

Release Notes for Cisco ASR 900 Series Routers, Cisco IOS XE Fuji 16.9.x

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Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
http://www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

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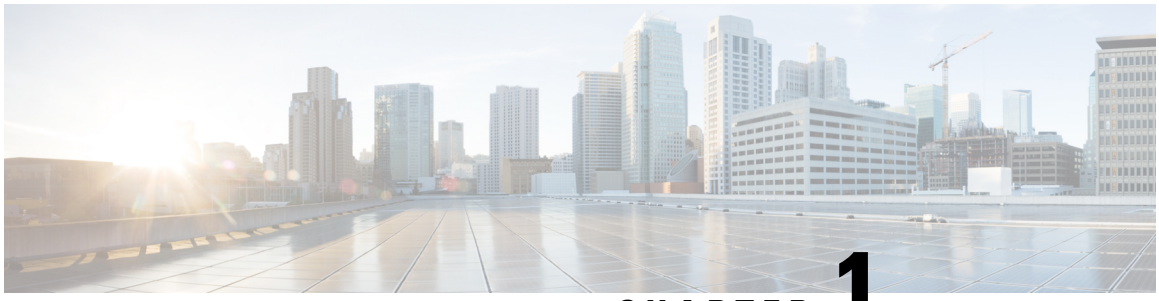
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CHAPTER 1

Introduction

The Cisco ASR 900 Series Routers are full-featured, modular aggregation platforms designed for the cost-effective delivery of converged mobile, residential, and business services. This document provides information about the IOS XE software release for the Cisco ASR 900 Series Routers.

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- Feature Navigator, on page 3
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- Feature Matrix, on page 16
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Overview of Cisco ASR 900 Series Routers

The Cisco ASR 900 Series Router is a fully-featured routing platform designed for the cost-effective delivery of converged mobile and business services. With full redundancy, shallow depth, low power consumption and high service scale, this 3-rack-unit (3RU) router is optimized for small aggregation and remote point-of-presence (POP) applications. The Cisco ASR 900 Series Router provides a rich and scalable feature set of Legacy, Timing, Carrier Ethernet, Layer 2 VPN (L2VPN) and Layer 3 VPN (L3VPN) services in a compact package.

The Cisco ASR 900 Series Router is a fully modular platform with support for upto 6-Interface Modules (IMs), two Route Switch Processor (RSP) slots, two power supplies and redundant fans, based on the router model. Cisco offers a wide choice of LAN and WAN interfaces available in speeds ranging from nxDS0 to 10 Gigabit Ethernet. The design of the Cisco ASR 900 Series Router delivers in-box hardware redundancy for all hardware components and supports software redundancy with In Service Software Upgrade (ISSU) and Non-Stop Forwarding (NSF) support.

Cisco ASR 900 Series Router

The Cisco ASR 900 Series Router is a fully-featured routing platform designed for the cost-effective delivery of converged mobile and business services. With full redundancy, shallow depth, low power consumption and high service scale, this 3-rack-unit (3RU) router is optimized for small aggregation and remote point-of-presence (POP) applications. The Cisco ASR 900 Series Router provides a rich and scalable feature

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Cisco ASR 902 Router

The Cisco ASR 902 Router is a full-featured aggregation platform designed for cost-effective delivery of converged mobile and business services. With shallow depth, low power consumption, and an extended temperature range, this compact 2-rack unit (2RU) router provides high service scale and flexible hardware configuration.

Cisco ASR 903 Router

The Cisco ASR 903 Series Aggregation Services Router is a Cisco aggregation router product. This router uses an innovative and powerful forwarding technology known as the Cisco Carrier Ethernet ASIC.

The Cisco ASR 903 Series Router is a 6-Interface Module (IM), 3-RU, hardware-redundant chassis with two Route Switch Processor (RSP) slots, and six IM slots. It supports fully redundant RSPs that allow for full RSP hardware redundancy, NSF, ISSU, and future RSP service upgrades.

Cisco ASR 907 Router

The Cisco ASR 907 Router seven-rack (7RU) unit router that belongs to the Cisco ASR90x family of routers. This router complements Cisco’s offerings for IP RAN solutions for the GSM, UMTS, LTE and CDMA. Given its form-factor, interface types and Gigabit Ethernet density the Cisco ASR 907 Router can also be positioned as a Carrier Ethernet aggregation platform.

The Cisco ASR 907 Router is a cost optimized, fully redundant, centralized forwarding, extended temperature, and flexible pre-aggregation router.

Cisco ASR 914 Router

The Cisco ASR 914 Router is a 14-rack unit router that belongs to the Cisco ASR 900 family of routers. This router complements Cisco’s offerings for IP RAN solutions for the GSM, UMTS, LTE, and CDMA. Given its form-factor, interface types and GigabitEthernet density the Cisco ASR 914 Router can also be positioned as a Carrier Ethernet aggregation platform.

The Cisco ASR 914 Router is a cost optimized, fully redundant, centralized forwarding, extended temperature, and flexible pre-aggregation router.

Feature Navigator

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

Hardware Support

Cisco ASR 902 Supported Interface Modules

A900-RSP2-Supported Interface Modules (ASR 902 Router)

Table 1: A900-RSP2-Supported Interface Modules and Part Numbers

RSP	Interface Modules	Part Numbers	Slots
A900-RSP2A-128 A900U-RSP2A-128	8-port Gigabit Ethernet SFP Interface Module (8x1GE)	A900-IMA8S	All
	8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8x1GE)	A900-IMA8T	
	1-port 10-Gigabit Ethernet XFP Interface Module (1x10GE)	A900-IMA1X	
	16-port T1/E1 Interface Module	A900-IMA16D	
	4-port OC3/STM-1 (OC-3) or 1-port OC12/STM-4 (OC-12) Interface Module	A900-IMA4OS	
	SFP Combo IM—8-port Gigabit Ethernet (8x1GE) + 1-port 10-Gigabit Ethernet (1x10GE)	A900-IMA8S1Z	
	Copper Combo IM—8-port Gigabit Ethernet (8x1GE) + 1-port 10-Gigabit Ethernet Interface Module (1x10GE)	A900-IMA8T1Z	
	2-port 10 Gigabit Ethernet Interface Module (2x10GE)	A900-IMA2Z	
	14-port Serial Interface Module	A900-IMASER14A/S	

RSP	Interface Modules	Part Numbers	Slots
	4-port C37.94 Interface Module	A900-IMA4C3794	
A900-RSP2A-64 A900U-RSP2A-64	1-port 10 Gigabit Ethernet XFP Interface Module (1x10GE)	A900-IMA1X	0-2
	2-port 10 Gigabit Ethernet Interface Module (2x10GE)	A900-IMA2Z	
	4-port OC3/STM-1 (OC-3) or 1-port OC12/STM-4 (OC-12) Interface Module	A900-IMA4OS	
	8-port Gigabit Ethernet SFP Interface Module (8x1GE)	A900-IMA8S	0, 2 and 3
	8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8x1GE)	A900-IMA8T	
	16-port T1/E1 Interface Module	A900-IMA16D	
	32-port T1/E1 Interface Module	A900-IMA32D	
	8-port T1/E1 Interface Module	A900-IMA8D	
	6-port E & M Interface Module	A900-IMA6EM	
	14-port Serial Interface Module	A900-IMASER14A/S	
	4-port C37.94 Interface Module	A900-IMA4C3794	

A900-RSP3C-200-S Supported Interface Modules (ASR 902 Router)

Table 2: A900-RSP3C-200 Supported Interface Modules and Part Numbers

RSP Module	Supported Interface Modules	Part Numbers	Slot
A900-RSP3C-200-S	8-port Gigabit Ethernet SFP Interface Module (8x1GE)	A900-IMA8S	All[1]
	8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8x1GE)	A900-IMA8T	
	1-port 10 Gigabit Ethernet XFP Interface Module (1x10GE)	A900-IMA1X	0 and 1
	SFP Combo IM—8-port Gigabit Ethernet (8x1GE) + 1-port 10 Gigabit Ethernet (1x10GE)	A900-IMA8S1Z	All
	Copper Combo IM—8-port Gigabit Ethernet (8x1GE) + 1-port 10 Gigabit Ethernet Interface Module (1x10GE)	A900-IMA8T1Z	
	2-port 10 Gigabit Ethernet Interface Module (2x10GE)	A900-IMA2Z	
	8-port 10 Gigabit Ethernet Interface Module (8x10GE)	A900-IMA8Z	0
	2-port 40 Gigabit Ethernet QSFP Interface Module (2x40GE)	A900-IMA2F	

[1] There are restrictions using the interface modules in different slots with RSP3 module. Contact Cisco Sales/Support for the valid combinations..

Cisco ASR 903 Supported Interface Modules

A900-RSP2 Supported Interface Modules

A900-IMA2Z IM supports SFP+ and XFP on ports 0 and 1. Either SFP+ or XFP can be connected on each port. If both are connected on the same port, the port will go down.

The combination IMs (A900-IMA8S1Z, A900-IMA8T1Z) are not supported on the A900-RSP2-64 RSP module on the Cisco ASR 903 Router.

The table below is applicable for A900-RSP2A-128 and A900U-RSP2A-128 RSP modules.

Table 3: A900-RSP2A-128 Supported Interface Modules and Part Numbers

Supported Interface Modules	Part Numbers	Slot
1-port OC48/ STM-16 or 4-port OC-12/OC-3 / STM-1/STM-4 + 12-Port T1/E1 + 4-Port T3/E3 CEM Interface Module	A900-IMA3G-IMSG	2,3,4,5
8-port Gigabit Ethernet SFP Interface Module (8x1GE)	A900-IMA8S	All
8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8x1GE)	A900-IMA8T	
1-port 10 Gigabit Ethernet XFP Interface Module (1x10GE)	A900-IMA1X	
16-port T1/E1 Interface Module	A900-IMA16D	
32-port T1/E1 Interface Module	A900-IMA32D	
8-portT1/E1 Interface Module	A900-IMA8D	
4-port OC3/STM-1 (OC-3) or 1-port OC12/STM-4 (OC-12) Interface Module	A900-IMA4OS	
SFP Combo IM—8-port SFP Gigabit Ethernet (8x1GE) + 1-port 10 Gigabit Ethernet (1x10GE)	A900-IMA8S1Z	
Copper Combo IM—8-port 10/100/1000 Gigabit Ethernet (8x1GE) + 1-port 10 Gigabit Ethernet Interface Module (1x10GE)	A900-IMA8T1Z	
2-port 10 Gigabit Ethernet Interface Module (2x10GE)	A900-IMA2Z	
6-port E & M Interface Module	A900-IMA6EM	
14-port Serial Interface Module	A900-IMASER14A/S	
4-port C37.94 Interface Module	A900-IMA4C3794	

The table below is applicable for A900-RSP2A-64 and A900U-RSP2A-64 RSP modules.

Table 4: A900-RSP2A-64 Supported Interface Modules and Part Numbers

Supported Interface Modules	Part Numbers	Slot
1-port 10 Gigabit Ethernet XFP Interface Module (1x10GE)	A900-IMA1X	0-2
2-port 10 Gigabit Ethernet Interface Module (2x10GE)	A900-IMA2Z	
4-port OC3/STM-1 (OC-3) or 1-port OC12/STM-4 (OC-12) Interface Module	A900-IMA4OS	

Supported Interface Modules	Part Numbers	Slot
8-port Gigabit Ethernet SFP Interface Module (8x1GE)	A900-IMA8S	3-5
8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8x1GE)	A900-IMA8T	
16-port T1/E1 Interface Module	A900-IMA16D	
32-port T1/E1 Interface Module	A900-IMA32D	
8-port T1/E1 Interface Module	A900-IMA8D	
6-port E & M Interface Module	A900-IMA6EM	
14-port Serial Interface Module	A900-IMASER14A/S	
4-port C37.94 Interface Module	A900-IMA4C3794	

A900-RSP3C-400-S Supported Interface Modules

The table below is applicable for A900-RSP3C-400-S RSP module.

Note If the **license feature service-offload enable** command is configured, then the following IMs are not supported in the router for RSP3:

- A900-IMA8S
- A900-IMA8T
- A900-IMA8S1Z
- A900-IMA8T1Z

Note There are certain restrictions in using the interface modules on different slots with RSP3 module. Contact Cisco Sales/Support for the valid combinations.

Note If there is any silicon oil leakage from the thermal pad of the RSP card, use a lint-free cloth moistened with IsoPropyl Alcohol (IPA) to thoroughly clean the affected area. Silicon oil leakage is an expected behaviour due to the material's properties. It is non-conductive, non-electrical, and poses no hazard to human health. The presence of silicon oil on the card is harmless and will not impact the card's functionality or system performance.

