

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

- Cisco ASR 920 Series Routers Overview, on page 2
- Feature Navigator, on page 2
- Feature Matrix, on page 2
- Software Licensing Overview, on page 2
- Determining the Software Version, on page 3
- Upgrading to a New Software Release, on page 4
- Supported HoFPGA and ROMMON Versions, on page 4
- Restrictions and Limitations, on page 11
- Additional References, on page 12

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 Licenses Feature Set

Metro Services	Metro IP Services	Metro Aggregation Services
—	Includes all features in Metro Services	Includes all features in Metro IP Services
QoS, with deep buffers and hierarchical QoS (HQOS)	IP routing (RIP, OSPF, EIGRP, BGP, IS-IS)	MPLS (LDP and VPN)

Metro Services	Metro IP Services	Metro Aggregation Services
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(54r)S
ASR-920-12SZ-IM	15.6(54r)S
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, and ASR920-8S4Z-PD	15.6(56r)S

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 Amsterdam 17.1.x	0X00040043 (BFD/default template) 0x00020009 (Netflow template)	15.6(32r)S
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 Cupertino 17.7.1	0X00040044	15.6(48r)S
Cisco IOS XE Cupertino 17.8.1	0X00040044	15.6(48r)S
Cisco IOS XE Dublin 17.10.1	0X00040044	15.6(56r)S
Cisco IOS XE Dublin 17.11.1a	0X00040044	15.6(56r)S

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Dublin 17.12.1	0X00040044	15.6(56r)S
Cisco IOS XE Dublin 17.12.2a	0X00040044	15.6(56r)S
Cisco IOS XE 17.13.1	0X00040044	15.6(56r)S
Cisco IOS XE 17.15.1	0X00040044	15.6(56r)S
Cisco IOS XE 17.15.2	0X00040044	15.6(56r)S
Cisco IOS XE 17.15.3b	0X00040044	15.6(56r)S
Cisco IOS XE 17.15.4	0X00040044	15.6(56r)S
Cisco IOS XE 17.15.5	0X00040044	15.6(56r)S
Cisco IOS XE 17.15.6	0X00040044	15.6(56r)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 Amsterdam 17.1.x	0x00030014 (BFD/default template) 0x00030014 (Netflow template)	15.6(32r)S
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 Cupertino 17.7.1	0X0004001b	15.6(48r)S
Cisco IOS XE Cupertino 17.8.1	0X0004001b	15.6(48r)S
Cisco IOS XE Dublin 17.10.1	0X0004001b	15.6(56r)S
Cisco IOS XE Dublin 17.11.1a	0X0004001b	15.6(56r)S
Cisco IOS XE Dublin 17.12.1	0X0004001b	15.6(56r)S
Cisco IOS XE Dublin 17.12.2a	0X0004001b	15.6(56r)S
Cisco IOS XE 17.13.1	0X0004001b	15.6(56r)S
Cisco IOS XE 17.15.1	0X0004001b	15.6(56r)S

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE 17.15.2	0X0004001b	15.6(56r)S
Cisco IOS XE 17.15.3b	0X0004001b	15.6(56r)S
Cisco IOS XE 17.15.4	0X0004001b	15.6(56r)S
Cisco IOS XE 17.15.5	0X0004001b	15.6(56r)S
Cisco IOS XE 17.15.6	0X0004001b	15.6(56r)S

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

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Amsterdam 17.1.x	0x0003001B (BFD/default template) 0x00020008 (Netflow template)	15.6(24r)S
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 Cupertino 17.7.1	0x0003001e	15.6(46r)S
Cisco IOS XE Cupertino 17.8.1	0x0003001e	15.6(46r)S
Cisco IOS XE Dublin 17.10.1	0X0003001e	15.6(54r)S
Cisco IOS XE Dublin 17.11.1a	0X0003001e	15.6(54r)S
Cisco IOS XE Dublin 17.12.1	0X0003001e	15.6(54r)S
Cisco IOS XE Dublin 17.12.2a	0X0003001e	15.6(54r)S
Cisco IOS XE 17.13.1	0X0003001e	15.6(54r)S
Cisco IOS XE 17.15.1	0X0003001e	15.6(54r)S
Cisco IOS XE 17.15.2	0X0003001e	15.6(54r)S
Cisco IOS XE 17.15.3b	0X0003001e	15.6(54r)S
Cisco IOS XE 17.15.4	0X0003001e	15.6(54r)S
Cisco IOS XE 17.15.5	0X0003001e	15.6(54r)S

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE 17.15.6	0X0003001e	15.6(54r)S

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 Amsterdam 17.1.x	0x00010039 (BFD/default template) 0x10000007 (Netflow template)	15.6(29r)S
Cisco IOS XE Amsterdam 17.3.1	0X10000008	15.6(43r)S
Cisco IOS XE Amsterdam 17.3.2	0X10000008	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	0X10000008	15.6(43r)S
Cisco IOS XE Bengaluru 17.6.1	0X10000008	15.6(46r)S
Cisco IOS XE Bengaluru 17.6.2	0X00020043	15.6(46r)S
Cisco IOS XE Cupertino 17.7.1	0X00020043	15.6(46r)S
Cisco IOS XE Cupertino 17.8.1	0X00020043	15.6(46r)S
Cisco IOS XE Dublin 17.10.1	0X00020043	15.6(54r)S
Cisco IOS XE Dublin 17.11.1a	0X00020043	15.6(54r)S
Cisco IOS XE Dublin 17.12.1	0X00020043	15.6(54r)S
Cisco IOS XE Dublin 17.12.2a	0X00020043	15.6(54r)S
Cisco IOS XE 17.13.1	0X00020043	15.6(54r)S
Cisco IOS XE 17.15.1	0X00020043	15.6(54r)S
Cisco IOS XE 17.15.2	0X00020043	15.6(54r)S
Cisco IOS XE 17.15.3b	0X00020043	15.6(54r)S
Cisco IOS XE 17.15.4	0X00020043	15.6(54r)S
Cisco IOS XE 17.15.5	0X00020043	15.6(54r)S
Cisco IOS XE 17.15.6	0X00020043	15.6(54r)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
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 Cupertino 17.7.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Cupertino 17.8.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Dublin 17.10.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Dublin 17.11.1a	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Dublin 17.12.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Dublin 17.12.2a	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 17.13.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.2	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.3b	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.4	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.5	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.6	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	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

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 17.6.1	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 Cupertino 17.7.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Cupertino 17.8.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Dublin 17.10.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Dublin 17.11.1a	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Dublin 17.12.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE Dublin 17.12.2a	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.13.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.1	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.2	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.3b	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.4	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.5	0.75	69.24	0.54	0.54	0.46
Cisco IOS XE 17.15.6	0.75	69.24	0.54	0.54	0.46

Restrictions and Limitations



Note 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.

  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.

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.

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.