Release Notes for Cisco ASR 920 Series Aggregation Services Router, Cisco IOS XE Amsterdam 17.1.x

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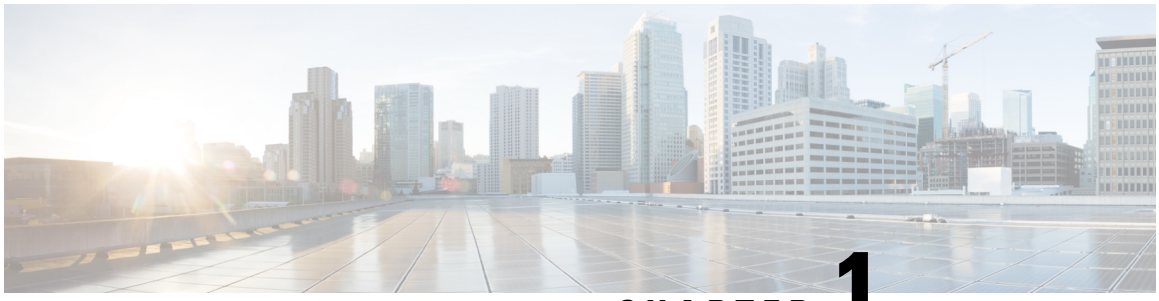

CHAPTER 1

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.

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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-920-20SZ-M
- ASR-920-12SZ-IM
- ASR-920-12SZ-A
- ASR-920-12SZ-D

• Cisco ASR 920 Series Routers Overview, on page 2

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.

Determining the Software Version

Use the following commands to verify your software version:

- Consolidated Package— **show version**

Table 1: ROMMON Version

PIDs	ROMMON
ASR-920-12SZ-A , ASR-920-12SZ-D	15.6(29r)S
ASR-920-12SZ-IM	15.6(24r)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, and ASR-920-24TZ-M	15.6(31r)S

Table 2: ROMMON Version for Cisco IOS XE Everest 16.6.8

PIDs	ROMMON
ASR-920-12SZ-IM	15.6(24r)S

PIDs	ROMMON
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, and ASR-920-24TZ-M	15.6(32r)S

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.

The cumulative Feature Compatibility Release Matrix is available on Content Hub.

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, and ASR-920-10SZ-PD

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.8	0X00040043	15.6(48r)S
Cisco IOS XE Gibraltar 16.12.7	0X00040043	15.6(48r)S
Cisco IOS XE Gibraltar 16.12.6	0X00040043	15.6(48r)S
Cisco IOS XE Gibraltar 16.12.5	0X00040043	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.4	0X00040043	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.2a	0x00040043 (BFD/default template) 0x00020009 (Netflow template)	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.1	0X00040043	15.6(32r)S

Table 4: HoFPGA and ROMMON Versions for the Cisco ASR-920-20SZ-M

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.8	0X0001000A	15.6(48r)S
Cisco IOS XE Gibraltar 16.12.7	0X0001000A	15.6(48r)S
Cisco IOS XE Gibraltar 16.12.6	0X0001000A	15.6(48r)S

Release	HoFPGA Version	ROMMON Version
Cisco IOS XE Gibraltar 16.12.5	0X0001000A	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.4	0X0001000A	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.2a	0x0001000A (BFD/default template) 0x0001000A (Netflow template)	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.1	0X0001000A	15.6(32r)S

Table 5: 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 16.12.8	0X00040019	15.6(48r)S
Cisco IOS XE Gibraltar 16.12.7	0X00040019	15.6(48r)S
Cisco IOS XE Gibraltar 16.12.6	0X00040019	15.6(48r)S
Cisco IOS XE Gibraltar 16.12.5	0X00030015	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.4	0X00030015	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.2a	0x00030014 (BFD/default template) 0x00030014 (Netflow template)	15.6(32r)S
Cisco IOS XE Gibraltar 16.12.1	0X00030014	15.6(32r)S

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

Release	HoFPGA Version	ROMMON Version
Cisco IOSXE Gibraltar 16.12.8	0X0003001B	15.6(46r)S
Cisco IOSXE Gibraltar 16.12.7	0X0003001B	15.6(46r)S
Cisco IOSXE Gibraltar 16.12.6	0X0003001B	15.6(46r)S
Cisco IOSXE Gibraltar 16.12.5	0X0003001B	15.6(24r)S
Cisco IOSXE Gibraltar 16.12.4	0X0003001B	15.6(24r)S
Csico IOS XE Gibraltar 16.12.2a	0x0003001B (BFD/default template) 0x00020008 (Netflow template)	15.6(24r)S
Cisco IOSXE Gibraltar 16.12.1	Cisco IOSXE Gibraltar 16.12.1	15.6(24r)S