Table 5: Feature History

Feature Name	Release Information	Description
8-Port 10G SFP+ Single-Rate Interface Module (N560-IMA-8Q/4L) Support	Cisco IOS XE Cupertino 17.8.1	This release introduces the support of 8-Port 10G SFP+ Single-Rate Interface Module (N560-IMA-8Q/4L), on all slots with a default speed combination of 8X10G.

Table 6: A900-RSP3C-400 Supported Interface Modules and Part Numbers

Supported Interface Modules	Part Numbers	Slot
6-port E & M Interface Module	A900-IMA6EM	All
4-port C37.94 Interface Module	A900-IMA4C3794	All
14-port Serial Interface Module	A900-IMASER14A/S	All
8-port Gigabit Ethernet SFP Interface Module (8x1GE)	A900-IMA8S	All
8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8x1GE)	A900-IMA8T	All
1-port 10 Gigabit Ethernet XFP Interface Module (1x10GE)	A900-IMA1X	All
SFP Combo IM—8-port SFP Gigabit Ethernet (8x1GE) + 1-port 10 Gigabit Ethernet (1x10GE)	A900-IMA8S1Z	All
Copper Combo IM—8-port 10/100/1000 Gigabit Ethernet (8x1GE) + 1-port 10 Gigabit Ethernet Interface Module (1x10GE)	A900-IMA8T1Z	All
2-port 10 Gigabit Ethernet Interface Module (2x10GE)	A900-IMA2Z	All
8-port 10 Gigabit Ethernet Interface Module (8x10GE)	A900-IMA8Z	All
1-port 100 Gigabit Ethernet Interface Module (1x100GE)	A900-IMA1C	4 or 5
2-port 100 Gigabit Ethernet (QSFP) Interface Module (2x100GE)	N560-IMA2C/A900-IMA2C	4 and 5[2]
2-port 40 Gigabit Ethernet QSFP Interface Module (2x40GE)	A900-IMA2F	4 or 5

Supported Interface Modules	Part Numbers	Slot
8/16-port 1 Gigabit Ethernet (SFP/SFP) + 1-port 10 Gigabit Ethernet (SFP+) / 2-port 1 Gigabit Ethernet (CSFP) Interface Module	A900-IMA8CS1Z-M	0,3,4 or 5
8-Port 10G SFP+ Single-Rate Interface Module (N560-IMA-8Q/4L) Support	N560-IMA-8Q/4L	All [3][4]
48-port T1/E1 Interface module	A900-IMA48D-C	All
48-port T3/E3 Interface module	A900-IMA48T-C	All
1-port OC-192 or 8-Port Low Rate CEM Interface Module	A900-IMA8S1Z-CX	2,3,4,5
4-port OC-48/OC-12/OC-3 + 12-Port A900-IMA3G-IMSG T1/E1 + 4-Port T3/E3 CEM Interface Module	A900-IMA3G-IMSG	2,3,4,5

ASR 900 1-Port OC-192 or 8-Port Low Rate CEM 20G Bandwidth Interface Module	A900-IMA1Z8S-CXMS	2, 3, 4, 5[5]
		Note To enable this IM on slot 0 or slot 1, do the following and reload the router:
		`Router# configure t`
		`Router(config)# license feature service-offload enable`

[2] IM supports only one port of 100G with RSP3 as QSFP28 on Port 0 in both slots 4 and 5.
[3] Starting with Cisco IOS XE Cupertino Release 17.8.1, N560-IMA-8Q/4L is supported on all slots with a default speed combination of 8X10G.
[4] The restrictions for Cisco N560-IMA-8Q/4L interface module is same as that of Cisco A900-IMA8Z interface module.
[5] These slots are supported on 10G or 20G mode.

A900-RSP3C-200-S Supported Interface Modules

The table below is applicable for A900-RSP3C-200-S RSP module.

Note If the **license feature service-offload enable** command is configured, then the following IMs are not supported in the router for RSP3:

- A900-IMA8S
- A900-IMA8T
- A900-IMA8S1Z
- A900-IMA8T1Z

Note There are certain restrictions in using the interface modules on different slots with RSP3 module. Contact Cisco Sales/Support for the valid combinations.

Note FAN OIR is applicable every time the IM based fan speed profile is switched to the IMA1C and IMA2F interface modules. Even though the IMs remain in the Out-of-Service state, they are still considered as present in the chassis.

Note If there is any silicon oil leakage from the thermal pad of the RSP card, use a lint-free cloth moistened with IsoPropyl Alcohol (IPA) to thoroughly clean the affected area. Silicon oil leakage is an expected behaviour due to the material's properties. It is non-conductive, non-electrical, and poses no hazard to human health. The presence of silicon oil on the card is harmless and will not impact the card's functionality or system performance.

Table 7: A900-RSP3C-200 Supported Interface Modules and Part Numbers

Supported Interface Modules	Part Numbers	Slot
8-port Gigabit Ethernet SFP Interface Module (8x1GE)	A900-IMA8S	All
8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8x1GE)	A900-IMA8T	
1-port 10 Gigabit Ethernet XFP Interface Module (1x10GE)	A900-IMA1X	0, 2 or 4
SFP Combo IM—8-port SFP Gigabit Ethernet (8x1GE) + 1-port 10 Gigabit Ethernet (1x10GE)	A900-IMA8S1Z	1-5[6]

Supported Interface Modules	Part Numbers	Slot
Copper Combo IM—8-port 10/100/1000 Gigabit Ethernet (8x1GE) + 1-port 10 Gigabit Ethernet Interface Module (1x10GE)	A900-IMA8T1Z	0-4
2-port 10 Gigabit Ethernet Interface Module (2x10GE)	A900-IMA2Z	
8-port 10 Gigabit Ethernet Interface Module (8x10GE)	A900-IMA8Z	4
2-port 40 Gigabit Ethernet QSFP Interface Module (2x40GE)	A900-IMA2F	4
4-port OC-48/OC-12/OC-3 + 12-Port A900-IMA3G-IMSG T1/E1 + 4-Port T3/E3 CEM Interface Module	A900-IMA3G-IMSG	2-5[7]
8-Port 10 Gigabit Ethernet (8x10GE) SFP+ Interface Module with Conformal Coating	[8]ASR900-IMA8Z-CC	0

[6] If you have a 1-port 10G IM in slot 0, then SFP combo may not be supported in slot 5.
[7] If slot 0 has 8X10G IM and you want to insert IMA-3G-IMSG to slot 5, then insert 8X10G IM on slot 6, by using the **hw-module subslot 0/0 A900-IMA8Z mode 6-Port** command.
[8] Supported only from release XE-17.13.1 onwards.

Cisco ASR 907 Supported Interface Modules

Supported Interface Modules

Note There are certain restrictions in using the interface modules on different slots in the chassis. Contact Cisco Sales and Support for the valid combinations.

Table 8: A900-RSP3 Supported Interface Modules and Part Numbers

RSP Module	Interface Modules	Part Number	Slot
A900-RSP3C-400-W	8-port Gigabit Ethernet SFP Interface Module (8X1GE)	A900-IMA8S	0,1,2,5,6,9,10,13,14,15
	8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8X1GE)	A900-IMA8T	0,1,2,5,6,9,10,13,14,15
	1-port 10 Gigabit Ethernet XFP Interface Module (1X10GE)	A900-IMA1X	Not Supported
	SFP Combo IM—8-port Gigabit Ethernet (8X1GE) + 1-port 10 Gigabit Ethernet (1X10GE)	ASR900-IMA8S1Z	2,5,6,9,10,13,14,15
	Copper Combo IM—8-port Gigabit Ethernet (8X1GE) + 1-port 10 Gigabit Ethernet Interface Module (1X10GE)	ASR900-IMA8T1Z	2,5,6,9,10,13,14,15
	2-port 10 Gigabit Ethernet Interface Module (2X10GE)	ASR900-IMA2Z	3,4,7,8,11,12
	16-port T1/E1 Interface Module	A900-IMA16D	Not Supported
	14-port Serial Interface Module	A900-IMASER14A/S	Not Supported
	8-port T1/E1 Interface Module	A900-IMA8D	Not Supported
	32-port T1/E1 Interface Module	A900-IMA32D	Not Supported
	1x100G Interface module	A900-IMA1C	7 and 8
	2-port 100 Gigabit Ethernet (QSFP) Interface Module (2X100GE)	A900-IMA2C	7 and 8[9]
	2x40G Interface module	A900-IMA2F	3,4,7,8,11,12
	8x10G Interface module	A900-IMA8Z[10]	3,4,7,8,11,12
	8/16-port 1 Gigabit Ethernet (SFP/SFP) + 1-port 10 Gigabit Ethernet (SFP+) / 2-port 1 Gigabit Ethernet (CSFP) Interface Module	A900-IMA8CS1Z-M	0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15
	1-port OC-192 or 8-Port Low Rate CEM Interface Module	A900-IMA8S1Z-CX	3,4,7,8,11,12 (10 G Mode) 0,1,2,5,6,9,10,13,14,15 (5 G Mode)
	48-port T1/E1 Interface module	A900-IMA48D-C	2,3,4,5,6,7,8,9,10,11,12,13,14,15
	48-port T3/E3 Interface module	A900-IMA48T-C	2,3,4,5,6,7,8,9,10,11,12,13,14,15
		A900-IMA3G-IMSG	3,5,7,9,11,13,15

RSP Module	Interface Modules	Part Number	Slot
	1-port OC48/ STM-16 or 4-port OC-12/OC-3 / STM-1/STM-4 + 12-Port T1/E1 + 4-Port T3/E3 CEM Interface Module		

[9] IM supports only one port of 100G with RSP3 as QSFP28 on Port 0 in both slots 7 and 8.
[10] Six IM slots are supported with various combinations but only five IM slots are functional at a time.

Table 9: Supported Interface Modules and Part Numbers for N560-RSP4 and N560-RSP4-E

RSP Module	Interface Modules	Part Number	Slot
N560-RSP4 and N560-RSP4-E	8-port Gigabit Ethernet SFP Interface Module (8X1GE)	A900-IMA8S	Not Supported
	8-port Gigabit Ethernet RJ45 (Copper) Interface Module (8X1GE)	A900-IMA8T	Not Supported
	1-port 10 Gigabit Ethernet XFP Interface Module (1X10GE)	A900-IMA1X	Not Supported
	SFP Combo IM—8-port Gigabit Ethernet (8X1GE) + 1-port 10 Gigabit Ethernet (1X10GE)	ASR900-IMA8S1Z	Not Supported
	Copper Combo IM—8-port Gigabit Ethernet (8X1GE) + 1-port 10 Gigabit Ethernet Interface Module (1X10GE)	ASR900-IMA8T1Z	Not Supported
	2-port 10 Gigabit Ethernet Interface Module (2X10GE)	ASR900-IMA2Z	Not Supported
	2x100G Interface module	N560-IMA2C	7,9
	8-port SFP/8-port CSFP Gigabit Ethernet (8/16X1GE) + 1-port 10 Gigabit Ethernet (1X10GE) Interface module	A900-IMA8CS1Z-M	0,1,2,3,4,5,6,7,8,9,10,11,12,13,14 and 15
	8x10G Interface module	A900-IMA8Z	4,5,7,9,10 and 11

Cisco ASR 914 Supported Interface Modules

For information in interface modules supported, see Cisco A900-RSP3C-400-W Supported Interface Modules.

Swapping of Interface Modules

The following Ethernet interface modules support swapping on the Cisco A907-RSP3C-400-W module:

- SFP Combo IM—8-port Gigabit Ethernet (8X1GE) + 1-port 10 Gigabit Ethernet (1X10GE)

- 2-port 40 Gigabit Ethernet Interface Module (2X40GE)
- 8-port 10 Gigabit Ethernet Interface Module (8X10GE)
- 1-port 100 Gigabit Ethernet Interface Module (1X100GE)
- OC-192 Interface Module with 8-port Low Rate CEM Interface Module (10G HO / 10G LO)
- 48 T1/E1 TDM Interface Module (48XT1/E1)
- 48 T3/E3 TDM Interface Module (48XT3/E3)

Use the **hw-module subslot default** command before performing a swap of the modules to default the interfaces on the interface module.

Note There are certain restrictions in using the interface modules on different slots in the chassis. Contact Cisco Sales/Support for the valid combinations.

