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Release Notes for Cisco ASR 920 Series Aggregation Services Router, Cisco IOS XE Bengaluru 17.6.x

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Introduction

This release notes contain information about the Cisco ASR 920 Series Aggregation Services Routers, provides new and changed information for these routers, hardware support, limitations and restrictions, and caveats.

This release notes provides information for these variants of the Cisco ASR 920 Series Routers:

- ASR-920-12CZ-A
- ASR-920-12CZ-D
- ASR-920-4SZ-A
- ASR-920-4SZ-D
- ASR-920-10SZ-PD
- ASR-920-24SZ-IM
- ASR-920-24SZ-M
- ASR-920-24TZ-M
- ASR-920-12SZ-IM
- ASR-920-12SZ-A
- ASR-920-12SZ-D
- ASR 920-8S4Z-PD

Starting with Cisco IOS XE Bengaluru Release 17.4.1, Cisco ASR-920-24SZ-IM, Cisco ASR-920-24SZ-M, Cisco ASR-920-24TZ-M, Cisco ASR 920-10SZ-PD, Cisco ASR-920-12CZ-A/D, and Cisco ASR-920-4SZ-A/D routers are auto upgraded to ROMMON version 15_6_44r_s.

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Cisco ASR 920 Series Routers Overview

The Cisco ASR 920 Series Aggregation Services Routers provide a comprehensive and scalable set of Layer 2 and Layer 3 VPN services in a compact package. They are temperature-hardened, small form factor, with high throughput and low power consumption ideal for mobile backhaul, business services and residential voice, video, and data ("triple-play") applications.

Feature Navigator

Use the Cisco Feature Navigator to find information about feature, platform, and software image support. To access the Cisco Feature Navigator, go to http://www.cisco.com/go/cfn. An account on cisco.com is not required.

Feature Matrix

The feature matrix lists the features supported for each platform. For more information, see the Cisco ASR 920 Series Aggregation Services Routers Feature Compatibility Matrix.

Software Licensing Overview

Starting with Cisco IOS XE Cupertino 17.7.1, PAK licenses are no longer available. When you purchase the Cisco IOS XE Cupertino 17.7.1 release or later, Smart Licensing is enabled by default. We recommend that you move to Smart Licensing before upgrading to Cisco IOS XE Cupertino 17.7.1 or a higher release, for a seamless experience.

If you are using Cisco IOS XE Bengaluru 17.6.1 or an earlier release version, Smart Licensing is not enabled by default. To enable Smart Licensing, see Software Activation Configuration Guide (Cisco IOS XE ASR 920 Routers).

The router offers the following base licenses:

- Metro Services
- Metro IP Services
- Advanced Metro IP access
 - SDM Video Template

Table 1: Cisco ASR 920 Software L	icenses Feature Set
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Metro Services	Metro IP Services	Metro Aggregation Services
_	Includes all features in Metro Services	Includes all features in Metro IP Services

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Metro Services	Metro IP Services	Metro Aggregation Services
QoS, with deep buffers and hierarchical QoS (HQOS)	IP routing (RIP, OSPF, EIGRP, BGP, IS-IS)	MPLS (LDP and VPN)
Layer 2: 802.1d, 802.1q	PIM (SM, DM, SSM), SSM mapping	MPLS TE and FRR
Ethernet Virtual Circuit (EVC)	BFD	MPLS OAM
Ethernet OAM (802.1ag, 802.3ah)	Multi-VRF CE (VRF lite) with service awareness (ARP, ping, SNMP, syslog, trace-route, FTP, TFTP)	MPLS-TP
Multiple Spanning Tree (MST) and Resilient Ethernet Protocol (REP)	IEEE 1588-2008 Ordinary Slave Clock and Transparent Clock	Pseudowire emulation (EoMPLS, CESoPSN, and SAToP)
Synchronous Ethernet	—	VPLS and HVPLS
IPv4 and IPv6 host connectivity	_	Pseudowire redundancy
_	-	MR-APS and mLACP

The router offers the following additional feature licenses:

- ATM
- IEEE 1588-2008 Boundary Clock/Master Clock
- OC-x Port License

Determining the Software Version

Use the following commands to verify your software version:

Consolidated Package—show version

Table 2: ROMMON Version

PIDs	ROMMON
ASR-920-12SZ-A , ASR-920-12SZ-D	15.6(46r)S
ASR-920-12SZ-IM	15.6(46r)S
ASR-920-12CZ-A, ASR-920-12CZ-D,	15.6(48r)S
ASR-920-4SZ-A, ASR-920-4SZ-D,	
ASR-920-10SZ-PD,ASR-920-24SZ-IM,	
ASR-920-24SZ-M, ASR-920-24TZ-M, and ASR920-8S4Z-PD	

Upgrading to a New Software Release

Only the latest consolidated packages can be downloaded from Cisco.com; users who want to run the router using individual subpackages must first download the image from Cisco.com and extract the individual subpackages from the consolidated package.

