

Release Notes for Cisco ASR 920 Series Aggregation Services Router, Cisco IOS XE Gibraltar 16.11.x

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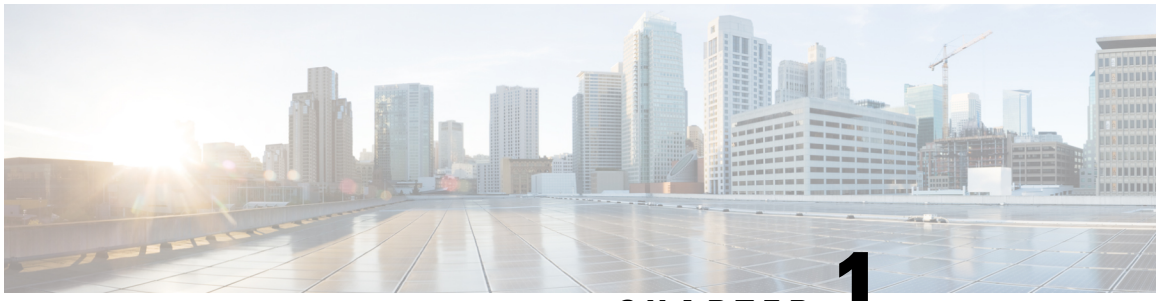
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CHAPTER 1

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.

Note Explore the Content Hub, the all new portal that offers an enhanced product documentation experience.

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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

Note The Cisco IOS XE Gibraltar 16.11.1a does not support the Cisco ASR-920-12SZ-IM, Cisco ASR-920-12SZ-A and Cisco ASR-920-12SZ-D routers.

- Cisco ASR 920 Series Routers Overview, on page 2
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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.

Determining the Software Version

Use the following commands to verify your software version:

- Consolidated Package— **show version**

Supported HoFPGA Versions

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

Table 1: HoFPGA 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
Csico IOS XE Gibraltar 16.11.1	0X00020029

Table 2: HoFPGA Versions for the Cisco ASR-920-20SZ-M

Release	HoFPGA Version
Cisco IOSXE Gibraltar 16.11.1	0X00010006

Table 3: HoFPGA Versions for the Cisco ASR-920-24SZ-IM, ASR-920-24SZ-M, and ASR-920-24TZ-M

Release	HoFPGA Version
Cisco IOSXE Gibraltar 16.11.1	0X0003000c

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 4: 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)

Metro Services	Metro IP Services	Metro Aggregation Services
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

Limitations and Restrictions on the Cisco ASR 920 Series Routers

- The default interface 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.
- The following restriction is applicable only to:
  - Cisco ASR-920-24SZ-IM, Cisco ASR-920-24SZ-M, and Cisco ASR-920-24TZ-M

- Cisco ASR-920-20SZ-M
  - Traffic is dropped when packets of size 64 to 100 bytes are sent on 1G and 10G ports.
    - For 64-byte packets, traffic drop is seen at 70% and beyond of the line rate.
    - For 90-byte packets, traffic drop is seen at 90% and beyond of the line rate.
    - For 95-byte packets, traffic drop is seen at 95% and beyond of the line rate.
  - Traffic is dropped when:
    - Traffic is sent on a VRF interface.
    - Traffic is sent across layer 2 and layer 3.

  However, traffic is not dropped when the packet size is greater than 100 bytes, even if the packets are sent bidirectionally at the line rate.

- 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.

- Portchannel 61–64 is not supported. The maximum port-channel interfaces limit (64) has been changed to 60.

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.

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

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Limitations and Restrictions on the Cisco ASR 920 Series Routers

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  - Cisco ASR-920-20SZ-M
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    - Traffic is dropped when:
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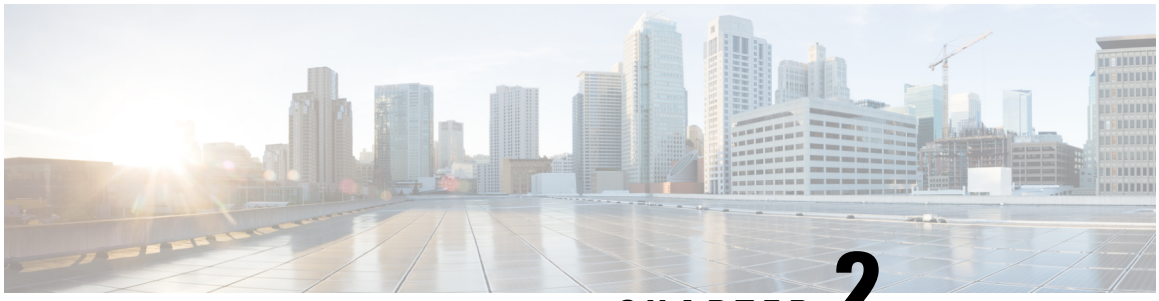
  Use the **no mpls ip propagate-ttl** command as the Short Pipe mode for the required label.