Table 10: Cisco A907-RSP3C-400-W Supported Interface Modules and Part Numbers

RSP Module	Interface Modules	Part Number	Slot
A907-RSP3C-400-W	SFP Combo IM—8-port Gigabit Ethernet (8X1GE) + 1-port 10 Gigabit Ethernet (1X10GE)	A900-IMA8S1Z	2,5,6,9,10,13,14,15
	1x100G Interface module	A900-IMA1C	7,8
	2x40G Interface module	A900-IMA2F	3,4,7,8,11,12
	8x10G Interface module	A900-IMA8Z	3,4,7,8,11,12
	8/16-port 1 Gigabit Ethernet (SFP/SFP) + 1-port 10 Gigabit Ethernet (SFP+) / 2-port 1 Gigabit Ethernet (CSFP) Interface Module	A900-IMA8CS1Z-M	0,1,2,3,4,5,6,7,8,9,10,11,12,13,14, and 15
	OC-192 Interface Module with 8-port Low Rate CEM Interface Module (10G HO / 10G LO)	A900-IMA1Z8S-CX	3,4,7,8,11,12 **Note** Other slots are supported in the 5G mode.
	48XT1/E1 Interface module	A900-IMA48D-C	2,3,4,5,6,7,8,9,10,11,12,13,14, and 15
	48XT3/E3 Interface module	A900-IMA48T-C	2,3,4,5,6,7,8,9,10,11,12,13,14, and 15
	1-port OC48/ STM-16 or 4-port OC-12/OC-3 / STM-1/STM-4 + 12-Port T1/E1 + 4-Port T3/E3 CEM Interface Module	A900-IMA3G-IMSG	2,3,4,5,6,7,8,9,10,13,14, and 15
	2x100G Interface module	NCS560-IMA2C	7, 8

Feature Matrix

The feature matrix lists the features that are supported for each platform.

Software Licensing Overview

The router offers the following base licenses:

- Metro Services
- Metro IP Services
- Metro Aggregation Services

Table 11: Cisco ASR 900 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
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-overview- Port License



Note These features require a software license to use.

Determining the Software Version

You can use the following commands to verify your software version:

- Consolidated Package—**show version**
- Individual sub-packages—**show version installed** (lists all installed packages)

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 Cisco ASR 900 Series Router Configuration Guide.

ROMMON Version

We recommend you to upgrade the ROMMON version to 15.6(33r)S.

For more information on the ROMMON package, see Cisco Software Download.

Supported FPGA Versions

Use the show **hw-module all fpd** command to display the **IM moduleFPGA** version on the router

The below table lists the FPGA version for the software releases.

Note If there is an FPGA upgrade during ISSU, it will cause traffic disruption. TDM interface modules get reset irrespective of FPGA upgrade during the ISSU.

Table 12: IM FPGA Versions for all Ethernet Phase 1,Phase 2 ,Phase3 IMs, and IOFPGA version of RSP

Cisco IOS XE Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase 2) FPGA	Gigabit Ethernet Interface Module (Phase 3) FPGA	TDM Interface Module FPGA	RSP2 Module HoFPGA	RSP3 Module IoFPGA
16.9.3	• A900-IMA8S/ A900-IMA8T — 0.47 • A900-IMA1X — 0.47	• A900-IMA8T1Z/ A900-IMA8S1Z — 69.24 • A900-IMA2Z — 69.22	• A900-IMA8Z — 0.22 • A900-IMA2F — 0.22 • A900-IMA8CS1Z-M : 1.61	—	0X0003000b	0.2C

Cisco IOS XE Release	Gigabit Ethernet Interface Module (Phase 1) FPGA	Gigabit Ethernet Interface Module (Phase 2) FPGA	Gigabit Ethernet Interface Module (Phase 3) FPGA	TDM Interface Module FPGA	RSP2 Module HoFPGA	RSP3 Module IoFPGA
16.9.4	• A900-IMA8S/ A900-IMA8T — 0.47 • A900-IMA1X — 0.49	• A900-IMA8T1Z/ A900-IMA8S1Z — 69.24 • A900-IMA2Z — 69.22	• A900-IMA8Z — 0.21 • A900-IMA2F — 0.22 • A900-IMA8CS1Z-M : 1.128	—	0X0003000e	0.2C
16.9.5	• A900-IMA8S/ A900-IMA8T — 0.47 • A900-IMA1X — 0.47	• A900-IMA8T1Z/ A900-IMA8S1Z — 69.24 • A900-IMA2Z — 69.22	• A900-IMA8Z — 0.21 • A900-IMA2F — 0.22 • A900-IMA8CS1Z-M : 1.129	—	0X0003000e	0.2C
16.9.6	• A900-IMA8S/ A900-IMA8T — 0.47 • A900-IMA1X — 0.47	• A900-IMA8T1Z/ A900-IMA8S1Z — 69.24 • A900-IMA2Z — 69.22	• A900-IMA8Z — 0.21 • A900-IMA2F — 0.22 • A900-IMA8CS1Z-M : 1.129	—	0X00030010	0.2C
16.9.7	• A900-IMA8S/ A900-IMA8T — 0.75 • A900-IMA1X — 0.47	• A900-IMA8T1Z/ A900-IMA8S1Z — 69.24 • A900-IMA2Z — 69.22	• A900-IMA8Z — 0.21 • A900-IMA2F — 0.22 • A900-IMA8CS1Z-M : 1.61	—	0X00030010	0.34

Table 13: CEM and IM FPGA Versions for ASR 903 RSP3 and ASR 907

Category	48-port T1/E1 CEM Interface Module FPGA	48-port T3/E3 CEM Interface Module FPGA	1-port OC-192 Interface Module + 8-port Low Rate Interface Module FPGA	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
CEM FPGA 16.9.4	0x60210021	0x60210031	5G mode: 0x60210012 10G mode: 0x60210051	0x60210061

Category	48-port T1/E1 CEM Interface Module FPGA	48-port T3/E3 CEM Interface Module FPGA	1-port OC-192 Interface Module + 8-port Low Rate Interface Module FPGA	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
IM FPGA 16.9.4	1.23	1.22	1.15	2.00
CEM FPGA 16.9.5	0x60210021	0x60210031	5G mode: 0x60210012 10G mode: 0x60210051	0x60210061
IM FPGA 16.9.5	1.22	1.22	1.15	2.00
CEM FPGA 16.9.6	0x60210021	0x60210031	5G mode: 0x60210012 10G mode: 0x60210051	0x60210061
IM FPGA 16.9.6	1.22	1.22	1.15	2.00
CEM FPGA 16.9.7	0x60210021	0x60210031	5G mode: 0x60210012 10G mode: 0x60210051	0x60210061
IM FPGA 16.9.7	1.22	1.22	1.15	2.00

MIB Support

The below table summarizes the supported MIBs on the Cisco ASR 900 Series Router.

Table 14: Supported MIBs

Supported MIBs		
BGP4-MIB (RFC 1657)	CISCO-IMAGE-LICENSE-MGMT-MIB	MPLS-LDP-STD-MIB (RFC 3815)
CISCO-BGP-POLICY-ACCOUNTING-MIB	CISCO-IMAGE-MIB	MPLS-LSR-STD-MIB (RFC 3813)
CISCO-BGP4-MIB	CISCO-IPMROUTE-MIB	MPLS-TP-MIB
CISCO-BULK-FILE-MIB	CISCO-LICENSE-MGMT-MIB	MSDP-MIB
CISCO-CBP-TARGET-MIB	CISCO-MVPN-MIB	NOTIFICATION-LOG-MIB (RFC 3014)
CISCO-CDP-MIB	CISCO-NETSYNC-MIB	OSPF-MIB (RFC 1850)
CISCO-CEF-MIB	CISCO-OSPF-MIB	OSPF-TRAP-MIB (RFC 1850)

CISCO-CLASS-BASED-QOS-MIB	CISCO-OSPF-TRAP-MIB	PIM-MIB (RFC 2934)
CISCO-CONFIG-COPY-MIB	CISCO-PIM-MIB	RFC1213-MIB
CISCO-CONFIG-MAN-MIB	CISCO-PROCESS-MIB	RFC2982-MIB
CISCO-DATA-COLLECTION-MIB	CISCO-PRODUCTS-MIB	RMON-MIB (RFC 1757)
CISCO-EMBEDDED-EVENT-MGRMIB	CISCO-PTP-MIB	RSVP-MIB
CISCO-ENHANCED-MEMPOOL-MIB	CISCO-RF-MIB	SNMP-COMMUNITY-MIB (RFC 2576)
CISCO-ENTITY-ALARM-MIB	CISCO-RTTMON-MIB	SNMP-FRAMEWORK-MIB (RFC 2571)
CISCO-ENTITY-EXT-MIB	CISCO-SONET-MIB	SNMP-MPD-MIB (RFC 2572)
CISCO-ENTITY-FRU-CONTROLMIB	CISCO-SYSLOG-MIB	SNMP-NOTIFICATION-MIB (RFC 2573)
CISCO-ENTITY-SENSOR-MIB	DS1-MIB (RFC 2495)	SNMP-PROXY-MIB (RFC 2573)
CISCO-ENTITY-VENDORTYPE-OID-MIB	ENTITY-MIB (RFC 4133)	SNMP-TARGET-MIB (RFC 2573)
CISCO-FLASH-MIB	ENTITY-SENSOR-MIB (RFC 3433)	SNMP-USM-MIB (RFC 2574)
CISCO-FTP-CLIENT-MIB	ENTITY-STATE-MIB	SNMPv2-MIB (RFC 1907)
CISCO-IETF-ISIS-MIB	EVENT-MIB (RFC 2981)	SNMPv2-SMI
CISCO-IETF-PW-ATM-MIB	ETHERLIKE-MIB (RFC 3635)	SNMP-VIEW-BASED-ACM-MIB (RFC 2575)
CISCO-IETF-PW-ENET-MIB	IF-MIB (RFC 2863)	SONET-MIB
CISCO-IETF-PW-MIB	IGMP-STD-MIB (RFC 2933)	TCP-MIB (RFC 4022)
CISCO-IETF-PW-MPLS-MIB	IP-FORWARD-MIB	TUNNEL-MIB (RFC 4087)
CISCO-IETF-PW-TDM-MIB	IP-MIB (RFC 4293)	UDP-MIB (RFC 4113)
CISCO-IF-EXTENSION-MIB	IPMROUTE-STD-MIB (RFC 2932)	CISCO-FRAME-RELAY-MIB
CISCO-IGMP-FILTER-MIB	MPLS-LDP-GENERIC-STD-MIB (RFC 3815)	IF-MIB
CISCO-AAA-SERVER-MIB	—	—

Table 15: Unverified MIBs

Unverified MIBs		
ATM-MIB	CISCO-IETF-DHCP-SERVER-EXT-MIB	EXPRESSION-MIB
CISCO-ATM-EXT-MIB	—	HC-ALARM-MIB
CISCO-ATM-IF-MIB	CISCO-IETF-PPVPN-MPLS-VPN-MIB	HC-RMON-MIB

CISCO-ATM-PVC-MIB	CISCO-IP-STAT-MIB	IEEE8021-CFM-MIB
CISCO-ATM-PVCTRAP-EXTN-MIB	CISCO-IPSLA-ETHERNET-MIB	IEEE8021-CFM-V2-MIB
CISCO-BCP-MIB	CISCO-L2-CONTROL-MIB	IEEE8023-LAG-MIB
CISCO-CALLHOME-MIB	CISCO-LAG-MIB	INT-SERV-GUARANTEED-MIB
CISCO-CIRCUIT-INTERFACE-MIB	CISCO-MAC-NOTIFICATION-MIB	INTEGRATED-SERVICES-MIB
CISCO-CONTEXT-MAPPING-MIB	CISCO-MEMORY-POOL-MIB	MPLS-L3VPN-STD-MIB (RFC 4382)
CISCO-EIGRP-MIB	CISCO-NHRP-EXT-MIB	MPLS-LDP-ATM-STD-MIB (RFC 3815)
CISCO-ERM-MIB	CISCO-NTP-MIB	MPLS-LDP-MIB
CISCO-ETHER-CFM-MIB	CISCO-PING-MIB	MPLS-TE-STD-MIB
CISCO-ETHERLIKE-EXT-MIB	CISCO-RESILIENT-ETHERNET-PROTOCOL-MIB	MPLS-VPN-MIB
CISCO-EVC-MIB	CISCO-RTTMON-ICMP-MIB	NHRP-MIB
CISCO-HSRP-EXT-MIB	CISCO-RTTMON-IP-EXT-MIB	RFC2006-MIB (MIP)
CISCO-HSRP-MIB	CISCO-RTTMON-RTP-MIB	RMON2-MIB (RFC 2021)
CISCO-IETF-ATM2-PVCTRAP-MIB	CISCO-SNMP-TARGET-EXT-MIB	SMON-MIB
CISCO-IETF-ATM2-PVCTRAP-MIBEXTN	CISCO-TCP-MIB	VRRP-MIB
CISCO-IETF-BFD-MIB	CISCO-VRF-MIB	—
CISCO-IETF-DHCP-SERVER-MIB	ETHER-WIS (RFC 3637)	—