For information about upgrading to a new software release, see the Upgrading the Software on the Cisco ASR 920 Series Routers.

Upgrading the FPD Firmware

FPD Firmware packages are bundled with the software package. FPD upgrade is automatically performed ont the router.

If you like to manually change the FPD Firmware software, use the **upgrade hw-module subslot 0/0 fpd bundle** to perform FPD frmware upgrade.

Supported HoFPGA and ROMMON Versions

The tables below list the HoFPGA and ROMMON version of the software releases.

Table 3: HoFPGA and ROMMON Versions for the Cisco ASR-920-12CZ-A, ASR-920-12CZ-D, ASR-920-4SZ-A, ASR-920-4SZ-D, ASR-920-10SZ-PD, and ASR 920-8S4Z-PD

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.1	0X00040043	15.6(32r)S
Csico IOS XE Gibraltar 16.12.2a	0x00040043 (BFD/default template) 0x00020009 (Netflow template)	15.6(32r)S
	0x00020003 (Nethow template)	
Cisco IOS XE Amsterdam 17.1.x	0X00040043 (BFD/default template)	15.6(32r)S
	0x00020009 (Netflow template)	
Cisco IOS XE Amsterdam 17.3.1	0X00020009	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X00020009	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X00040044 (BFD/default template)	15.6(44r)S
Cisco IOS XE Bengaluru 17.5.1	0X00040044 (BFD/default template)	15.6(44r)S
Cisco IOS XE Bengaluru 17.6.1	0X00040044	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.2	0X00040044	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.3	0X00040044	15.6(48r)S

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Bengaluru 17.6.4	0X00040044	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.5	0X00040044	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.6	0X00040044	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.6a	0X00040044	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.7	0X00040044	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.8	0X00040044	15.6(48r)S

Table 4: HoFPGA and ROMMON Versions for the Cisco ASR-920-24SZ-IM, ASR-920-24SZ-M, and ASR-920-24TZ-M

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.1	0X00030014	15.6(32r)S
Csico IOS XE Gibraltar 16.12.2a	0x00030014 (BFD/default template)	15.6(32r)S
	0x00030014 (Netflow template)	
Cisco IOS XE Amsterdam 17.1.x	0x00030014 (BFD/default template)	15.6(32r)S
	0x00030014 (Netflow template)	
Cisco IOS XE Amsterdam 17.3.1	0X00030014	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X00030014	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X00030016	15.6(44r)S
Cisco IOS XE Bengaluru 17.5.1	0X00040019	15.6(44r)S
Cisco IOS XE Bengaluru 17.6.1	0X0004001b	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.2	0X0004001b	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.3	0X0004001b	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.4	0X0004001b	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.5	0X0004001b	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.6	0X0004001b	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.6a	0X0004001b	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.7	0X0004001b	15.6(48r)S
Cisco IOS XE Bengaluru 17.6.8	0X0004001b	15.6(48r)S

Release	HoFPGA Version	ROMMON Version
Cisco IOSXE Gibraltar 16.12.1	0X0003001B	15.6(24r)S
Csico IOS XE Gibraltar 16.12.2a	0x0003001B (BFD/default template)	15.6(24r)S
	0x00020008 (Netflow template)	
Cisco IOS XE Amsterdam 17.1.x	0x0003001B (BFD/default template)	15.6(24r)S
	0x00020008 (Netflow template)	
Cisco IOS XE Amsterdam 17.3.1	0X0003001b	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X0003001b	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X0003001e	15.6(43r)S
Cisco IOS XE Bengaluru 17.5.1	0X0003001e	15.6(43r)S
Cisco IOS XE Bengaluru 17.6.1	0X0003001e	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.2	0X0003001e	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.3	0X0003001e	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.4	0X0003001e	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.5	0X0003001e	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.6	0X0003001e	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.6a	0X0003001e	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.7	0X0003001e	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.8	0X0003001e	15.6(46r)S

Table 5: HoFPGA and ROMMON Versions for the Cisco ASR-920-12SZ-IM

Table 6: HoFPGA and ROMMON Versions for the Cisco ASR-920-12SZ-A and ASR-920-12SZ-D