- Portchannel 61–64 is not supported. The maximum port-channel interfaces limit (64) has been changed to 60.

Important Notes



Note Port channels 61-64 are not supported in the 16.11.1a release. The range of configurable port channel interfaces is limited to 60.



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 Gibraltar 16.11.1c, on page 9
- New Software Features in Cisco IOS XE Gibraltar 16.11.1c, on page 9
- New Hardware Features in Cisco IOS XE Gibraltar 16.11.1a, on page 9
- New Software Features in Cisco IOS XE Gibraltar 16.11.1a, on page 9

New Hardware Features in Cisco IOS XE Gibraltar 16.11.1c

There are no new hardware features for this release.

New Software Features in Cisco IOS XE Gibraltar 16.11.1c

There are no new software features for this release.

New Hardware Features in Cisco IOS XE Gibraltar 16.11.1a

There are no new hardware features for this release.

New Software Features in Cisco IOS XE Gibraltar 16.11.1a

- **Alarm Profile and Auto In Service States**

  The Alarm Profiling feature enables you to create a unique alarm profiles for chassis, card or interface module and port. You can also enable Auto In Service (AINS) through the Alarm Profile by using the ains command. To configure the alarm profiles, you must create profiles either for the chassis, card or port and define the severities for each alarm and then attach the profile onto the corresponding chassis, card or port.

  The Cisco ASR920 Series Routers support Configuration of Interface modules in Administrative Configuration Mode according to the Telecordia GR-1093. For more information, see Auto-in-Service States, Cisco IOS XE Gibraltar 16.11.x (ASR20 Series)

- **Control Plane Policing Overview**

  The IPv4 control packets are punted into the respective CPU queues instead of host queues, if MPLS explicit NULL labels are tagged. Use the **platform qos-feature copp-mpls enable** command, to enable CoPP on the device for MPLS explicit null scenario.

  For more information, see the QoS: Policing and Shaping Configuration Guide, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series).

- **CoS Marking for Local Traffic on the RSP2 Module**

  CoS marking is supported on the following list of supported protocols for locally generated traffic:

  - SNMP
  - NTP
  - TELNET
  - SSH
  - TFTP
  - Syslog
  - FTP
  - DNS
  - TACACS
  - ICMP

  Use the platform **cos-mark protocol <protocol> cos-value <cos-value>** command to enable CoS marking on protocols.

  For more information on CoS marking, see Quality of Service Configuration Guidelines, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series).

- **IP SLA for Pseudowire on the RSP2 Module**

  The IP SLAs VCCV operation supports Virtual Circuit Connectivity Verification (VCCV) for Pseudo-Wire Emulation Edge-to-Edge (PWE3) services across MPLS networks.

  The IP SLAs VCCV operation type is based on the **ping mpls** pseudowire command, which checks MPLS LSP connectivity across an Any Transport over MPLS (AToM) virtual circuit (VC) by sending a series of pseudo-wire ping operations to the specified destination PE router.

  For more information on IP SLA for Pseudowire, see IP SLAs Configuration Guide, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series).

- **IPv4 Layer 3 Termination on HDLC or PPP Serial Interfaces**

  Starting with Cisco IOS XE 16.11.x release, you can perform IPv4 Layer 3 termination on HDLC or PPP serial interfaces for RSP3 module on the Cisco ASR 920 Series 4-Port OC3/STM-1 or 1-Port OC12/STM-4 Module.

  IPv4 routing can be performed using standard routing protocols such as OSPF, BGP, IS-IS, EIGRP, and RIP. For more information see the 1 port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.11.x (ASR 920 Series Routers)

- **Interworking Multiservice Gateway Access Circuit Redundancy**

  Interworking Multiservice Gateway Access Circuit Redundancy (iMSG ACR) is supported on Cisco ASR 900 RSP2 and RSP3 modules. The iMSG ACR enables local switching for serial interfaces by creating a virtual serial-ACR interface. All configuration changes made on the virtual serial-ACR interface are applied automatically on both the working and protect interfaces.

  For more information, see the 1 port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module Configuration Guide Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series).