Table 7: 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 16.12.8	0X10000008	15.6(46r)S
Cisco IOS XE Gibraltar 16.12.7	0X10000008	15.6(46r)S
Cisco IOS XE Gibraltar 16.12.6	0X10000008	15.6(46r)S
Cisco IOS XE Gibraltar 16.12.5	0X00010040	15.6(24r)S
Cisco IOS XE Gibraltar 16.12.4	0X00010040	15.6(24r)S
Csico IOS XE Gibraltar 16.12.2a	0x00010039 (BFD/default template) 0x10000007 (Netflow template)	15.6(24r)S
Cisco IOS XE Gibraltar 16.12.1	0x00010039 (BFD/default template) 0x10000007 (Netflow template)	15.6(29r)S

Table 8: 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 Gibraltar 16.12.8	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Gibraltar 16.12.7	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Gibraltar 16.12.6	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Gibraltar 16.12.5	0.49	69.24	0.54	0.54	0.46

Table 9: 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 Gibraltar 16.12.8	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Gibraltar 16.12.7	0.49	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 Gibraltar 16.12.6	0.49	69.24	0.54	0.54	0.46
Cisco IOS XE Gibraltar 16.12.5	0.49	69.24	0.54	0.54	0.46

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 10: 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)
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

Metro Services	Metro IP Services	Metro Aggregation Services
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

Limitations and Restrictions on the Cisco ASR 920 Series Routers

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.