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.1	0X00010039	15.6(29r)S
Csico IOS XE Gibraltar 16.12.2a	0x00010039 (BFD/default template) 0x10000007 (Netflow template)	15.6(29r)S
Cisco IOS XE Amsterdam 17.1.x	0x00010039 (BFD/default template) 0x10000007 (Netflow template)	15.6(29r)S

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Amsterdam 17.3.1	0X1000008	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X1000008	15.6(43r)S
Cisco IOS XE Bengaluru 17.4.1	0X00010040 (BFD/default template)	15.6(43r)S
Cisco IOS XE Bengaluru 17.5.1	0X1000008	15.6(43r)S
Cisco IOS XE Bengaluru 17.6.1	0X1000008	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.2	0X00020043	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.3	0X00020043	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.4	0X00020043	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.5	0X00020043	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.6	0X00020043	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.6a	0X00020043	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.7	0X00020043	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.8	0X00020043	15.6(46r)S

Table 7: IM FPGA Versions for the Cisco ASR-920-24SZ-IM

Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase2) FPGA	8 T1/E1	16 T1/E1	32 T1/E1
Cisco IOS XE Amsterdam 17.1.x	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Amsterdam 17.3.1	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Amsterdam 17.3.2	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.4.1	0.75	N/A	N/A	0.54	0.46

Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase2) FPGA	8 T1/E1	16 T1/E1	32 T1/E1
Cisco IOS XE Bengaluru 17.5.1	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.6.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.2	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.3	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.4	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.5	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.6	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.6a	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.7	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.8	0.75	69.24	0.54	0.54	0.46

Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase2) FPGA	8 T1/E1	16 T1/E1	32 T1/E1
Cisco IOS XE Amsterdam 17.1.x	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Amsterdam 17.3.1	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Amsterdam 17.3.2	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.4.1	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.5.1	0.75	N/A	N/A	0.54	0.46
Cisco IOS XE Bengaluru 17.6.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.2	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.3	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.4	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.5	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.6	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.6a	0.75	69.24	0.54	0.54	0.46

Table 8: IM FPGA Versions for the Cisco ASR-920-12SZ-IM

Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase2) FPGA		16 T1/E1	32 T1/E1
Cisco IOS XE Bengaluru 17.6.7	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Bengaluru 17.6.8	0.75	69.24	0.54	0.54	0.46

Restrictions and Limitations

The error message "PLATFORM-1-NOSPACE: SD bootflash : no space alarm assert" may occur in the following scenarios:

- Any sector of SD Card gets corrupted
- Improper shut down of router
- power outage.

This issue is observed on platforms which use EXT2 file systems.

We recommend performing a reload of the router. As a result, above alarm will not be seen during the next reload due to FSCK(file systems check) execution.

However, If the error persists after a router reload, we recommend to format the bootflash or FSCK manually from IOS.

- Embedded Packet Capture (EPC) is not supported on ASR 920 routers.
- The **default** *command-name* command is used to default the parameters under that interface. However, when speed is configured on the interface, the following error is displayed:

Speed is configured. Remove speed configuration before enabling auto-negotiation

- For VCoP, only SFP-T3F-SATOP-I is supported.
- Adding or deleting the Trunk Ethernet flow points (TEFPs) with scaled bridge-domain, without delay causes the Cisco ASR 920 Series router to crash.
- Virtual services should be deactivated and uninstalled before performing replace operations.
- The Cisco ASR920 Series Routers no longer support the controller and nid-controller commands for the Cisco ME1200 switch.
- The following interface modules (IMs) do not require the activation command for IM boot up, provided no other IM is activated in subslot 0/1 before.

Note

However, if an IM was activated in the system earlier, deactivate the previously-activated IM before inserting a new IM in system.

- 16-Port T1/E1 Interface Module
- 32-Port T1/E1 Interface Module
- 8-Port T1/E1 Interface Module
- 4-port OC3/STM-1 (OC-3) or 1-port OC12/STM-4 (OC-12) Interface Module
- 14-Port Serial Interface Module
- 6-Port E and M Interface Module
- 4-Port C37.94 Interface Module
- RS422 works on ports from 0 to 7 only.
- The frame drops may occur for packets with packet size of less than 100 bytes, when there is a line rate of traffic over all 1G or 10G interfaces available in the system. This restriction is applicable only on RSP2 module and ASR 920 platform, and is not applicable for RSP3 module.
- MPLS VC label packet with time-to-live (TTL) value of 2 is dropped at egress MPLS PE device due to ASIC limitations. During PHP process, MPLS TTL value for the VC label is decremented by one with implicit-null. The VC label-related TTL value is set to 255 while imposing the VC label due to multiple VC switching scenarios.

