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

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.