MIB Documentation

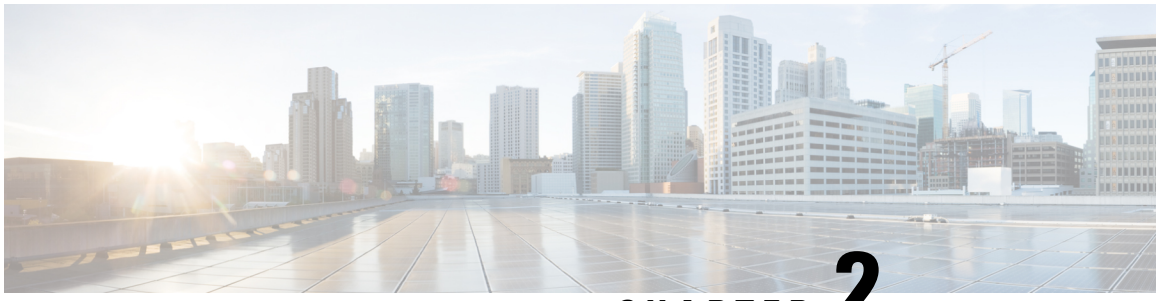
The following resources provide more detail about MIBs on the Cisco ASR 900 Series Router:

- Cisco ASR 900 Series Router MIB Guide—For information about the Cisco ASR 903 Series Router product implementation of the MIB protocol, see *Cisco ASR 903 Series Aggregation Services Router MIB Specifications Guide* at the following location:

  http://www.cisco.com/c/en/us/td/docs/wireless/asr_900/mib/guide/asr903mib.html

- MIB Locator—To locate and download MIBs for selected platforms, Cisco IOS and Cisco IOS XE releases, and feature sets, use Cisco MIB Locator found at the following location:

  https://snmp.cloudapps.cisco.com/Support/SNMP/do/BrowseOID.do?local=en



CHAPTER 2

New Features

This chapter describes the new hardware and software features supported on the Cisco ASR 900 Series routers in the following releases:

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

- New Software Features in Cisco IOS XE Fuji 16.9.7, on page 23
- New Hardware Features in Cisco IOS XE Fuji 16.9.7, on page 23
- New Software Features in Cisco IOS XE Fuji 16.9.6, on page 23
- New Hardware Features in Cisco IOS XE Fuji 16.9.6, on page 24
- New Software Features in Cisco IOS XE Fuji 16.9.5, on page 24
- New Hardware Features in Cisco IOS XE Fuji 16.9.5, on page 24
- New Software Features in Cisco IOS XE Fuji 16.9.4, on page 24
- New Hardware Features in Cisco IOS XE Fuji 16.9.4, on page 24
- New Software Features in Cisco IOS XE Fuji 16.9.3, on page 24
- New Hardware Features in Cisco IOS XE Fuji 16.9.3, on page 25
- New Software Features in Cisco IOS XE Fuji 16.9.2, on page 25
- New Hardware Features in Cisco IOS XE Fuji 16.9.2, on page 25
- New Software Features in Cisco IOS XE Fuji 16.9.1a, on page 25
- New Hardware Features in Cisco IOS XE Fuji 16.9.1a, on page 28

New Software Features in Cisco IOS XE Fuji 16.9.7

There are no new features introduced for Cisco IOS XE Fuji 16.9.7.

New Hardware Features in Cisco IOS XE Fuji 16.9.7

There are no new features introduced for Cisco IOS XE Fuji 16.9.7.

New Software Features in Cisco IOS XE Fuji 16.9.6

There are no new features introduced for Cisco IOS XE Fuji 16.9.6.

New Hardware Features in Cisco IOS XE Fuji 16.9.6

There are no new features introduced for Cisco IOS XE Fuji 16.9.6.

New Software Features in Cisco IOS XE Fuji 16.9.5

There are no new features introduced for Cisco IOS XE Fuji 16.9.5.

New Hardware Features in Cisco IOS XE Fuji 16.9.5

There are no new features introduced for Cisco IOS XE Fuji 16.9.5.

New Software Features in Cisco IOS XE Fuji 16.9.4

- **SDM template enhancement for uRPF scale**

  A new feature template, RSP3_SDM_TEMPLATE_IPV4_IPV6, is introduced to enhance the uRPF scale from 4096 to 32768 and decrease the IPv6 scale from 65536 to 36864. You can enable this template using the sdm prefer ipv4_ipv6 command.

  For more information on SDM template enhancement for uRPF scale, see the Cisco ASR 900 Router Series Configuration Guide, Cisco IOS XE Fuji 16.9.x.

New Hardware Features in Cisco IOS XE Fuji 16.9.4

There are no new features introduced for Cisco IOS XE Fuji 16.9.4.

New Software Features in Cisco IOS XE Fuji 16.9.3

- **BDI statistics Support on RSP3 Module**

  Starting Cisco IOS XE Fuji Release 16.9.3, BDI statistics is supported on the RSP3 module. The **show interface** command displays the BDI statistics for the interface.

  For more information, see Carrier Ethernet Configuration Guide, Cisco IOS XE Fuji 16.9.x (Cisco ASR 900 Series).

- **Control Plane Policing**

  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 Fuji 16.9.x (Cisco ASR 900 Series).

- **Storm Control Support on Port Channel on RSP3 Module**

  Starting with Cisco IOS XE Fuji 16.9.3, storm control over port channel is supported on the RSP3 module. Storm control over port-channel is applicable for port channel interfaces, and is used for restricting the unicast, broadcast and multicast ingress traffic on the port channel interfaces.

  For more information see, Storm Control Configuration Guide, Cisco IOS XE Fuji 16.9.x (Cisco ASR 900 Series).

New Hardware Features in Cisco IOS XE Fuji 16.9.3

There are no new features introduced for Cisco IOS XE Fuji 16.9.3.

New Software Features in Cisco IOS XE Fuji 16.9.2

There are no new features introduced for this release.

New Hardware Features in Cisco IOS XE Fuji 16.9.2

There are no new features introduced for this release.

New Software Features in Cisco IOS XE Fuji 16.9.1a

- **3G CEM LC support with RSP3 400G**

  In addition to support on RSP2 module, 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 is supported on RSP3.

  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 16.9.x.

- **BFD Echo Mode**

  BFD echo mode works with asynchronous BFD. Echo packets are sent by the forwarding engine and forwarded back along the same path in order to perform detection--the BFD session at the other end does not participate in the actual forwarding of the echo packets.

  Starting with Cisco IOS Fuji XE Release 16.9.x, this feature is supported on the RSP3 module.

  For more information, see the IP Routing: BFD Configuration Guide, Cisco IOS XE Fuji 16.9.x (Cisco ASR 900 Series).

- **CoPP**

  The Control Plane Policing feature allows you to configure a quality of service (QoS) filter that manages the traffic flow of control plane packets to protect the control plane of routers and switches against reconnaissance and denial-of-service (DoS) attacks. In this way, the control plane (CP) can help maintain packet forwarding and protocol states despite an attack or heavy traffic load on the router or switch.

  Starting with Cisco IOS XE Fuji Release 16.9.x, this feature is supported on the RSP3 module.

For more information, see the QoS: Policing and Shaping Configuration Guide, Cisco IOS XE Fuji 16.9.x (Cisco ASR 900 Series).

- **Dying Gasp via SNMP Trap**

  Dying GASP via SNMP trap feature is supported on Cisco RSP3 module for ASR 900 Series routers. The supported modules are A900-RSP3C-200-S, A900-RSP3C-400-S, and RSP3–690t for ASR 907 routers. The feature helps to quickly notify a network administrator whenever a node undergoes power shutdown.

  The following new command is introduced:

  platform dying-gasp-port-enable

  For more information on the feature, see the Cisco ASR 900 Router Series Configuration Guide, Cisco IOS XE Fuji 16.9.x.

  For more information on the new command, see the Cisco IOS Interface and Hardware Component Command Reference.

- **HDLC or PPP to Ethernet IPv4 Interworking Pseudowire**

  The L2VPN interworking allows you to connect disparate attachment circuits, for example, TDM and Ethernet attachment circuits. The L2VPN interworking operates in IP (routed) mode that facilitates transport of IPv4 payload in HDLC or PPP frames to Ethernet, over MPLS network translation. The configuration is supported on both A900-RSP2A-128 and A900-RSP3C-400-S.

  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 16.9.x.

- **IPv6 Qos ACL L4 classification with expansion approach on IPv6 QoS SDM Template**

  Maximum number of Layer 4 source and destination matches per interface are supported in maximum IPv6 QoS SDM template.

  For more information, see the Cisco ASR 900 Router Series Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **Micro BFD**

  The BFD feature on ASR 900 RSP3 now 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 on the feature, see the IP Routing: BFD Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **MPLS TE and BGP PIC Edge**

  MPLS TE Load balancing, BGP PIC Edge, and RFC 3107 are now supported over TE-FRR.

  For more information on the feature, see the IP Routing: BGP Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **Multicast VPN over Routed Pseudowire**

  Routed Pseudowire and Virtual Private LAN Services (VPLS) configuration can route layer 3 traffic as well as layer 2 traffic for pseudowire connections between Provider Edge (PE) devices using VPLS multipoint PE. The ability to route frames to and from these interfaces supports termination of pseudowires

into the layer 3 network (VPN or global) on the same switch, or to the tunnel layer 3 frames over a layer 2 tunnel (VPLS).

For more information on the feature, see the IP Multicast: Multicast Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **Programmability Support**
  - Model-Driven Telemetry—Model-driven telemetry allows network devices to continuously stream real time configuration and operating state information to subscribers.
  - Candidate Configuration—A temporary configuration that can be modified without changing running configuration. You can then choose when to update the device's configuration with the candidate configuration, by committing and confirming the candidate configuration.

  For more information, see the Programmability Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **RS232 Sync**

  The serial interface module now supports pseudowire transport over MPLS and raw socket for Sync traffic. Out of 14 ports, 6 ports (8-13) support sync interfaces. RS232 Sync data is carried over Raw Socket.

  For more information, see theCisco ASR 900 Router Series Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **Support for STS-1e**

  3GSM-DS3 ports and 48 T3/E3 ports can now be configured in STS-1e mode. For more information see the,
  - 48-Port T3/E3 CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.9.x
  - 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 16.9.x

- **Transparent Overhead Tunneling Data Communication Channel**

  Transparent Overhead Tunneling Data Communication Channel enables Network Management System (NMS) to discover the existing topology even when new ASR nodes are added as these nodes are transparent to the DCC bytes. These ASR nodes help NMS to tunnel DCC bytes and the connectivity remains intact.

  For more information, see the 1-Port OC-192 or 8-Port Low Rate CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **VPLS Statistics**

  VPLS statistic feature supports packet and byte count in ingress and egress directions.

  For more information on the supported MIBs, see the MPLS Layer 2 VPNs Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **VRRPv3 SNMP MIB**

  SNMP MIBs are now supported for Virtual Router Redundancy Protocol (VRRP) version 3.

  For more information on the supported MIBs, see the First Hop Redundancy Protocols Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **Over Subscription Mode and Partial Port Mode Support on 8-port 10 Gigabit Ethernet Interface Module on the ASR 907 Chassis**

  Over subscription mode enables the operation of the 8-port 10 Gigabit Ethernet interface module in slots with a lesser backplane capacity. With over subscription mode all the front plane ports of the interface module receive and transmit traffic.

  Partial port mode is used to free the used Serializer/Deserializer (SerDes) lines, to accommodate other interface modules that support over subscription in slots that may utilize the shared SerDes.

  Both these modes are introduced to support population of maximum number of interface modules on the chassis.

  For more information, see the Cisco ASR 900 Router Series Configuration Guide, Cisco IOS XE Fuji 16.9.x.

- **Ear and Mouth Type Transmission Only**

  The Ear and Mouth (ENM) Transmission Only (TO) mode configuration supports CESoP without CAS configuration to transport voice data using T1 or E1 CESoP pseudowire. When TYPE TO is configured on the port, the port is always on off-hook state.