Use the **no mpls ip propagate-ttl** command as the Short Pipe mode for the required label.

- Interface naming is from right to left. For more information, see the Cisco ASR 920 SoftwareConfiguration Guide.
- Packet size greater than 1460 is not supported over IPsec Tunnel.
- Minimal traffic drop might be seen for a moment when higher rate traffic is sent through the IPsectunnels for the first time.
- One Ternary Content-Addressable Memory (TCAM) entry is utilized for Segment Routing Performance Measurement. This is required for the hardware timestamping to function.
- While performing an auto upgrade of ROMMON, only primary partition is upgraded. Use the **upgrade rom-mon filename** command to upgrade the secondary partition of the ROMMON. However, the router can be reloaded during the next planned reload to complete the secondary ROMMON upgrade.
- Some router models are not fully compliant with all IETF guidelines as exemplified by running the pyang
 tool with the lintflag. The errors and warnings exhibited by running the pyang tool with the lint flag are
 currently non-critical as they do not impact the semantic of the models or prevent the models from being
 used as part of the toolchains. A script is provided, check-models.sh, which runs pyang with lint validation
 enabled, but ignoring certain errors. This allows the developer to determine what issues may be present.
- If IPv6 Global IP is configured as the BFD peer, and if the interface goes down, a VRRP flap may occur. This may occur because, VRRP works on the basis of Link-local IP and not global IP. As a result, VRRP flaps on the previously backed up device and prints a DAD message.

Documentation Updates

IPv4 Unicast Generic Routing Encapsulation Tunnel Overview is now available in the IP Routing: GRE Configuration Guide, Cisco IOS XE 17 (Cisco ASR 920 Series). The chapter is moved from the MPLS: Layer 3 VPNs Configuration Guide.

Additional References

Product Information

Cisco ASR 920 Series Aggregation Services Router Data Sheets

Hardware Installation Guides

Cisco ASR 920 Series Aggregation Services Router Hardware Guides

Software Configuration Guides

Cisco ASR 920 Series Aggregation Services Router Configuration Guides

Regulatory Compliance and Safety Information

 Regulatory Compliance and Safety Information for the Cisco ASR 920 Series Aggregation Services Routers

Field Notices and Bulletins

- Field Notices—We recommend that you view the field notices for this release to determine whether your software or hardware platforms are affected. You can find field notices at http://www.cisco.com/en/US/support/tsd_products_field_notice_summary.html.
- Bulletins—You can find bulletins at http://www.cisco.com/en/US/products/sw/iosswrel/ps5012/prod_literature.html.

MIB Support

To view supported MIB, go to http://tools.cisco.com/ITDIT/MIBS/MainServlet.

Accessibility Features in the Cisco ASR 920 Series Routers

For a list of accessibility features in Cisco ASR 920 Series Routers, see the Voluntary Product Accessibility Template (VPAT) on the Cisco website, or contact accessibility@cisco.com.

All product documents are accessible except for images, graphics, and some charts. If you would like to receive the product documentation in audio format, braille, or large print, contact accessibility@cisco.com.

End-of-Life and End-of-Sale Notices

For End-of-Life and End-of-Sale Notices for the Cisco ASR 920 Series Routers, see http://www.cisco.com/ c/en/us/products/routers/asr-920-series-aggregation-services-router/eos-eol-notice-listing.html.



What's New in Cisco IOS XE Bengaluru 17.6.x

This chapter describes the new hardware and software features supported on the Cisco ASR 920 Series routers in Cisco IOS XE Bengaluru 17.6.x.

For information on features supported for each release, see Feature Compatibility Matrix.

- What's New in Hardware for Cisco IOS XE Bengaluru 17.6.8, on page 13
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What's New in Hardware for Cisco IOS XE Bengaluru 17.6.8

There are no hardware features for this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.8

There are no new software features in this release.

What's New in Hardware for Cisco IOS XE Bengaluru 17.6.7

There are no hardware features for this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.7

There are no new software features in this release.

What's New in Hardware for Cisco IOS XE Bengaluru 17.6.6a

There are no hardware features for this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.6a

There are no new features in this release. This release provides a fix for CSCwh87343: Cisco IOS XE Software Web UI Privilege Escalation Vulnerability. For more information, see cisco-sa-iosxe-webui-privesc-j22SaA4z.

What's New in Hardware for Cisco IOS XE Bengaluru 17.6.6

There are no new hardware features in this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.6

There are no new software features in this release.

What's New in Hardware for Cisco IOS XE Bengaluru 17.6.5

There are no new hardware features in this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.5

There are no new software features in this release.