- 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
  ```

- 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.
- 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.
- IPsec is *only* supported for TCP and UDP and is not supported for SCTP.
- IPSec is supported *only* on the Cisco ASR-920-12SZ-A and Cisco ASR-920-12SZ-D routers.

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.

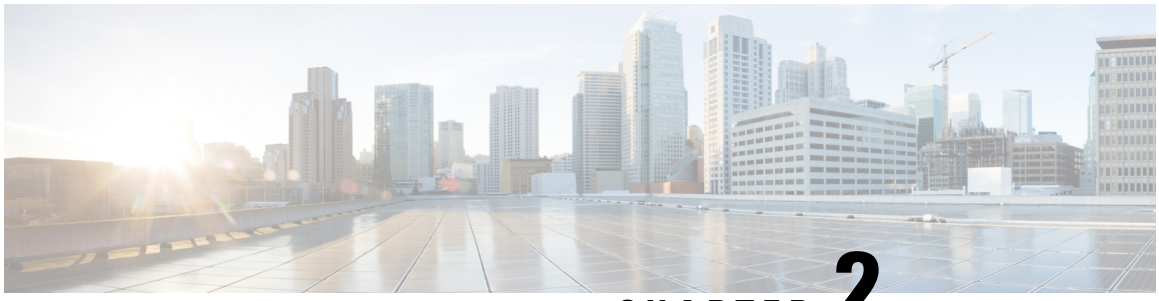
Accessibility Features in the Cisco ASR 920 Series Routers

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.



CHAPTER 2

New Features

This chapter describes the new hardware and software features supported on the Cisco ASR 920 Series routers in the following releases:

New Hardware Features in Cisco IOS XE Amsterdam 17.1.x

The following optics are supported from the Cisco IOS XE Amsterdam 17.1.x

- ONS-SI+-10G-SR
- ONS-SI+-10G-LR
- ONS-SI+-10G-ER
- ONS-SI+-10G-ZR

New Software Features in Cisco IOS XE Amsterdam 17.1.x

- **EVPN-VPWS Single Homing over Segment Routing**

  EVPN-VPWS single homing is a BGP control plane solution for point-to-point services. It has the ability to forward traffic from one network to another using Ethernet Segment without MAC lookup. EVPN-VPWS single homing works on both IP and SR core. IP core is used to support BGP while the SR core is used to switch packets between the endpoints.

  For more information, see Segment Routing Configuration Guide, Cisco IOS XE 17 (Cisco ASR 920 Series).

- **Facility Protocol Status Support**

  The routers report the protocol status using Syslog or Trap alarm notifications. Few Syslogs and Traps are not cleared when the router gets disconnected or reloaded. As a result, the alarms are not notified.

  To avoid this, a new command, **show facility protocol status**, is introduced that displays the output of the following routing protocols status at any interval of time:

  - ISIS

- OSPF
- BGP
- TE Tunnels
- LDP
- Bundles
- PWs
- EVPN PWs
- CFM
- SYncE
- PTP
- HSRP
- BFD
- SensorThresholdViolations

For more information, see *Cisco ASR 920 Series Aggregation Services Router Configuration Guide, Cisco IOS XE 17*.

- **Programmability Features**

  The following Programmability features are supported from this release:

  - gRPC Network Management Interface (gNMI)—Model-driven configuration and retrieval of operational data using the gNMI capabilities, GET and SET RPCs.
  - Model Driven Telemetry - gNMI Dial-In—Support for telemetry subscriptions and updates over a gRPC Network Management Interface (gNMI).
  - TLS for gRPC Dial-Out—Support for TLS for gRPC dial-out.

  For more information, see the Programmability Guide, Cisco IOS XE Amsterdam 17.1.x.

- **Licensing Information for Cisco ASR-920-8S4Z-PD Router**

  This release includes the licensing information for Cisco ASR-920-8S4Z-PD.

  For more information, see Software Activation Configuration Guide (Cisco ASR 920 Routers).

- **PTP Multi-profile**

  The Precision Time Protocol (PTP) is a protocol used to synchronize clocks throughout a network. PTP Multi-profile support is configured on a PTP boundary clock by translating one PTP profile at PTP slave port to other PTP profile at PTP master port. To translate PTP properties from one profile to other, a special type of "inter-op" clock-port is introduced. This special clock-port is configured with the required profile and domain information.

  For more information, see Timing and Synchronization Configuration Guide, Cisco IOS XE Amsterdam 17.1.x (Cisco ASR 920 Series).

- **MPLS TE: Newer SR-TE Policy Command**

Effective Cisco IOS XE Gibraltar 17.1.1, the Cisco ASR 920 Series routers support the newer SR-TE Policy command, **segment-routing traffic-eng**.

For more information, see Segment Routing Configuration Guide, Cisco IOS XE Amsterdam 17.1.x (Cisco ASR 920 Series).

- **SADT Overhead Accounting**

  FPGA measures the following parameters for SADT:

  - Throughput
  - Frame Loss
  - Jitter
  - Delay

  FPGA has the capability to generate and measure only 1Gbps traffic rate and hence maximum throughput cannot be achieved. To overcome this limitation, use the **platform y1564 shadow-session-enable** command to replicate the packets 10 times in FPGA.

  For more information, see IP SLAs Configuration Guide, Cisco IOS XE Amsterdam 17.1.x (Cisco ASR 920 Series).

- **SR-TE ODN Color Extended Community (L3VPN)**

  Effective Cisco IOS XE Gibraltar 17.1.1, the Cisco ASR 920 Series routers support the 'color extended' community as follows:

  - An egress router adds the 'color extended' community to the BGP updates that require a Traffic-Engineered path.
  - A Segment Routed Traffic Engineering (SR-TE) policy is created on the ingress router for the Color-Endpoint pair.

  For more information, see the Segment Routing Configuration Guide, Cisco IOS XE Amsterdam 17.1.x (Cisco ASR 920 Series).

- **Segment Routing Low Latency Network Slice**

  This feature allows the advertisement and reception of the extended TE Link Delay Metrics without any additional configuration required in IS-IS, OSPF or BGP-IS.

  When the link delay values are configured, they are flooded in the PCE topology and when the path computation is requested, these values are used for path calculation.

  For more information, see the Segment Routing Configuration Guide, Cisco IOS XE Amsterdam 17.1.x (Cisco ASR 920 Series).

- **Segment Routing Performance Measurement Link Delay Metrics**

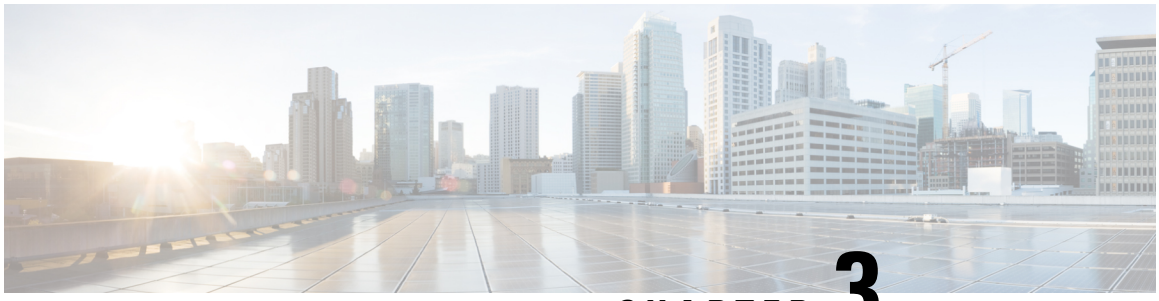
  Network performance metrics such as packet loss, delay, delay variation, and bandwidth utilization is a critical measure for traffic engineering (TE) in service provider networks. These metrics provide network operators with information about characteristics of their networks for performance evaluation and helps to ensure compliance with service level agreements. The service-level agreements (SLAs) of service providers depend on the ability to measure and monitor these network performance metrics.

  For more information, see the Segment Routing Configuration Guide, Cisco IOS XE Amsterdam 17.1.x (Cisco ASR 920 Series).

- **Traps and Performance MIBs for GNSS**

  A new MIB, CISCO-GNSS-MIB, is introduced for GNSS.

  For more information, see the *Timing and Synchronization Configuration Guide, Cisco IOS XE Amsterdam 17.1.x (Cisco ASR 920 Series)*.



CHAPTER 3

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.

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

Open Caveats – Cisco IOS XE Amsterdam 17.1.x

Caveat ID Number	Description
CSCvr61371	BFD remains down when using PBR on BDI/interface
CSCvw34109	PTP failure due to LSMPI buffer exhaustion

Resolved Caveats – Cisco IOS XE Amsterdam 17.1.x

Caveat ID Number	Description
CSCvp86320	Cisco ASR-920-12SZ-A and Cisco ASR-920-12SZ-D secure FPGA
CSCvr07668	FRR with Multi member POCH and LB is not working.