- **IPv4 Unicast Generic Routing Encapsulation Tunnel**

  IPv4 Unicast Generic Routing Encapsulation Tunnel is supported on ASR 900 RSP2 module.

  For more information, see the MPLS: Layer 3 VPNs Configuration Guide, Cisco IOS XE Fuji 16.11.x, (Cisco ASR 920 Series).

- **MPLS TE: Newer SR-TE Policy Command, SR-TE: Affinity constraints for ODN, SR-TE ODN Color Extended Community (L3VPN)**

  Effective Cisco IOS XE Gibraltar 16.11.1, the Cisco ASR 920 Series routers support:

  - MPLS TE New SR-TE Policy command:

    Effective 16.11, there is a new command (**segment-routing traffic-eng)** to configure the SR policy under segment routing.

  - Color-extended community:

    Effective Cisco IOS XE Gibraltar 16.11.1, ‘color extended’ community is added 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

  - Affinity constraints:

    Affinity is a 32-bit constraint used by the PCE and PCALC for calculating paths that take the ‘affinity constraint’ into account. Affinity constraints let you assign, or map, color names for path affinities. After mappings are defined, the attributes can be referred to by the corresponding color name

  - Disjointness constraints:

    Disjointness describes two or more services that must be completely disjoint of each other. Disjointness is useful for providing traffic flow redundancy in the network.

  For more information, see the Segment Routing Configuration Guide, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series Routers).

- **Micro BFD**

  The BFD feature on ASR 920 supports micro BFD sessions on individual port channel member links to monitor Layer 3 connectivity on those links. With micro BFD feature, BFD is able to verify the ability of each member link to be able to forward Layer 3 packets and appropriately update the load balance.

  For more information, see the IP Routing: BFD Configuration Guide, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series).

- **Policer Adjustment in QoS Policy Map**

  Policers are configured usually at a value range of 64,000–10 G whereas the hardware policer is programmed only to discrete value. The policer rate received is less than that of the configured CIR and PIR values. The policer adjustment feature is added to adjust the CIR and PIR values of hardware policer either to match the configured value or to the next higher value available in hardware.

  The policer adjustment feature is supported on the RSP2 module. For more information see the QoS: Policing and Shaping Configuration Guide, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series)

- **PTP Asymmetry Readjustment**

  Effective Cisco IOS XE Gibraltar 16.11.1, PTP asymmetry readjustment can be performed on each PTP node to compensate for the delay in the network.

  For more information, see Timing and Synchronization Configuration Guide, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 900 Series).

- **QoS Overhead Accounting Overview**

  Overhead accounting enables the router to account for packet overhead when shaping traffic to a specific rate.

  This accounting ensures that the router executes quality of service (QoS) features on the actual bandwidth used by subscriber traffic.

  The overhead accounting feature enables the router to account for downstream Ethernet frame headers when applying shaping to packets. The traffic scheduler allows a minimum amount of value more than the configured rate at the port, in addition to the excess bytes configured on that port.

  For more information, see the QoS: Policing and Shaping Configuration Guide, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series)

- **Seven Segment Routing-Traffic Engineering Label Support**

  Effective Cisco IOS XE Gibraltar 16.11.1, the Cisco ASR 920 router supports more than one SR-TE label in both, the primary and backup paths. This increase in number of labels is achieved by recirculating the FRR backup path.

  For more information, see Segment Routing, Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Routers).

- **Unidirectional Path Switching Ring Over HDLC**

  A Unidirectional Path Switching Ring (UPSR) over HDLC is supported on Cisco ASR 920.

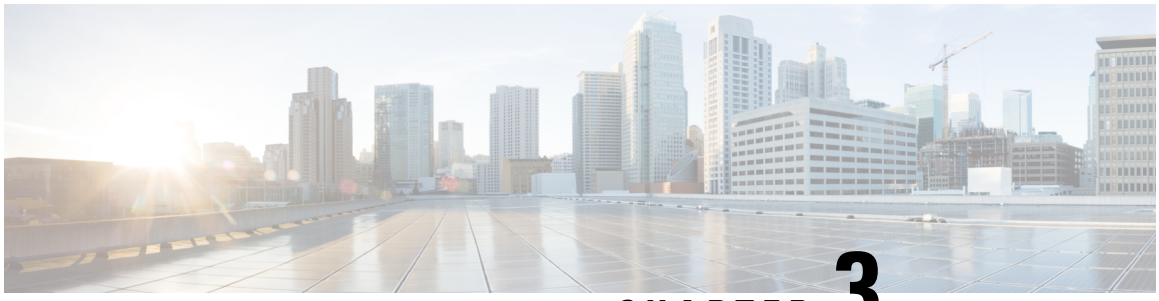
  In an access network, the UPSR serial traffic is processed with an HDLC encapsulation protocol. UPSR is supported on modes such as VT 1.5, STS 3c, and T3.