What's New in Hardware for Cisco IOS XE Bengaluru 17.6.4

There are no new hardware features in this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.4

There are no new software features in this release.

What's New in Hardware for Cisco IOS XE Bengaluru 17.6.3

There are no new hardware features in this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.3

There are no new software features in this release.

What's New in Hardware for Cisco IOS XE Bengaluru 17.6.2

There are no new hardware features in this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.2

There are no new software features in this release.

What's New in Hardware for Cisco IOS XE Bengaluru 17.6.1

There are no new hardware features in this release.

What's New in Software for Cisco IOS XE Bengaluru 17.6.1

Feature	Description
First Hop Redunda	ncy Protocols
Support for BFD, sub-second fast hello for VRRPv3 convergence and re-convergence	This feature supports VRRP failover such that the fault is detected by the VRRP-BFD client within the configured value – when the connection to the remote interface IP address fails.
IP Routing	
Establish GRE Tunnel over VRF Routes	This feature establishes GRE tunnels over Virtual Route Forward (VRF) routes.

Feature	Description
MPLS Layer 2 VPN	ls
Remote LFA for MLDP	Remote Loop-Free Alternate (RLFA) based Fast Reroute (FRR) improves LFA coverage. When used with Multicast Label Distribution Protocol (MLDP) for IPv4, there is no need for an extra protocol in the control plane.
Network Manageme	ent
Ingress and Egress Flexible NetFlow	Flexible NetFlow allows you to monitor the traffic from access circuit on an L2VPN and L3VPN network. In addition to monitoring traffic in routed and ethernet service interfaces, you can now monitor traffic in VRF enabled L2 VFI (virtual forwarding interfaces) and cross-connect services.
Programmability	
YANG Model Support for show mpls tr tunnel Command	This feature enables you to verify the show mpls traffic engineering tunnel command to check the status from YANG models.
YANG Model Support for RSVP Commands	You can use the interface BDI 10 and ip rsvp bandwidth percent 4 commands to configure the RSVP bandwidth on a BDI interface from YANG. You can configure, modify, and verify different bandwidth values using these commands.
YANG Model Support for IPSLA Operating Model for Y1731	You can check the history interval statistics of delay operations like DMM, DMMv1 and 1DM, and loss operations like LMM and SLM using the NETCONF-YANG command to enable YANG data collection.
YANG Model Support for QoS Overhead Accounting	QoS Overhead Accounting feature enables a particular port to consider a particular number of bits that are removed from the packet when the egress packet is re-edited. The traffic scheduler allows more bits than the configured rate at the port, without exceeding the number of bytes that is configured on a port.
	YANG QOS Overhead accounting configuration model supports the configuration on the router accounting on router from YANG/NETCONF protocol.
YANG Model Support for Alarm Profile Configurations	This feature enables you to configure the alarm profile on the interface through native YANG models that run on Cisco IOS XE.
YANG Model Support for Shared Risk Link Groups (SRLG) Group Identification (GID) Configurations	Shared Risk Link Groups (SRLG) Group Identification (GID) configurations can be enabled on YANG using the srlg gid command. Multiple groups and interfaces can be enabled on the interface mode.
Segment Routing	1

Feature	Description
EVPN-IRB DHCP v4 and v6 Relay over Segment Routing	This feature introduces a specialised implementation of DHCP packets to support DHCPv4 and DHCPv6 in an EVPN Fabric with Distributed Anycast Gateways (DAGs) on the same Virtual Routing and Forwarding (VRF). It also avoids DHCP discovery packet floods across the fabric.
	The flooding suppression feature is also enhanced to intercept multicast or broadcast DHCP packets when DHCP relay is configured on the DAG to perform the required action and localize the scope of the service.
IS-IS Flexible Algorithm Include Affinity Support	This feature supports "include-any" and "include-all" affinities in IS-IS. Prior to Cisco IOS XE Bengaluru 17.6.1 release, only Flexible Algorithm affinity "exclude-any" was supported.
OSPF Flexible Algorithm (Ph2): Topology-Independent Loop-Free Alternate (TI-LFA) path	This feature allows you to configure the Loop-Free Alternate (LFA) and TI-LFA backup or repair paths for a Flexible Algorithm. The backup path is computed based on the constraints and metrics of the primary path. Prior to Cisco IOS XE Bengaluru 17.6.1, OSPF Flexible Algorithm supported only the primary path.
SR-PCE: Enabling SR PM Delay or Liveness for PCE-Initiated Policies	This feature enables the Path Computation Element (PCE) that can provision a Segment Routing Traffic Engineering (SR-TE) policy to mitigate link congestion. Prior to this release, you could only enable PM link and delay measurement using CLI-based policies. Starting with this release, you can also use PCE to enable PM link and delay measurement.
Stitching of Subnet Route from EVPN to L3VPN	This feature introduces the collpased spine and border leaf node in the network topology of single homing DAGs with symmetric IRB, inter-subnet layer 3 traffic within fabric and inter-subnet layer 3 stitching through layer 3 border gateway. The hosts participating in fabric IRB are directly attached with the collapsed spine and border leaf node.
System Managemen	ıt
Cisco Secure Development Lifecycle—Factory Reset	This feature removes all the customer-specific data that stored on the device since the time of its shipping. Data erased includes configurations, log files, boot variables, core files, and credentials like FIPS-related keys. Cisco Secure Development Lifecycle (CSDL) is a repeatable and measurable proces designed to increase Cisco product resiliency and trustworthiness.
	The following new commands are introduced:
	• factory-reset all
	 factory-reset keep-licensing-info
	• factory-reset all secure 3-pass DoD 5220.22-M
	For information on the commands, Cisco IOS Configuration Fundamentals Command Reference.
Time Division Multi	iplexing

