</release>	Contains the VPC-DI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-di_T- <release>.iso.zip</release>	qvpc-di_T- <release>.iso</release>	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.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-di-template- vmware- <release>.zip</release>	qvpc-di-template- vmware- <release>.tgz</release>	Contains the VPC-DI binary software image that is used to on-board the software directly into VMware.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-di-template- vmware_T- <release>.zip</release>	qvpc-di-template- vmware_T- <release>.tgz</release>	Contains the trusted VPC-DI binary software image that is used to onboard the software directly into VMware.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-di-template-libvirt- kvm- <release>.zip</release>	qvpc-di-template-libvirt- kvm- <release>.tgz</release>	Contains the same VPC-DI ISO identified above and additional installation files for using it on KVM.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-di-template-libvirt- kvm_T- <release>.zip</release>	qvpc-di-template-libvirt- kvm_T- <release>.tgz</release>	Contains the same trusted VPC-DI ISO identified above and additional installation files for using it on KVM.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-di- <release>.qcow2.zip</release>	qvpc-di- <release>.qcow2.tgz</release>	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.
		In 21.12.0 and later releases, this package also includes 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.

#### Operator Notes

Releases         qvpc-di_T-         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         qvpc-si-<release>.bin         Contains the VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations. In 21.12.0 and later releases, this package also includes 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.           Qvpc-si_T-         qvpc-si_T-         Contains the VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations. In 21.12.0 and later releases, this package also includes 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.           qvpc-si_T-         crelease&gt;.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. In 21.12.0 and later releases, this package also includes 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.           qvpc-si_T-         qvpc-si_T-         Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image. In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the scr</release></release>	In 21.12.0 and later	In pre-21.12.0 Releases	Description
serelease>.qcow2.zip   serelease>.qcow2.tgz   be loaded directly with KVM using an XML definition file, or with OpenStack.   In 21.12.0 and later releases, this package also includes 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.		III pre 21.12.0 Releases	Description
a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.    VPC-SI	· · · —		be loaded directly with KVM using an XML definition file, or with
qvpc-si- <release>.bin.zip         qvpc-si-<release>.bin         Contains the VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.           ln 21.12.0 and later releases, this package also includes 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.           qvpc-si_T-         Contains the trusted VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.           ln 21.12.0 and later releases, this package also includes 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.           qvpc-si_         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-         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_T-         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_T-         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-         In 21.12.0 and later releases, this package also includes the signature file, a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the cert</release></release>			a verification script, the x509 certificate, and a README file containing
previously deployed image on the flash disk in existing installations.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si_T- <release>.bin.zip  qvpc-si_T-<release>.bin  1</release></release>	VPC-SI		
In 21.12.0 and later releases, this package also includes 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.   qvpc-si_T- <release>.bin  qvpc-si_T- <release>.bin.zip  Qvpc-si_T- <release>.bin</release></release></release>	qvpc-si- <release>.bin.zip</release>	qvpc-si- <release>.bin</release>	Contains the VPC-SI binary software image that is used to replace a
a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.  qvpc-si_T- <release>.bin <pre>crelease&gt;.bin.zip</pre>  Contains the trusted VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si_  qvpc-si_<pre>contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si_T- <release>.iso.zip  qvpc-si_T-<release>.iso  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.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template- vmware-<release>.zip  Qvpc-si-template- vmware-<release>.ova  Total alter releases, this package also includes 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.  Qvpc-si-template- vmware-<release>.zip  Total and later releases, this package also includes 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.  Qvpc-si-template-  Qvpc-si-template-  Qvpc-si-template-  Qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on</release></release></release></release></release></pre></release>			previously deployed image on the flash disk in existing installations.