  The CESoP is configured without signaling

New Hardware Features in Cisco IOS XE Fuji 16.9.1a

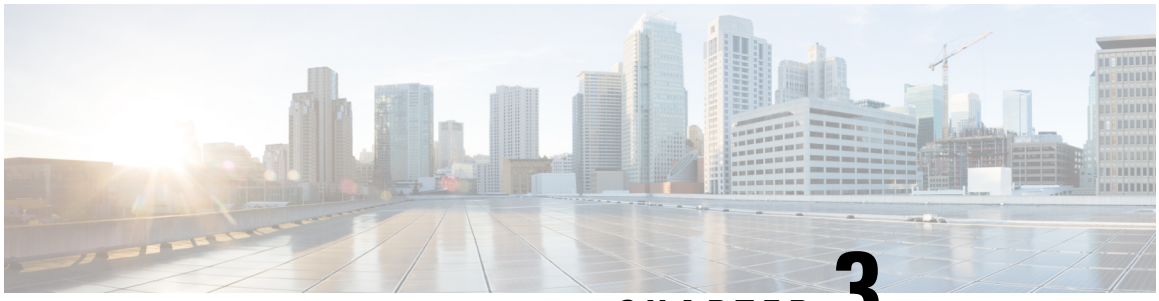
From current release, the following interface module is supported on ASR 907 and ASR 914 chassis.

- **1-port OC48/ 4-port OC12/OC3 + 12-port T1/E1 + 4-port T3/E3 CEM Interface Module**

  The A900-IMA3G-IMSG interface module supports:

  - 12xDS1/E1 + 4xDS3/E3/STS-1e interface over the high-density port
  - 1xOC48/12/3 or 1GE interface and 3xOC12/3 or 1GE interface

  For more information on supported ports, see Cisco ASR 903 and ASR 903U Aggregation Services Router Hardware Installation Guide, Cisco ASR 907 Router Hardware Installation Guide, or Cisco ASR 914 Aggregation Services Router Hardware Installation Guide.



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 30
- Open Caveats – Cisco IOS XE Fuji 16.9.7, on page 30
- Platform Independent Open Caveats - Cisco IOS XE Fuji 16.9.7, on page 30
- Resolved Caveats – Cisco IOS XE Fuji 16.9.7, on page 30
- Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.7, on page 31
- Open Caveats – Cisco IOS XE Fuji 16.9.6, on page 31
- Resolved Caveats – Cisco IOS XE Fuji 16.9.6, on page 31
- Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.6, on page 32
- Open Caveats – Cisco IOS XE Fuji 16.9.5f, on page 32
- Resolved Caveats – Cisco IOS XE Fuji 16.9.5f, on page 33
- Open Caveats – Cisco IOS XE Fuji 16.9.5, on page 33
- Resolved Caveats – Cisco IOS XE Fuji 16.9.5, on page 33
- Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.7, on page 34
- Open Caveats – Cisco IOS XE Fuji 16.9.4, on page 35
- Resolved Caveats – Cisco IOS XE Fuji 16.9.4, on page 36
- Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.4, on page 37
- Open Caveats – Cisco IOS XE Fuji 16.9.3, on page 37
- Platform Independent Open Caveats - Cisco IOS XE Fuji 16.9.3, on page 38
- Resolved Caveats – Cisco IOS XE Fuji 16.9.3, on page 38
- Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.3, on page 39
- Open Caveats – Cisco IOS XE Fuji 16.9.2, on page 39

- Platform Independent Open Caveats - Cisco IOS XE Fuji 16.9.2, on page 40
- Resolved Caveats – Cisco IOS XE Fuji 16.9.2, on page 40
- Platform Independent Open Caveats - Cisco IOS XE Fuji 16.9.2, on page 42
- Open Caveats – Cisco IOS XE Fuji 16.9.1a, on page 44
- Resolved Caveats – Cisco IOS XE Fuji 16.9.1a, on page 47

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 Fuji 16.9.7

Caveat ID Number	Description
CSCvo42088	Default SONET Path alarm severity is not correct
CSCvp16487	High CPU utilisation observed for IOMD process

Platform Independent Open Caveats - Cisco IOS XE Fuji 16.9.7

Caveat ID Number	Description
CSCvv79677	ASR902-RSP2 crashed after BGP flaps
CSCvv80471	IPv6 BGP update is not applied after changes to inbound route-map
CSCvw19062	Changing external route tag does not update origin code in BGP
CSCvw44599	IPSLA UDP-jitter: Packets are sent at appx 2ms less or more than the config packet interval

Resolved Caveats – Cisco IOS XE Fuji 16.9.7

Caveat ID Number	Description
CSCvv24059	Router crash noticed on RSP when EMPLSINTD is exhausted.
CSCvv51145	Crash seen on **show plat hard pp active feature multicast database ipv4 table label eos**
CSCvv83093	OBFL updation with valid time after NTP Sync in RTC failure case

Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.7

Caveat ID Number	Description
CSCvu85572	Dynamic neighbor does not form when peer-group is shutdown in different vrf
CSCvv17560	BMP BGP server can lead to CPUHOG and crashes
CSCvv40006	Traceback: IP SLA triggers INJECT_HDR_LENGTH_ER and INJECT_FEATURE_ESCAPE log message
CSCvv64633	BGP: advertised community list is malformed due to GSHUT community
CSCvw05035	BGP fall-over not working when Null0 static route is configured
CSCvw37109	Pseudowire interface may be unexpectedly removed from VFI on unrelated configuration change
CSCvx02515	BGP IPv6 link-local session does not come up

Open Caveats – Cisco IOS XE Fuji 16.9.6

Caveat ID Number	Description
CSCvi58066	[show platform hardware qfp active feature ipsec debugging] passed into mcprp_dc_handler
CSCvt82525	ASR 900 crash while IPV6 updating prefixes

Resolved Caveats – Cisco IOS XE Fuji 16.9.6

Caveat ID Number	Description
CSCvn47496	ENH : RSP3C Request for overriding restriction "MVPN-GRE VRF-SM: RP must be at Encap PE"
CSCvo80325	CFM Error object observed after CFM session flap
CSCvq07399	OBFL updation with valid time after NTP Sync in RTC failure case
CSCvq64605	RSP3: RLFA resource leak on FRR create/delete with link flaps
CSCvr29358	Placeholder - RSP3C: Read only file system error/IO error seen on eUSB
CSCvr86355	Netconf login via loopback int is failing though it is working with other inband int

Caveat ID Number	Description
CSCvs34482	ISSU not working on RSP2 nodes
CSCvt14323	ASR903 IGMP: reports received on mLACP Port-Channel dropped incorrectly
CSCvt25458	MPLS TE is not coming UP when bandwidth configured on Juniper head end
CSCvt35963	Uea_mgr and keepalive crashes observed in a sequence after attempting to enable service-offload
CSCvt58155	rsp3c: Kernel crash bcmINTR rcu_check_callback
CSCvt64706	CPU HOG due to constant soft-parity errors
CSCvt98075	ASR903-memory leak seen on SNMP DG when IGP flaps
CSCvu18276	ASR903 Standby RSP3 crash during IOS upgrade
CSCvu30972	ASR903: All readings for Power supply unit reflect as zero though the unit is functional
CSCvu95940	RSP2:Egress QoS policy config missing on PoCh member link flap

Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.6

Caveat ID Number	Description
CSCvs18780	SR Labels not installed in forwarding plane when there are multiple sources for the prefix SID
CSCvs95815	C1111 telnet refused for link-local addresses when using ipv6 access class

Open Caveats – Cisco IOS XE Fuji 16.9.5f

Caveat ID Number	Description
CSCvj88449	VCoP BERT test to a physical loop
CSCvm84355	[SVSP-299]-'linkDown' trap should not be sent when the port is in AINS mode-[SVSPE-570]
CSCvn99725	Iomd crash followed by E&M module reload during ISSU
CSCvq64605	RSP3: RLFA resource leak on FRR create/delete with link flaps
CSCvs30865	rLFA for LDP causes loss of MPLS traffic after RSP switchover
CSCvs58993	Crash after Failed to write chassis filesystem object pf/2/fan property state

Resolved Caveats – Cisco IOS XE Fuji 16.9.5f

Caveat ID Number	Description
CSCvr97004	VTY lines higher than 5 cannot be configured NVGEN
CSCvt21903	RSP2 traffic drops observed with IPSec traffic

Open Caveats – Cisco IOS XE Fuji 16.9.5

Caveat ID Number	Description
CSCvj88449	VCoP BERT test to a physical loop
CSCvm84355	[SVSP-299]-'linkDown' trap should not be sent when the port is in AINS mode-[SVSPE-570]
CSCvn99725	Iomd crash followed by E&M module reload during ISSU
CSCvq64605	RSP3: RLFA resource leak on FRR create/delete with link flaps
CSCvs30865	rLFA for LDP causes loss of MPLS traffic after RSP switchover
CSCvs58993	Crash after Failed to write chassis filesystem object pf/2/fan property state

Resolved Caveats – Cisco IOS XE Fuji 16.9.5

Caveat ID Number	Description
CSCvk56297	Enhancement request to warn about different software image in RSP3
CSCvk68174	Led Indicator on ASR903 showing down after configuring xconnect
CSCvm31596	ASR903 RSP3C-400-S going in hang state
CSCvm79556	RSP3: MSPW VC down after Switchover (Error Local access circuit is not ready for label advertise)
CSCvp48572	Limitation of configuring 280 or more service instances under one interface/portchannel in ASR903
CSCvp91087	PRBS/BERT line is not working on pdh de1 of 3GMS IM
CSCvq67129	ASR 907 forwards directed broadcast out same interface if uRPF is enabled on BDI
CSCvq67989	NCS4200-1T8S-10CS : APS Protect : LAIS : Incorrect response alarm reported
CSCvq76305	ASR900 autoRP listener functionality issue

Caveat ID Number	Description
CSCvr28956	Show debug memory leak should not be the part of "show tech" as this is intriusive command
CSCvr40112	Removing pseudowire-class for 1 peer makes all the peers fail.
CSCvr50508	ASR920: Router_RP_0_fman_rp crash on applying conditional crypto debug
CSCvr59626	RSP2_HA: Standby RP goes for a crash upon continuous rep interface flap
CSCvr97005	ASR920-IMA3G loopback CLI rejected on T1 controller when AINS alarm-profile configured
CSCvm38889	New fan tray speed algorithm based upon type of IMs present in ASR903 chassis
CSCvq16372	ROMMON auto upgrade in RSP3

Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.7

Caveat ID Number	Description
CSCvf02131	IP SLA can trigger crash when used with MPLS probe
CSCvm79556	RSP3: MSPW VC down after Switchover (Error Local access circuit is not ready for label advertise)
CSCvo55194	After RSP switchover label imposition was not programmed in Software on APS standby router
CSCvo71904	The 'app-hosting' fails with "ip unnumbered" configuration in Virtual PortGroup
CSCvp74674	QoS fails to apply to tunnel2 when underlying tunnel1 reachability change
CSCvp77521	Device-tracking tracking 0.0.0.0 mask ignored after Legacy IPDT to SISF conversion
CSCvp81958	BGL18 Alpha: Cat9x00 hitting "No connections to Shell Manager available for processing the command"
CSCvp91484	CSCvp91484 - SDA Fabric Multicast - Unable to calculate RPF from LISP
CSCvq19669	Evaluation of all for TCP_SACK
CSCvq33994	BGP YANG oper address-family fails with vpnv4-unicast
CSCvq56114	Cat3k crash in IGMP code due to invalid source count in DNS lookup
CSCvq58265	ASR1K BGP PIC Repair path broke after link flap
CSCvq69866	HSRPv2 crash whilst retrieving group from received packet

Caveat ID Number	Description
CSCvq70148	BGP is improperly formatting the BGP ASSET attribute if ASSET attribute length is beyond 255
CSCvq76305	ASR900 autoRP listener functionality issue
CSCvq78692	mGRE L3VPN broken after reload
CSCvq89252	IP SLA for Path-Jitter returning a value which isn't defined by the MIB
CSCvq96794	VPLS label misprogramming after RSP switchover
CSCvr05213	Smart licensing PID and SN logs filling up the IOSRP tracelogs
CSCvr05406	LISP Map-cache not updated correctly after wired Host-mobility
CSCvr08740	Router crash after receiving EVPN route-type 2 without any ext-community
CSCvr09014	IGP metric not detected MPLS TE topology
CSCvr10897	Adjacency SIDs not detected in mpls traffic-eng topology (interop issue)
CSCvr12450	LISP: Block adding SVI (anycast gateway) MAC address to LISP ethernet database after svi reconfig
CSCvr18919	Cat9k SVL - Upon redundancy failover, route being purged on downstream device
CSCvr23104	BGP looped update among 3 peers
CSCvr27393	Crash on "BGP Router" process
CSCvr37065	C9200L kernel Oops jumbo packets
CSCvr39868	Unexpected reload when issueing show ip mroute vrf <vrf> verbose
CSCvr40112	Removing pseudowire-class for 1 peer makes all the peers fail.
CSCvr54031	TBs seen with scaled IP SLA configs with "ip sla reset"
CSCvr59231	Cat9400- PNP fails with Dual Supervisor with non default startup vlan
CSCvs02038	BGP Loss of RPKI Table
CSCvs15811	cbr8/L2VPN : Toggle of PW-Status-TLV causes Backup PW to remain DOWN