Description
 You can configure the following features for E1 in framed and unframed modes: Loopback, framing, line code encoding, cable length, and jitter buffer BERT Performance monitoring counters and alarms Alarm profiling Clock recovery modes These features that are configured on framed and unframed E1 interfaces help you to
monitor the traffic and troubleshoot errors or failures efficiently.
 You can configure the following features for T1 in framed and unframed modes: Loopback, framing, line code encoding, cable length, and jitter buffer BERT Performance monitoring counters and alarms Alarm profiling Clock recovery modes These features that are configured on framed and unframed T1 interfaces help you to monitor the traffic and troubleshoot errors or failures efficiently.
TSoP SSFP Dejitter Buffer Tuning is applicable only for T1 smart SFP.
ware on the Cisco ASR 920 Series Routers
This feature allows you to manually upgrade the firmware of the power supply monitoring device in a router. The firmware upgrade reduces unplanned hardware-related downtime caused by input voltage transients during a power outage

YANG Data Models—For the list of Cisco IOS XE YANG models available with this release, navigate to https://github.com/YangModels/yang/tree/master/vendor/cisco/xe/1761.

Revision statements embedded in the YANG files indicate if there has been a model revision. The README.md file in the same GitHub location highlights changes that have been made in the release.

For more information, see Programmability Configuration Guide, Cisco IOS XE Bengaluru 17.6.x.



Caveats

This chapter describes open and resolved severity 1 and 2 caveats and select severity 3 caveats:

- The "Open Caveats" sections list open caveats that apply to the current release and may apply to previous releases. A caveat that is open for a prior release and is still unresolved applies to all future releases until it is resolved.
- The "Resolved Caveats" sections list caveats resolved in a specific release, but open in previous releases.

The bug IDs are sorted alphanumerically.



Note The Caveats section includes the bug ID and a short description of the bug. For details on the symptoms, conditions, and workaround for a specific caveat you must use the Bug Search Tool.

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Open Caveats - Cisco IOS XE Bengaluru 17.6.8

There are no open caveats in this release.

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.8

ldentifier	Headline
CSCwj82056	Smart Licensing is not getting auto-registered while upgrading the node.

Open Caveats - Cisco IOS XE Bengaluru 17.6.7

There are no open caveats in this release.

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.7

Identifier	Headline	
CSCwi75499	Lost CEM circuit configuration after reboot	
CSCwj06370	Serial cease traffic when configuring module other port	

Open Caveats - Cisco IOS XE Bengaluru 17.6.6a

There are no open caveats in this release.

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.6a

Identifier	Headline
CSCwh87343	Cisco IOS XE Software Web UI Privilege Escalation Vulnerability

Open Caveats – Cisco IOS XE Bengaluru 17.6.6

Identifier	Headline
CSCwh12668	Standard loopback is not working when applied on both the ends on a back to back link.
CSCwa40025	IMA3G card high temperature due to dynamic fan algorithm.