information on how to use the script to validate the certificate.  qvpc-si_T- <release>.bin <pre>crelease&gt;.bin.zip</pre>  Contains the trusted VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-  Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si_T- <release>.iso  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.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template- vmware-<release>.zip  qvpc-si-template- vmware-<release>.ova  in 21.12.0 and later releases, this package also includes 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.  qvpc-si-template- vmware-<release>.ova  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template- qvpc-si-temp</release></release></release></release></release>			In 21.12.0 and later releases, this package also includes the signature file,
qvpc-si_T-         qvpc-si_T-         Contains the trusted VPC-SI binary software image that is used to replace a previously deployed image on the flash disk in existing installations.           ln 21.12.0 and later releases, this package also includes 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.           qvpc-si- <release>.iso.zip         Qvpc-si-         Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.           ln 21.12.0 and later releases, this package also includes 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.           qvpc-si_T-         qvpc-si_T-         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.           ln 21.12.0 and later releases, this package also includes 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.           qvpc-si-template-vmware-<release>.zip         Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.           ln 21.12.0 and later releases, this package also includes 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.           qvpc-si-template-vmware-<red>vpc-si-template-vmware-         Contains the trusted VPC-SI binary so</red></release></release>			· · · · · · · · · · · · · · · · · · ·
a previously deployed image on the flash disk in existing installations.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si- <release>.iso  Qvpc-si-<release>.iso  Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si_T- <release>.iso  Qvpc-si_T-<release>.iso  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.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si-template- vmware-<release>.ova  Qvpc-si-template- vmware-<release>.ova  To 21.12.0 and later releases, this package also includes 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.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si-template-  Qvpc-si-template-</release></release></release></release></release></release>			information on how to use the script to validate the certificate.
In 21.12.0 and later releases, this package also includes 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.  Qvpc-si- <release>.iso.zip  Qvpc-si-<release>.iso  Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si_T- <release>.iso  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.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si-template- vmware-<release>.ova  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si-template- qvpc-si-temp</release></release></release></release>	qvpc-si_T-	qvpc-si_T- <release>.bin</release>	Contains the trusted VPC-SI binary software image that is used to replace
a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.  Qvpc-si- <release>.iso.zip  Qvpc-si-<release>.iso  Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si_T- <release>.iso  Qvpc-si_T-<release>.iso  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.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si-template- vmware-<release>.zip  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si-template-  Qvpc-si-template-</release></release></release></release></release>	<release>.bin.zip</release>		a previously deployed image on the flash disk in existing installations.
information on how to use the script to validate the certificate.    Qvpc-si- <release>.iso   Qvpc-si-<release>.iso   Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.    In 21.12.0 and later releases, this package also includes 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.    Qvpc-si_T-  </release></release>			In 21.12.0 and later releases, this package also includes the signature file,
qvpc-si- <release>.iso.zip  qvpc-si-<release>.iso  Contains the VPC-SI ISO used for new deployments, a new virtual machine is manually created and configured to boot from a CD image.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si_T- <release>.iso.zip  Qvpc-si_T-<release>.iso In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template- vmware-<release>.zip  Qvpc-si-template- vmware-<release>.ova  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  Qvpc-si-template-  Qvpc-si-template-</release></release></release></release></release></release>			· · · · · · · · · · · · · · · · · · ·
machine is manually created and configured to boot from a CD image.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si_T- <release>.iso  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.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template- vmware-<release>.vip  qvpc-si-template- vmware-<release>.ova  Total and later releases, this package also includes 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.  qvpc-si-template- qvpc-si-template</release></release></release>			information on how to use the script to validate the certificate.
In 21.12.0 and later releases, this package also includes 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.     QVpc-si_T-	qvpc-si- <release>.iso.zip</release>	qvpc-si- <release>.iso</release>	