Open Caveats – Cisco IOS XE Fuji 16.9.4

Caveat ID Number	Description
CSCvj33102	[SVSP-215]-AINS card type profile not working post router reload for DS1 card
CSCvk00975	LDP not coming up due to TCP failure with OS mode and 2:1 mode

Caveat ID Number	Description
CSCvn13911	RSP3:ARAD sesnor threshold alarms not displaying on console, in FAN OIR thermal shutdown case
CSCvo18347	RSP2:Service impact seen while enabling the netconf-yang model
CSCvo60233	IMA8Z : OTN mode Port Not Coming Up after shutdown , MSR, SSO and no shutdown in Sequence
CSCvq54167	ASR Crash fib_rpf_list_hw_notify_create

Resolved Caveats – Cisco IOS XE Fuji 16.9.4

Caveat ID Number	Description
CSCvi93315	RSP2: Cylon_Mgr Crash in Multicast on RP SSO Soak
CSCvj75078	RSP3: IOMD crash @ iomd_bsess_open_callback_retry on new active after RP SSO
CSCvk32423	IMA8Z 6-port mode, hwidx not created leading to complete traffic drop
CSCvn40185	RSP3: With USB device connected to RSP3 and reloading RSP3 causing erase startup configs.
CSCvn82547	ASR903 : OSPF packets over VPLS are punted to CPU queue 15
CSCvn97073	Vz Sol: serdes release doesn't happen for OCx IM when moved from slot 14 to slot 12
CSCvo10847	RSP3:POCH TE-FRR with Min Link less than No of Members Triggers FRR Via FLCD
CSCvo40953	SDH : Serial interface stay in up/down status for SDH Modes
CSCvo44727	OC-3 port will not clear PUNEQ alarm
CSCvo65688	16.9.3-QIP-crete-TOD flaps in Crete (master) when setup is left overnight
CSCvp16947	ASR907 shows CRITICAL alarm when one of the power supplies is missing
CSCvp19127	Card-protection : Channelized T1 circuits fails to pass traffic , after RSP switchover
CSCvp25241	APS group OC48 does not send signal fail indication in K1 byte
CSCvp27918	ASR900 Router should throw out warning when wrong FAN TRAY installed (Module overheat and shut down)

Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.4

Caveat ID Number	Description
CSCvm06775	ATOM CW is not exchanged after node reload
CSCvn01354	ICMP echo probe is successful when the source interface does not have the ip address.
CSCvo21122	Memory leak at hman process
CSCvo41879	Interface is not joined to mcast map-notify after reload
CSCvo62584	DHCP discover packets were being dropped at firewall since UDP source port as 0.
CSCvo67856	in.telnetd process consumes 100% CPU in show process cpu platform sorted
CSCvo90060	Wrong label programming leading to traffic drop
CSCvo90231	spurious accesses are seen in show alignment output with BGP
CSCvp71303	Router crashes when "tod-clock revertive" command is executed
CSCvp78236	Crash during SNMP Configuration, ospfv3_pdb_from_router_info

Open Caveats – Cisco IOS XE Fuji 16.9.3

Caveat ID Number	Description
CSCvj32802	RSP3: Tunnel stats are not working after FRR cutover
CSCvm76770	Unpredictable asymmetry on T1/E1 IM
CSCvn99716	C3794 controller displays down state with traffic flow
CSCvn99725	IOMD crash followed by E&M module reload during ISSU
CSCvo65688	QIP-TOD flaps in Cisco ASR-920-12SZ-IM and ASR-920U-12SZ-IM (master) when setup is left overnight
CSCvn97073	SerDes release does not work for OCx IM when moved from slot 14 to slot 12
CSCvo78794	iMSG : RSP3 on standy chooses continous reload with combination of HDLC and PPP
CSCvo35450	ASICs to IM SerDes connectivity goes down after random reloads
CSCvo80325	CFM Error object observed after CFM session flap
CSCvp19127	A900-IMA48D-C protection : T1 circuits fails to pass traffic, after RSP switchover

Platform Independent Open Caveats - Cisco IOS XE Fuji 16.9.3

Caveat ID Number	Description
CSCvk34062	LLDP TX not working on few ports after the router is reloaded

Resolved Caveats – Cisco IOS XE Fuji 16.9.3

Caveat ID Number	Description
CSCvc38475	SerDes not locking with ISSU and reload
CSCvf21504	RSP3: Gig TX RX Fails when RP SSO During Link Flap of Another Gig on Same IMA8S1Z IM
CSCvi21714	ASR907 showing alarms of power supply 3 missing
CSCvj39070	Router crashes during MPLS FRR cutover
CSCvk13764	uea_mgr fault on fp_0_0 issue leads to 907 crash on boot-up .
CSCvk54023	Convergence delay in active RSP removal
CSCvk59137	Fan tray temperature read as 0 degree Celsius
CSCvk72044	adjmgr_get_fid_index crashes in soak run
CSCvk75941	[RP-OIR]: Interface comes out of PoCH on IM OIR followed by RP OIR.
CSCvm74609	A900-IMASER14A/S signaling: Not able to remove the signaling commands when device is booted with older images.
CSCvm83498	SONET SIT: PUNEQ is asserted to wrong port with 3c and 12c config on port pair
CSCvm90040	A900-IMASER14A/S: Duplicate IP Addresses in Different Routing Contexts Break Listener
CSCvm96368	non-Cisco USB is not recognized in Rommon while it shows up in IOS-XE
CSCvn08456	RSP3: Giant counters incremented for packets bigger than 1500 bytes
CSCvn13793	**no neg auto** command changed to after image upgrade
CSCvn19901	After upgrade (318SP2-1671) the router stayed down
CSCvn49741	ASR903 cylon_mgr crash.
CSCvn64973	A900-IMA4OS module reload with controller mode change
CSCvo07619	ASR920-BDI IPv6 ping failure_FMFP_OBJ_Download_Failure

Caveat ID Number	Description
CSCvn07765	On upgrading the node using ISSU from an image where we have the issue outlined in CSCvn07765 to an image having the fix we expect the CU SFP ports to go down after ISSU completion. Workaround to get the ports up again is to flap the ports once
CSCvj49172	RSP3: VRRP service traffic drop on G8032 ring during cutover and reopt
CSCvj87085	PTPD crashed after removing the PTP configurations, default profile 169
CSCvi72519	Improper configuration of flow ID in ARP/LL entry results in egress QoS misbehavior.
CSCvj70341	RSP3: G.8032 ports stuck in blocked state with Ring in Idle State
CSCvp16487	A900-IMA48D-C: High CPU utilisation observed for IOMD process

Platform Independent Resolved Caveats - Cisco IOS XE Fuji 16.9.3

Caveat ID Number	Description
CSCvm67074	IS-IS Node Cache may consume excessive CPU
CSCvm68200	OBS: router bgp af network mask does not sync to CBD on reload/full-sync
CSCvn00184	IOS-XE can not build SR-TE towards SR node without mpls-te enabled
CSCvn25081	Cisco-IOS-XE-bgp YANG model needs proper handling for **neighbor <ip> activate** command with peer-groups
CSCvn69452	in.telnetd process consumes 100% CPU in show process cpu platform sorted

Open Caveats – Cisco IOS XE Fuji 16.9.2

Caveat ID Number	Description
CSCvi72770	Unpredictable asymmetry across the port on C37.94 IM
CSCvj32802	RSP3: Tunnel stats are not working after FRR cutover
CSCvj84951	ASR903 reports optic field is zero and incorrect Tx/Rx optical power thresholds for QSFP-40G-LR4
CSCvk72286	High Path Asymmetry value ~ 17 msec observed with RS-232 A900-IMASER14A Service
CSCvm64157	IOT: Inconsistent behaviour of E&M impedance attribute
CSCvm88691	ASR07: Gruoup D (9-16) fan failure alarms are not reporting on fan failure condition

Caveat ID Number	Description
CSCvm90040	A900-IMASER14A/S: Duplicate IP Addresses in Different Routing Contexts Break Listener
CSCvm90057	A900-IMASER14A/S: Packet Debugs Cause Router to Crash
CSCvm96368	Non-Cisco USB is not recognized in rommon while it shows up in IOS-XE
CSCvm97580	On shutting backup ABR, traffic drops observed for 6PE over primary ABR drops.
CSCvk77003	One VLAN traffic is not flowing in scaling BCPoMLPPP with 64 VLANs
CSCvm08992	E1 interfaces go DOWN on remote alarm (RDI)
CSCvk73179	TDM traffic in priority queue affected with 9,000 bytes size packet of transit data traffic

Platform Independent Open Caveats - Cisco IOS XE Fuji 16.9.2

Caveat ID Number	Description
CSCvj17588	Router may reload in **BGP Router** process when interface flap occurs with IPv6 MPLS per vrf routes
CSCvk59169	Strict SID has NOT been enabled in ISIS segment-routing
CSCvm52543	Subscriber session hangs after the upgrade and reload
CSCvm59483	Host crashes the DSP if ipv6 commands are configured under Service-Engine [Purge ipv6 config option]
CSCvm61279	Crash under AFW_application_process with shared-line configuration
CSCvm76590	CUBE does not forward 200 OK in SRTP-RTP scenario with TCL script on Dial-peer
CSCvm76699	TCP closed when using Virtual IP HA(high availability)setup with WSAPI registration
CSCvn01507	ISR not recalcluating the hash value correctly after payload change
CSCvn02047	Configuring more than 5k NAT entries cause high CPU utilization with no traffic.

Resolved Caveats – Cisco IOS XE Fuji 16.9.2

Caveat ID Number	Description
CSCvg67742	ASR903-RSP3C Enhancement of log messages on FAN Tray OIR
CSCvh59821	RSP3 : FP Switchover is not successful on active failover due to kernel crash

Caveat ID Number	Description
CSCvi91527	RSP2 8xT1E1 Adaptive Clock Recovery in UNKNOWN status
CSCvj22030	ACR fails with -/+ 50 ppm tolerance
CSCvj27554	Handling for ASIC FPGA SEU on RSP3
CSCvj40597	Show ptp port running and detail showing incorrect clock IDS.
CSCvj43861	E3-CP : show facility-alarm status shows E1 level alarms though its configured as clear channel
CSCvj49266	Rx getting dropped at Master after losing its 10M input.
CSCvj50537	ISSU Failure in ME lab
CSCvj60379	RSP3: ARP Request Not Generated when IPv4 Routable Packets with L4 Header are Punted
CSCvj67071	RS232 A900-IMASER14A/S : line and pattern issues in Albedo with different data/stop bits.
CSCvj76013	RSP3: Error Objects wrt to Load balance on on increasing the BGP next-hop
CSCvj87273	ASR903: False high temp readings from ARAD+ sensor causing system shutdown
CSCvj89265	IOT: Issue with duplex mode while creating RS422 Service
CSCvk04547	Port-channel member link flap on RP OIR
CSCvk14135	With monitoring session configured slave is not locking<167>
CSCvk20144	Not able to see the physical-layer configuration under **show run** command
CSCvk23983	DATACORRUPTION-1-DATAINCONSISTENCY observed with VFI and XCONNECT configuration during reload.
CSCvk32660	EM IM: Dejitter Buffer Not Taking Effect on IM or Router Bootup
CSCvk37892	IOT: Default duplex "full" is displayed in show run output
CSCvk64429	Show controllers output not showing c3794 controller in ASR903U
CSCvk70824	RSP3 crashes after executing "show mac address-table" simultaneously from two vty sessions.
CSCvm04696	Mac learnt on G8032 blocked ports due to DHCPv4 discovery pkts
CSCvm10079	Force QL Tx option is not working when netsync configured with more than 3 input sources.
CSCvm11685	RSP3C crash//UEA_CEF//Pointer held by trefp is NULL
CSCvj76560	BFD DDR BUSY condition not recovered

Caveat ID Number	Description
CSCvk07069	OBFL logging for SBE/MBE FPGA interrupts
CSCvk62834	cylon_mgr crash@nile_cef_prefix_v4u_get_adj_info seen in soak run on image
CSCvj70711	BFD flap during DDR3 Busy recovery
CSCvk45460	MLDP:Router crashed after breaking the core link with recursive enabled
CSCvm21116	RP-reset when **show pla har pp act** command is executed for the failed object after EMPLSintd exhaust