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.6

Identifier	Headline
CSCwd78618	IMASER14A/S does not boot on ASR920.
CSCwe38959	The RS232 ASYNC pseudowire service with full scale seeing packet and byte drops intermittently.
CSCwf40953	DS3_ADMIN_DOWN gets cleared after IM OIR.
CSCwf86864	CEM traffic flow is dropped in one direction due to DEI bit set from router.
CSCwf49426	PAIS alarm get reported after IM OIR.
CSCwe54549	ASR-920 - SFP not detected due to checksum error.
CSCwe27336	Error logs during reload in ASR920-24SZ-M variant.
CSCwh02460	With x.21 configured observing underruns in cem counters.
CSCvy81362	ASR920: Controllers are down due to LP-LOP alarm After CE reboots.
CSCwf07736	CEM interface counters momentarily report error when x21 xconnect is cleared and re-established.
CSCwd46121	Time stamp issue on Transparent clock for 1G PORTS.
CSCwd67723	In IMA32D/IMA8D card, sometimes change in E1 controller config(after ctrlr flap)results in IM reboot.
CSCwf71463	With traffic ON, when speed lowered on ASYNC port, SYNC port CEM traffic gets impacted.
CSCwe98227	The show version does not display details of T1/E1 interfaces for 8D and 32D IMs.

Open Caveats – Cisco IOS XE Bengaluru 17.6.5

Identifier	Headline
CSCwd90840	Multicast data traffic is getting dropped over vpls
CSCwc77502	Unexpected reload due to MLDPv6
CSCwd67723	In IMA32D/IMA8D cards, any changes in the E1 interface configs (after interface flapping) results in IM crash and reboot
CSCwd16666	The Bit Error Rate Testing (BERT) pattern does not sync while configuring network loop in 3GMS OC-3 ports

Open Caveats – Cisco IOS XE Bengaluru 17.6.5 - Platform Independent

Identifier	Headline
CSCwc55520	Traceback and IDB leak noticed when a RSP3 setup performs a switchover
CSCvy94083	NCS4216:Running configuration syn to the NETCONF running data store takingmor time .
CSCvy87800	Remote LInk Failure notification is disabled when configuring through YANG
CSCwb43369	ASR920::Traceback seen when default made on all core intfs.

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.5

Identifier	Headline
CSCwc41135	Continuous assertion and clear of LAIS on protect channel causing IPC failure
CSCwc80493	APS - K2 byte not reflecting proper value during LRDI and LAIS conditions.
CSCwd04198	A900-IMASER14A/S: when configurations are pasted in a specific order, line config is missing
CSCwc41115	APS 1+1 Uni - Tx K2 to reflect Rx K1 channel number
CSCwc84627	ASR-920-12SZ-IM - EOMER IM goes continous reboot for a PCIE bus error
CSCwd48164	EVPN statd resource leak after protocol flaps
CSCwc93296	ASR-920-10SZ-PD /16.9.4/port Te0/0/10 went admin down after in successive reload

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Identifier	Headline
CSCvy09725	Software solution to detect the BAD PSU
CSCwc79322	Memory leak on ptpd_uea process
CSCwd26357	rs485 with half-duplex configuration when reloaded, it gets into default full-duplex mode

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.5 - Platform Independent

Identifier	Headline
CSCwd66936	UDP pseudowire stuck in Activating
CSCwc21402	Invalid BGP update when add-paths negotiated only for label (SAFI 4) and not unicast (SAFI1)
CSCwb91762	RSP3: MSPW VC down points to Error Local access circuit is not ready for label advertise
CSCwb77093	A BGP speaker may advertise a next-hop set to self when advertising an eBGP route to an iBGP peer.

Open Caveats – Cisco IOS XE Bengaluru 17.6.4

Identifier	Headline
CSCwc60168	Traffic drop in primary/active path when changes are made on backup path

Open Caveats – Cisco IOS XE Bengaluru 17.6.4 - Platform Independent

Identifier	Headline
CSCwa30653	MVPN Profile 14 : Data MDT traffic not flowing with 2 paths when OSPF cost configured on 1 path

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.4

Identifier	Headline
CSCwb32119	IOT IMs fpd does not auto upgrade on RSP3
CSCwb01284	ASR 900 Series PTP Sync degraded on Tester after primary PTP source failover to secondary

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.4 - Platform Independent

There are no resolved caveats in this release.

Open Caveats – Cisco IOS XE Bengaluru 17.6.3

There are no open caveats for this release.