a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.  qvpc-si_T- <release>.iso  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.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template- vmware-<release>.zip  Qvpc-si-template- vmware-<release>.ova  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  Qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-</release></release></release>			machine is manually created and configured to boot from a CD image.
qvpc-si_T- <release>.iso Zip  qvpc-si_T- <release>.iso Zip  Gontains the trusted VPC-SI ISO used for new deployments a new virtual machine is manually created and configured to boot from a CD image.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template- vmware-<release>.zip  qvpc-si-template- vmware-<release>.ova  in 21.12.0 and later releases, this package also includes the signature file, a verification script, into VMware.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-</release></release></release></release>			In 21.12.0 and later releases, this package also includes the signature file,
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release>.iso.zip  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-vmware- <release>.zip  qvpc-si-template-vmware-<release>.ova  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-</release></release>			information on how to use the script to validate the certificate.
In 21.12.0 and later releases, this package also includes 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.   qvpc-si-template- vmware- <release>.zip  qvpc-si-template- vmware-<release>.ova  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-</release></release>	qvpc-si_T-	qvpc-si_T- <release>.iso</release>	
a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.  qvpc-si-template- vmware- <release>.zip  qvpc-si-template- vmware-<release>.ova  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-</release></release>	<release>.iso.zip</release>		machine is manually created and configured to boot from a CD image.
qvpc-si-template- vmware- <release>.zip  qvpc-si-template- vmware-<release>.zip  qvpc-si-template- vmware-<release>.ova  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-</release></release></release>			In 21.12.0 and later releases, this package also includes the signature file,
qvpc-si-template- vmware- <release>.zip  qvpc-si-template- vmware-<release>.ova  Contains the VPC-SI binary software image that is used to on-board the software directly into VMware.  In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  qvpc-si-template-  Contains the VPC-SI binary software image that is used to on-</release></release>			
vmware- <release>.zip  vmware-<release>.ova  ln 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-</release></release>			information on how to use the script to validate the certificate.
In 21.12.0 and later releases, this package also includes 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.  qvpc-si-template-  Qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-	qvpc-si-template-	qvpc-si-template-	Contains the VPC-SI binary software image that is used to on-board the
a verification script, the x509 certificate, and a README file containing information on how to use the script to validate the certificate.  qvpc-si-template-  qvpc-si-template-  Contains the trusted VPC-SI binary software image that is used to on-	vmware- <release>.zip</release>	vmware- <release>.ova</release>	software directly into VMware.
qvpc-si-template- qvpc-si-template- Contains the trusted VPC-SI binary software image that is used to on-			In 21.12.0 and later releases, this package also includes the signature file,
qvpc-si-template- qvpc-si-template- Contains the trusted VPC-SI binary software image that is used to on-			
			information on how to use the script to validate the certificate.
vmware T- <release>.zip   vmware T-   board the software directly into VMware.</release>			
	vmware_T- <release>.zip</release>	vmware_T-	board the software directly into VMware.
<pre><release>.ova In 21.12.0 and later releases, this package also includes the signature file,</release></pre>		N elease≥.0Va	In 21.12.0 and later releases, this package also includes 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.			information on how to use the script to validate the certificate.

Obtaining Documentation and Submitting a Service Request

In 21.12.0 and later Releases	In pre-21.12.0 Releases	Description
qvpc-si-template-libvirt- kvm- <release>.zip</release>	qvpc-si-template-libvirt- kvm- <release>.tgz</release>	Contains the same VPC-SI ISO identified above and additional installation files for using it on KVM.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-si-template-libvirt- kvm_T- <release>.zip</release>	qvpc-si-template-libvirt- kvm_T- <release>.tgz</release>	Contains the same trusted VPC-SI ISO identified above and additional installation files for using it on KVM.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-si- <release>.qcow2.zip</release>	qvpc-si- <release>.qcow2.gz</release>	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.
		In 21.12.0 and later releases, this package also includes 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.
qvpc-si_T- <release>.qcow2.zip</release>	qvpc-si_T- <release>.qcow2.gz</release>	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.
		In 21.12.0 and later releases, this package also includes 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 Companion Package		
companion-vpc- <release>.zip</release>	companion-vpc- <release>.tgz</release>	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.
		In 21.12.0 and later releases, the VPC companion package also includes 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.

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