Platform Independent Open Caveats - Cisco IOS XE Fuji 16.9.2

Caveat ID Number	Description
CSCuz14861	IOS-XE Fails to correctly populate RTCP SSRC Field
CSCvf65079	ASR CUBE 1K reloaded with reason: RG-application reload on voice-b2bha RG
CSCvj16209	CME with external SIP trunk registration results into crash
CSCvj24940	Voice VRF with No Bind OPTIONS Ping response not sent
CSCvj25678	Crash after failing to modify xcode
CSCvj27172	Crash during Generic Call Filter Module cleanup
CSCvj43156	Crash in XDR process: "fib_rp_table_broker_encode_buf.size <= FIB_RP_TABLE_BROKER_ENC_BUF_SZ"
CSCvj50005	ISR4K PPE ucode crash when processing ipsec traffic on CWS tunnel
CSCvj69654	OSPF originates default route without "default-information originate"
CSCvj73544	OSPF routing loop for external route with multiple VLINKs/ABRs
CSCvj88138	VASI NAT: FTP ALG translation is sometimes failed
CSCvj91448	PKI:-IP address parsing issue while printing the subject name if classless IP is used in Trustpoint
CSCvj92548	CSR1k-FlexVPN: Spoke to Spoke: Implicit NHRP entry due to expired resolution request handling.
CSCvj92862	Router returns 255 length byte-stream chars instead of actual length for OSPFV2 Key-string
CSCvj95351	OSPF SR uloop : After issuing **clear ip ospf process** OSPF process crashed.
CSCvk00446	BGP high CPU when config 256k vxlan static route

Caveat ID Number	Description
CSCvk02072	Hoot-n-holler multicast traffic marked with DSCP 0
CSCvk07838	CUBE is using wrong source IP address to send SIP error
CSCvk10633	BGP crash while running show command and same time BGP peer reset
CSCvk12152	Unable to remove command **ip nat inside destination**
CSCvk15062	Modification to ZBFW access-lists do not reflect in TCAM
CSCvk17777	When using VRF NAT port used for ftp data is not freed
CSCvk24323	Router crash in ISIS with SR Ti-LFA
CSCvk27007	MGCP status remains Down after IOS upgrade caused by CSCvh70570
CSCvk37875	High Availability system with two Voice Gateways - Crash
CSCvk49905	Crash when shifting the layer 2 LACP member peer from one link to another
CSCvk53405	Router crash - AFW_application_process
CSCvk56331	Initial contact in IKEv1 phase 2 rekey (QM1) causes all crypto sessions to drop
CSCvk60184	Random crash of data plane with SRTP-SRTP / SRTP-RTP load tests
CSCvk65072	Crash due ZBF + NAT
CSCvk65354	Extension Mobility Not working when used with Greek locale on SIP CME
CSCvk66880	CUBE incorrectly fomats SIP SDP
CSCvk69075	No calls shown in output **show call active voice brief** on CUBE & stale entries are present
CSCvk69093	CUBE is not responding to SIP INFO
CSCvm01351	Observed IPv6 Adj memory leaks
CSCvm02627	Incorrect Contact port 5060 used instead of 5061 by CUBE in **302 Moved Temporarily** message
CSCvm03744	%FMFP-3-OBJ_DWNLD_TO_DP_FAILED:fman_fp_image:xxx" appears when configured **ip port-map** on Router
CSCvm06270	ICMP unrechables are not sent to the client on C1117 platform
CSCvm08571	Rework need on CSCvj59170 to support SDP parsing
CSCvm16619	CPP-mcplo-ucode crash while encrypting SIP packets with ALG NAT for SIP
CSCvm53491	SIP CME Crashes when Calling Shared Line
CSCvm56592	CME/BE4K: Corrupted config file for Auto Registered IP Phones after reload

Caveat ID Number	Description
CSCvm56670	ACL dropping packets after updating it - %CPPEXMEM-3-NOMEM
CSCvm66103	Crash due to communication failure - IPC (Inter-Procedure Call) messages between DSP and RP.

Open Caveats – Cisco IOS XE Fuji 16.9.1a

Caveat ID Number	Description
CSCvg10313	Cu clock source still squelched on interface bring up after two SSOs
CSCvi72770	Unpredictable asymmetry across the port on C37.94 IM
CSCvi84049	Attaching E1 serial interface with multilink group failed
CSCvi88851	RSP3: Sometimes IMs Take 4 Minutes to come online after OIR Re-insertion
CSCvi91527	RSP2 8xT1E1 Adaptive Clock Recovery in UNKNOWN status
CSCvj02225	RS232 A900-IMASER14A/S failing due to punt issue in datapath
CSCvj05503	Channelized T3 function is setting DS2 X bits to 0 for normal condition
CSCvj16369	Alarm is not asserted when we do no mode and mode on vt1.5 and ct3 with alarm injected
CSCvj19108	Alarm-profile: Detach alarm-prof after IM removal, later tracebacks are seen when IM is re-inserted.
CSCvj22030	ACR fails with -/+ 50 ppm tolerance
CSCvj32802	RSP3: Tunnel stats are not working after FRR cutover
CSCvj33102	[SVSP-215]-AINS card type profile not working post router reload for DS1 card
CSCvj37683	IP SLA UDPjitter probe - false-positives on RSP3-based routers
CSCvj40597	show ptp port running and detail showing incorrect clock IDS.
CSCvj49266	Rx getting dropped at Master after losing its 10M input.
CSCvj57705	RSP3: Failed to move VLAN to blocked (for normal EFP) on modifying the exclusion list under G8032
CSCvj60860	RS232 A900-IMASER14A/S serial interface output stats are not incr and no end to end traffic.
CSCvj67071	RS232 A900-IMASER14A/S line and pattern issues in Albedo with different data/stop bits.
CSCvj70563	Higher latency with E&M traffic

Caveat ID Number	Description
CSCvj72171	PPPoE packets (PADI PADO PADR PADS PADT) counters are not getting incremented after SSO
CSCvj82644	PTP session moves out of PA after configuring more than 63 scale slaves in HBC<RSP3>
CSCvj84567	rs232 sync: multiple session establishment failures leads to event memory exhaustion in clients
CSCvj84662	ENM IM: Frame and Pattern errors see with Type TO in default operation mode(2-wire).
CSCvj84951	ASR903 reports optic field is zero and incorrect Tx/Rx optical power thresholds for QSFP-40G-LR4
CSCvj88449	VCoP BERT test to a physical loop
CSCvj89265	IOT: Issue with duplex mode while creating RS422 Service
CSCvk04648	FMFP-3-OBJ_DWNLD_TO_DP_FAILED: SIP0: fman_fp_image: adj 0x3e5, Flags None download to DP failed
CSCvk07960	RSP3_400 - silent reload - Last reload reason: Critical process smand fault on rp_0_0 (rc=0)
CSCvk13953	Crash when configuring L2VPN under pseudowire interface
CSCvk14135	With monitoring session configured slave is not locking<167>
CSCvk15424	iMSG: VC missing from AVL tree on standby with scale of 1k, one VC found missing in standby RSP
CSCvg00947	Serial IM LEDs shows inconsistent behavior while performing SSO
CSCvg66190	IOT: A900-IMASER14A/S disconnected clients are not sending any notification
CSCvh51488	RS232 sync, when continous traffic is sent without interframe gap, RX<TX with end to end traffic
CSCvi72770	Unpredictable asymmetry across the port on C37.94 IM
CSCvj02225	RS232 A900-IMASER14A/S failing due to punt issue in datapath
CSCvj24884	Traceback seen while loading image in Active and standby
CSCvj60860	RS232 A900-IMASER14A/S serial interface output stats are not incr and no end to end traffic.
CSCvj70563	Higher latency with E&M traffic
CSCvj74325	X.21: Serial IM flaps/hangs when CEM interface allows to config clock rates 4032000 and 8064000.
CSCvj82372	CPUHOG observed when rs232 A900-IMASER14A/S config and unconfig on ASR920.

Caveat ID Number	Description
CSCvj82885	IOS thread disabled interrupt Tracebacks seen with r232 A900-IMASER14A/S session
CSCvj84567	RS232 A900-IMASER14A/S: multiple session establishment failures leads to event memory exhaustion in clients
CSCvj84662	ENM IM: Frame and Pattern errors see with Type TO in default operation mode(2-wire).
CSCvj86932	X21: CEM ingress and Egress counters are not incrementing for different clock rates.
CSCvk00980	Router crashed while configuring A900-IMASER14A/S raw-tcp service post OIR.
CSCvk23646	RS232 - traffic fails with parity values except default
CSCvk23733	RS232 A900-IMASER14A/S: Pattern(SLIP) issues seen with higher packet-length values(>510)
CSCvk30191	RS232 A900-IMASER14A/S: IM rebooted and IFCFG_CMD_TIMEOUT traces seen with OIR.
CSCvk31981	RS232 A900-IMASER14A/S: raw TCP sessions are up even tough cable is not connected.
CSCvh83686	BGP Link Bandwidth community gets corrupted for a large values
CSCvi11914	BGP PIC/Max-paths:150K scale device stuck with pending issues for huge time with network changes
CSCvi90526	OSPF TILFA: SRLG protect tilfa path computation ALGORITHM fails due to wrong directly connected flag
CSCvi92979	ISIS SRTE: verbatim tunnels stay UP even if the IGP is shut (happens after fail over)
CSCvj09305	slow convergence when configuring ha-mode sso for IPv6 peers
CSCvj10061	Display full IPv6 address in **sh l2tp tunnel**
CSCvj35317	Ti-LFA Repair Path is not Loop-Free
CSCvj73841	Overly aggressive initial SPF delay timer is configured -> SR uloop does not take effect
CSCvj78075	Yang model for arp entries is missing arp alias support
CSCvj81382	IPv6 AAA Prefix Support for 3rd party PPP clients no password for -dhcpv6 Access-Request
CSCvj85608	ARP reply not accepted if sourced from nat alias address in other VRFs
CSCvj93060	VRF stuck in deletion mode
CSCvk24323	Crash in ISIS with SR Ti-LFA
CSCvk32822	QoS stats process crash

Caveat ID Number	Description
CSCvm06486	Unconfiguring cem-group 0 unframed under controller T3, IOSD crash is seen.

Resolved Caveats – Cisco IOS XE Fuji 16.9.1a

Caveat ID Number	Description
CSCvd81332	EVENTLIB-3-CPUHOG: SIP1: iomd traceback observed while doing SSO
CSCve05859	Exxx EIN: G.8275.1 testing: Clock loop forming between synce and PTP
CSCve16000	Max of ECMP path to 8 for RSP3C
CSCve52155	RSP3: BFD Session Between 2 RSP3s Down on Reloading 1 RSP3
CSCve75491	TE auto-bw: Incorrect bandwidth requested on soaking with traffic
CSCvf03157	RSP3: PC stays in suspended state on IM OIR
CSCvf05560	Conditional EXP Marking for BDI+EVC
CSCvf09940	RSP3_2x10GE: output netsync drifting after SSO when locked to 2x10GE
CSCvf33429	APS UNI ADM mode: APS reverts back on clearing the shut from inactive controller
CSCvf41558	Support: A900-IMA1Z8S-CX in slot 0/1 for ASR907 in 5g mode
CSCvf45581	QoS: Configuration failed. Can not configure more than one access-group per class
CSCvf50635	Dynamic stream are getting deleted on ASR920 router with G8275.2 profile on Timing THS
CSCvf54458	903: OOS issue seen at 8X1G IM
CSCvf55743	ASR903: ifHCInBroadcastPkts, ifHCOutBroadcastPkts return incorrect decreasing values for portchannel
CSCvf56674	CPU HOG seen on SSO
CSCvf63352	CESoPSN: A900-IMA48T-C: ACR clock changes from P2 to P1 after SSO
CSCvf66442	MPLS IP support over Routed VPLS.
CSCvf67781	IOT: In SERIAL controllers, the clock-rate value 128000 is not shown in 'show running-config all'
CSCvf72154	RSP3 - PIM neighborship down on BDI interface due to packets ASIC loop.
CSCvf72165	RSP3 - Router crash after "debug platform condition" command is applied.
CSCvf72273	RSP3_G8275.1: Both the PLL locked to REMOTE RP and PLL lock status is OFF