  For more information, see the 1 port OC-48/STM-16 or 4 port OC-12/OC-3 / STM-1/STM-4 + 12 port T1/E1 + 4 port T3/E3 CEM Interface Module Configuration Guide Cisco IOS XE Gibraltar 16.11.x (Cisco ASR 920 Series).

- **Video Template - IPv4 QoS classifications**

  The max-qos-video template supports increased QoS support to 4000 and decreases IPv4 ACL to 2000.

  For more information, see the Cisco ASR 920 Router Series Configuration Guide, Cisco IOS XE Gibraltar 16.11.x.



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, on page 13
- Open Caveats – Cisco IOS XE Gibraltar 16.11.1c, on page 13
- Resolved Caveats – Cisco IOS XE Gibraltar 16.11.1c, on page 14
- Open Caveats – Cisco IOS XE Gibraltar 16.11.1a, on page 14
- Resolved Caveats – Cisco IOS XE Gibraltar 16.11.1a, on page 15

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 Gibraltar 16.11.1c

Caveat ID Number	Description
CSCvo35275	ASR-920:MVPN: Unable to pass high MTU multicast packets-MDT-MTU
CSCvo80325	CFM Error object observed after CFM session flap

Caveat ID Number	Description
CSCvo62186	Default-config overwrites startup-config when doing Password Recovery procedure

Resolved Caveats – Cisco IOS XE Gibraltar 16.11.1c

Caveat ID Number	Description
CSCvg43968	Cylon Mgr crash @ adjmgr_get_fid_index
CSCvi91527	RSP2 8xT1E1 Adaptive Clock Recovery in UNKNOWN status
CSCvi96805	IGMP packet duplicated if IGMP snooping is disabled
CSCvj22030	ACR fails with -/+ 50 ppm tolerance
CSCvj43977	CEF inconsistency issue observed after continuous BFD flaps.
CSCvk05865	AIS: box crashed at zl303xx_AprRemoveServer
CSCvk14135	With monitoring session configured slave is not locking<167>
CSCvk23983	%DATACORRUPTION-1-DATAINCONSISTENCY observed with VFI and XCONNECT configuration during reload.
CSCvk45460	ASR920 MLDP:Router crashed after breaking the core link with recursive enabled
CSCvm10079	Force QL Tx option is not working when netsync configured with more than 3 input sources.
CSCvm21116	ASR920:RP-reset when **sh pla har pp act** command is executed for the failed obj after EMPLSintd exhaust
CSCvm76770	Unpredictable asymmetry on T1 or E1 interface module
CSCvo07619	ASR920-BDI IPv6 ping failure_FMFP_OBJ_Download_Failure

Open Caveats – Cisco IOS XE Gibraltar 16.11.1a

Caveat ID Number	Description
CSCvn55871	T1 serial interface went down with encapsulation mode as PPP with remote loopback config as iboc.
CSCvo15424	PTP flap due to possible cylon T3 timestamp issue
CSCvo35275	Unable to pass high MTU multicast packets-MDT-MTU

Resolved Caveats – Cisco IOS XE Gibraltar 16.11.1a

Caveat ID Number	Description
CSCvi91527	RSP2 8xT1E1 Adaptive Clock Recovery in unknown status
CSCvi96805	IGMP packet duplicated if IGMP snooping is disabled
CSCvj22030	ACR fails with -/+ 50 ppm tolerance
CSCvj43977	CEF inconsistency issue observed after continuous BFD flaps.
CSCvk05865	AIS: box crashed at zl303xx_AprRemoveServer
CSCvk14135	With monitoring session configured slave is not locking
CSCvk23983	%DATACORRUPTION-1-DATAINCONSISTENCY observed with VFI and XCONNECT configuration during reload.
CSCvk45460	ASR920 MLDP:Router crashed after breaking the core link with recursive enabled
CSCvk62834	Cylon_mgr crash@nile_cef_prefix_v4u_get_adj_info seen in soak run
CSCvk72044	Cylon_mgr crash@adjmgr_get_fid_index seen in soak run
CSCvm21116	RP-reset when s**h pla har pp act** cmd is executed for the failed obj after EMPLSintd exhaust
CSCvm76770	Unpredictable asymmetry on T1/E1 IM
CSCvo07619	BDI IPv6 ping failure_FMFP_OBJ_Download_Failure