Open Caveats – Cisco IOS XE Bengaluru 17.6.3 - Platform Independent

Identifier	Headline
CSCwb04551	FRR not calculating backup route due to "primary_update_complete_pending:" flag set to 1
CSCwa30653	MVPN Profile 14 : Data MDT traffic not flowing with 2 paths when OSPF cost configured on 1 path
CSCwa36608	RSP3 ICCP stuck on CONNECTING state after RSP SO on Active PoA

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.3

Identifier	Headline
CSCvz42622	TPOP T1 SATOP : Cable length range needs to be changed to be consistent with the IMA48D/IMA3G
CSCvy78284	ASR920 will crash when zeroised RSA key is regenerated
CSCwa35351	Raw-socket config-event use all the iomem when L1 is down

Identifier	Headline
CSCwa59045	Need to support few line level CLIs with "no" even without any cable attached.
CSCwa79398	rs232 service on port8 gives SLIP errors when databits is set on other ports
CSCwa09302	iMSG serial interfaces bitrate/sec data is displayed incorrectly in show command output
CSCvy92074	MTU programming for mpls 12 vc may fail after interface flaps
CSCwa41638	ASR920 MAC Table and L2VPN EVPN Table out of sync

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.3 - Platform Independent

Identifier	Headline
CSCwa37283	RSP failover on NCS4200 showing several seconds of outage for L2VPN services

Open Caveats – Cisco IOS XE Bengaluru 17.6.2

Caveat ID Number	Description
CSCvy78284	Router crashes when zeroised RSA key is regenerated
CSCvz52848	Raw-socket config-event use all the iomem if connected device L1 signals are down

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.2

Caveat ID Number	Description
CSCvy64788	LLC frames get looped back due to autonomic networking
CSCvy91436	Egress QoS classification issues are seen with Service instance 2 configuration on CE facing interfaces
CSCvz07477	DWDM SFPs threshold value set to 0.0 dbm for RX/TX and -0.0 C for temperature.
CSCvz26979	DHCP packets are not forwarded from client to server when DHCP snooping is enabled globally
CSCvz79672	HQoS on egress TenGig interface does not work properly

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.2 - Platform Independent

Caveat ID Number	Description
CSCvz66346	New Bridge-Domain are not added dynamically to POCH when TEFP-encap from-bd is configured
CSCvz25471	NSO config push failure seen due to getconf on BD gives additional value mac learning

Open Caveats – Cisco IOS XE Bengaluru 17.6.1

Caveat ID Number	Description
CSCvy92074	MTU programming for MPLS Layer 2 VC may fail after interface flaps
CSCvz02352	Error objects are seen in mlist area
CSCvy74356	In T3 controller-CT3 E1 and CT3 mode the loopback local is not getting applied and the controller stays down

Resolved Caveats – Cisco IOS XE Bengaluru 17.6.1

Caveat ID Number	Description
CSCvs50029	Interface flaps and input errors seen with optics GLC-FE-100BX-D in ASR920-12CZ
CSCvu78738	T3 counter names to be as per GR-820 standard names
C8Cvv21542	Command to change from dynamic to static FAN algorithm for Cisco ASR-920-24SZ-IM, Cisco ASR-920-24SZ-M, and Cisco ASR-920-24TZ-M
CSCvv42595	REP flapping is seen randomly and frequently due to port down
CSCvv47918	Block SATOP when controller is looped remotely (far end) for ACR/UPSR/CPG/STS1e
CSCvv55842	DEI bit on C-TAG is not being preserved for Double tag to Double tag svc even if there is no rewrite
CSCvv74638	RSP2-128: IMA1X frequent link down
CSCvv62123	FPGA TX tables are not programmed for microbfd session after router reload in 17.4.1 release
CSCvv73275	Applique type, syslog are misleading when a path configured with t3 is over-written with STSnC mode

Caveat ID Number	Description
CSCvv74342	VPLSoBKPW: MAC is not flushed or withdrawn in remote peer on VC swichover from active to standby
CSCvv99456	ACL entries with FRAGMENT keywords are not working on the router
CSCvw08879	EVPN-IRB: Complete traffic drop seen in one direction after intf flap on spine or leaf with XE-XR interop
CSCvw32263	ASR-920-24SZ-IM system is not going for shutdown when device booted without fan tray
CSCvw56612	LOTR : show lic command does not show port details
CSCvw64784	RSP2 CEM ACR: Not able to reuse same clock ID on another controller after you delete clock ID
CSCvw82333	Continuous PCI role logging to trace file
CSCvx41010	Failed to marshal xcvr_sync message: Bad address
CSCvr43362	ASR-920-12SZ-IM, ASR-920-12SZ-A/ASR-920-12SZ-D: Fan speed control measures for overheating router

Cisco Bug Search Tool

Cisco Bug Search Tool (BST), the online successor to Bug Toolkit, is designed to improve effectiveness in network risk management and device troubleshooting. You can search for bugs based on product, release, and keyword, and aggregates key data such as bug details, product, and version. For more details on the tool, see the help page located at http://www.cisco.com/web/applicat/cbsshelp/help.html

Cisco Bug Search Tool