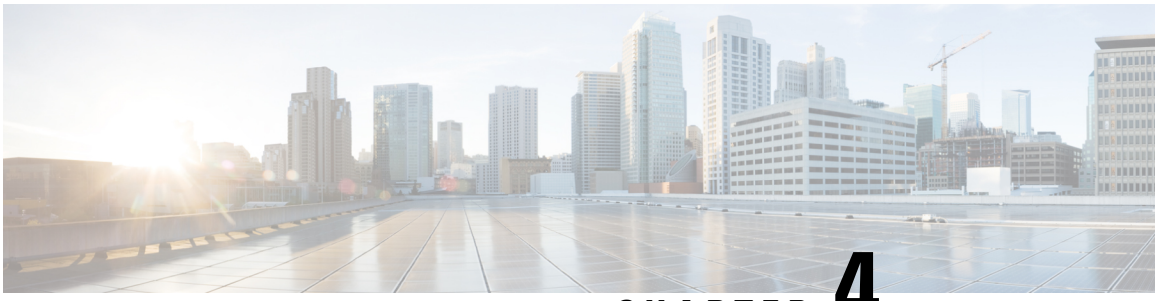
Caveat ID Number	Description
CSCvf72306	Placeholder to support multiple EFPs per port with BDI on RSP3
CSCvf75418	Combo IM/2x10gig IM iomd cpu utilization more than 50%
CSCvf75578	CESoPSN: ACR/DCR :P1 needs to be give more priority than P2
CSCvf76928	1G on 10G peer end remains down on shut/no shut
CSCvf78415	OCx APS CESoP: AIS is seen on DS1 after sonet-acr shut, OIR, no shut
CSCvf79354	RSP3: OOS recovery failed on 1G of SFP combo IM
CSCvf79533	Need to remove free-running CLI under E1 controller
CSCvf80056	MAC-FLAP-Syslog-Not generated for TEFP BDs
CSCvf82663	ASR903/RSP3C crashed at dl_callback
CSCvf85222	[RSP3] CFM over PC scale to be reduced to free up 1 Port Scheduler from each ARAD
CSCvf85795	VC3 TX C2 is displaying as 0 on show controller sdh output
CSCvf86662	RSP3_907: G8275.1 T-GM is hogging and stopping the PTP packets downstream
CSCvf90662	Doing configure replace of A900-IMASER14A/S config with cem config blocks all configs on interface
CSCvf90832	RSP3_907: UTC Offset is NOT taken care properly when VP is selected.
CSCvf90854	configured priority2 under ptp clock is not sent downstream when T- BC selected VP
CSCvf91208	Unable to retrieve stream with G8275.2 profile in timing THS
CSCvf95131	APS: ACR Rate configuration mismatch is seen in **show running** and **show controller**
CSCvf95955	3G : MSP : APS Inactive iff pull out work active cable when lockout of protection
CSCvf97942	Syslog messages for PATH alarm clear not coming for all 48 paths
CSCvf99109	Interface up in RSP3 phase1 IM and down at the peer
CSCvg01156	G275.2 Huge TIE jump seen on slave after reload completes on RSP3 master
CSCvg01577	LineStatusChange notification with not proper for clear event and problem event
CSCvg03308	[RSP3-DHCP-Relay]:unicast dhcp relay is getting dropped in transparent case with HSRP/VRRP/GLBP
CSCvg04717	DDR Busy and Calibration handling in FPGA software driver
CSCvg06691	G8265.1: huge TIE deviation while master is lost and regained continuously.
CSCvg09862	show controller o/p should show both remote and local PMON in the same CLI

Caveat ID Number	Description
CSCvg14825	Require varbind entSensorPrecision,Scale & Type along with trap entSensorThresholdNotification
CSCvg22018	Alarm prof: Modifications in the attached profile is not effective until it is reattached.
CSCvg23956	RSP2: VPLS Backup PW: Enable member bdi CLI under l2vpn xconnect context
CSCvg25003	Router gets rebooted with PTP master switch
CSCvg27327	Netsync is not working on 10G port of celeborn
CSCvg28721	RSP3: uea-mgr crashed while trying to install a label entry in kbp(update case)
CSCvg33938	Behavior of Loopback local and APS group
CSCvg38326	To throw warning and reject the priority configuration in class-default
CSCvg40919	Loopback commands: redundant loopback commands are seen under path
CSCvg42691	RSP3- P node ECMP loadbalancing failing for ip traffic
CSCvg43975	RSP3: Leak in G8032 IOS TDL Messaging on Flapping the Ring
CSCvg49571	RSP3: Accuracy not proper with double failure and restore
CSCvg53410	RSP3: IMA1X handle PHY HiBER events
CSCvg54341	Alarm prof: LP-UNEQ is seen when mode vt-15 is reconfigured
CSCvg61571	CEM traffic is not flowing either in slot 0 or 1 when slot 11 and slot 12 are configured
CSCvg65763	TOD cisco format broken.
CSCvg65787	E3 channelization is not enabled by default, whereas for T3 channelization is enabled by default.
CSCvg66177	DCC interface stats are not getting incremented even though DCC links are UP
CSCvg66287	Alarm prof: port profile is not removed when no mode sonet is executed
CSCvg66293	IOT: Admin and Oper state of C37.94 controller are not proper in SNMP IfTable
CSCvg76895	VID.116-ONS-SI-2G-L1 SFP is rejected by Sonet Module - OC48 SFP Init failure image
CSCvg84699	BFD session not coming up on RSP3 due to wrong platform offload limit
CSCvg88313	ACR/DCR : Global clock config has to be blocked for STSnc
CSCvg88758	STSnC (n=1,12 and 48) : C2 value is not reset to 0 after no mode configuration
CSCvg89287	show facility-alarm status critical|major|minor|info are not displaying selected fields alone

Caveat ID Number	Description
CSCvg90002	SATOP: Remote loopback is not working in card protection controller
CSCvg95992	Change syslog message for RSP3 on fan removal
CSCvh04843	G.8275.1: Unable to scale the number of ports beyond 8.
CSCvh14269	Alarm prof: When a profile is attched, LO alarms are not reported in syslog though syslog is enabled
CSCvi53346	RSP3 : BFD packets not sent out towards 9K after timer change and link flap
CSCvi79409	ENM flaps/hangs on configuring CEM interface
CSCvi80618	G.8265.1- SYNC and Delay Request are not being injected at ASR920 with VRF.
CSCvi84144	Auto-neg off not working
CSCvi92596	ISSU: interface module delay calculation needs to be enhanced for TDM IMs
CSCvi95085	PTP Holdover Timer resets to zero as soon as QL Flap in the event of double failure
CSCvi96045	T3 timestampping not happening on Celeborn 10G
CSCvi97136	Stream is still active though the clock port deleted at master.
CSCvi97402	Conditional marking not working for new policy-map when all 3 marker profile are used
CSCvj00215	CRC on ARAD to be detected and handled
CSCvj02290	Sync RS232: router reloads when traffic is sent in both directions simultaneously
CSCvj02765	G8275.1 : BC hybrid not moving to PA when multiple masters are present
CSCvj04138	**show ptp port virtual** showing Signal Fail as True eventhough the port is up
CSCvj04207	PTP over IMA8Z and IMA2Z is not working
CSCvj06628	RSP3:With HSRP Loop ,Unicast ARP Packet drops due to Br Q choke
CSCvj21360	Need to CLI support for enable/disable of control-word for iMSG feature
CSCvj27560	cman-fp/cmcc heartbeat failure crash due to pca954x channel selection errors.
CSCvj28545	RS422 service is not working on ports 0 to 3
CSCvj30510	DSx UPSR - Access circuit TDM settings mismatch error seen with xconnect
CSCvj35440	Reading wrong ASIC address causing RSP3 crash.
CSCvj39051	Default clock class 6 without input 1pps config 169
CSCvj39606	AG1 CLI command **show ptp port running detail** not showing output
CSCvj40006	Adding one more VLAN tag to the existing service instance causing entire traffic dr

Caveat ID Number	Description
CSCvj43887	Type TO is not working for different payload sizes
CSCvj52956	Unable to configure LOOPBACK option when alarm-profile attached
CSCvj57301	[VF-PT] Slave not locking on a specific ASR903 port (IMA8T Gi0/5/0)
CSCvj57659	SONET SIT: APSd process doesn't get re-initialized when standby IOMD crashes
CSCvj63480	RS232 A900-IMASER14A/S: IOSXE- Router crashed while performing OIR
CSCvj65555	G8275: Clock class value is 6 even when TOD is removed in TGM
CSCvj69889	Memory leaks seen when RS232: A900-IMASER14A/S service is unconfigured and re-configured
CSCvj70809	%SPA_SERIAL_IM-3-NULL_DATA_STRUCTURE: NULL pointer detected: msg in set destination address
CSCvj85141	Policy-map on Multilink interface interrupts ARP on ASR 903
CSCuy30367	ENH: IOS-XE should allow **ip address dhcp** on Tunnel interfaces
CSCve57194	RSP3 crashes @ fillin_mempool_pc_array, mempool_pc_summary_tty
CSCvg51358	DHCPNAK is not sent in roaming scenario.
CSCvh57050	IGMP multicast SSM-map with DNS doesn't work with IGMPv3
CSCvh60871	Unexpected Reboot following 'show platform software adjacency oce [ID]'
CSCvh61453	NULL remote_hostname from LAC
CSCvh69518	%SYS-3-TIMERNEG:Cannot start timer with negative offset Process= "ARP Background"
CSCvi31493	Configuration of BGP auto-summary using NETCONF fails
CSCvi36351	Standby rp crash on removing member link from port-channel
CSCvi60900	DHCP Leasequery Padding contains previously used data
CSCvj87392	DHCP server with option 249 pushes only the routes confiugred in the first instance.
CSCvg39675	3850 DHCP relay updates ARP table with incorrect MAC entry
CSCvh41614	IoT[T1E1 CAS]: CEM counters are getting zero after delete/recreate cem-group with CAS
CSCvh67138	RS232 A900-IMASER14A/S when **no chan-group** is used sessions are not removed
CSCvj53263	IOT: Issue with A900-IMASER14A/S Packet length default value
CSCvj63480	RS232 A900-IMASER14A/S- Router crashed while performing OIR

Caveat ID Number	Description
CSCvj67071	RS232 A900-IMASER14A/S: line and pattern issues in Albedo with different data/stop bits.
CSCvj69889	memory leaks seen when sync RS232 rA900-IMASER14A/S is unconfigured and re-configured
CSCvj89265	IOT: Issue with duplex mode while creating RS422 Service
CSCvk20144	Not able to see the physical-layer configuration under **show run** command
CSCvk32660	EM IM: Dejitter Buffer Not Taking Effect on IM or Router Bootup
CSCve01696	Support IPsec feature with metroipaccess license
CSCvh55384	Need to Accept User Configurable 4Wire E&M CEM Payload and Dejitter Buffer Values



CHAPTER 4

Restrictions and Limitations

- From the Cisco IOS XE 16.5.1 and 16.6.1 releases, In-Service Software Upgrade (ISSU) is not supported on the router to the latest releases.
- The port restriction on 1-port OC-192 or 8-port low rate CEM interface module is on port pair groups. If you have OC48 configured on a port, the possible port pair groups are 0-1, 2-3, 4-5, 6-7. If one of the port within this port group is configured with OC48 rate, the other port cannot be used.
- RS422 pinout works only on ports from 0 to 7.
- The **ip cef accounting** command is *not* supported on the router.
- Crash may be observed on the router when:
    - EoMPLS, CEM, ATM and IMA Pseudowire Redundancy (PW-redundancy) configurations exist while switchover and fail-back of the pseudowires are being triggered, and the **show platform hardware pp active pw eompls** command is executed.
- Configuration sync does *not* happen on the Standby RSP when the active RSP has Cisco Software Licensing configured, and the standby RSP has Smart Licensing configured on the router. If the active RSP has Smart Licensing configured, the state of the standby RSP is undetermined. The state could be pending or authorized as the sync between the RSP modules is not performed.
- Evaluation mode feature licenses may not be available to use after disabling, and enabling the smart licensing on the RSP2 module. A reload of the router is required.
- Ingress counters are not incremented for packets of the below format on the RSP3 module for the 10 Gigabit Ethernet interfaces, 100 Gigabit Ethernet interfaces, and 40 Gigabit Ethernet interfaces:

  Packet Format

  MAC header---->Vlan header---->Length/Type

  When these packets are received on the RSP3 module, the packets are not dropped, but the counters are not incremented.
- T1 SAToP, T3 SAToP, and CT3 are supported on an UPSR ring only with local connect mode. Cross-connect configuration of T1, T3, and CT3 circuits to UPSR are not supported.
- PTP is not supported when 8-port 10 Gigabit Ethernet interface module is in oversubscribed mode.
- ISSU is not supported between a Cisco IOS XE 3S Release and the Cisco IOS XE Fuji 16.9.1.
- This following restrictions are applicable only to Cisco RSP2 module.

- 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 bi-directionally at the line rate.

- Effective with Cisco IOS XE Everest 16.6.1, the Port-channel (PoCH) scale is reduced to 24 from 48 for Cisco ASR 900 RSP3 module.



Note The PoCH scale for Cisco ASR 907 routers is 48.

- Important Notes, on page 54

Important Notes



Note Port channel 61-64 is not supported in the 16.9.3 release. The range of configurable port channel interfaces has been limited to 60.