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 Hardware and Software Features in Cisco IOS XE Fuji 16.8.1c

Not applicable for this release.

New Hardware Features in Cisco IOS XE Fuji 16.8.1b

Not applicable for this release.

New Software Features in Cisco IOS XE Fuji 16.8.1b

- **16K EFP Support on Port Channel**

  16K EFPs on port channel are supported on the Cisco ASR 900 RSP3 module.

  For more information, see Quality of Service Configuration Guidelines, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series).

  The following new command is introduced for this feature:

  - platform port-channel members-asic-id

  For more information on the new command, see the Cisco IOS Quality of Service Solutions Command Reference.

- **Far-end Performance Monitoring Support**

The far-end counters for performance monitoring counters are supported for the following interface modules:

- 48-Port T1/E1 CEM Interface Module
- 48-Port T3/E3 CEM Interface Module
- 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
- 1-Port OC-192 or 8-Port Low Rate CEM Interface Module

The output for the **show controllers** commands are updated for far-end counters.

For more information on performance monitoring, see:

- 48-Port T1/E1 CEM Interface Module Configuration Guide
- 48-Port T3/E3 CEM Interface Module Configuration Guide
- 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
- 1-Port OC-192 or 8-Port Low Rate CEM Interface Module Configuration Guide

The following commands are updated for this feature:

- show controllers t1
- show controllers e1
- show controllers t3
- show controllers e3
- show controllers sonnet

For more information on the commands, see the Cisco IOS Interface and Hardware Component Command Reference

- **IPv6 QoS support for SDM Template**

  SDM template is supported for IPv6 QoS features on the Cisco ASR 900 RSP2 module. The resources supported for the IPv6 QoS SDM template are updated in the table detailing Feature Resources Allowed by Each SDM Template (RSP2).

  For more information on IPv6 QoS SDM template, see Cisco ASR 900 Router Series Configuration Guide.

- **Loopback Remote on T1 and T3 Interfaces**

  The Cisco ASR 903 and Cisco ASR 907 now support loopback remote configuration. The loopback remote configuration attempts to put the far-end T1 or T3 interfaces into a loopback. The loopback remote setting loops back the far-end at line or payload, using inband bit-orientated CDE (IBOC) or the ESF loopback codes to communicate the request to the far-end. This feature is supported on the following interface modules:

  - 48-Port T1/E1 CEM Interface Module
  - 48-Port T3/E3 CEM Interface Module

- 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
- 1-Port OC-192 or 8-Port Low Rate CEM Interface Module

For more information on loopback remote configuration, see:

- 48-Port T1/E1 CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series)
- 48-Port T3/E3 CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series)
- 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 16.8.x (Cisco ASR 900 Series)
- 1-Port OC-192 or 8-Port Low Rate CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series)

The following new command is introduced for this feature:

- Loopback remote

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

- **Multi EFPs for Single BDI Support on Cisco RSP3 Module**

  The Cisco ASR 900 RSP3 module now supports multiple EFPs with a single BDI.

  For more information, see the Carrier Ethernet Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series).

- **Programmability**

  - Model-Based AAA— Implements the NETCONF Access Control Model (NACM). NACM is a form of role-based access control (RBAC) specified in RFC 6536.
  - NETCONF Global Session Lock and Kill Session—Provides a global lock and the ability to kill non-responsive sessions in NETCONF. During a session conflict or client misuse of the global lock, NETCONF sessions can be monitored via the show netconf-yang sessions command, and non-responsive sessions can be cleared using the **clear configuration lock** command.
  - NETCONF and RESTCONF Debug commands—Commands for debugging were added.
  - NETCONF and RESTCONF IPv6 Support—Data model interfaces (DMIs) support the use of IPv6 protocol. DMI IPv6 support helps client applications to communicate with services that use IPv6 addresses. External facing interfaces will provide dual-stack support; both IPv4 and IPv6.
  - YANG Data Models—For the list of Cisco IOS XE YANG models available with this release, navigate to https://github.com/YangModels/yang/tree/master/vendor/cisco/xe/1681

    Revision statements embedded in the YANG files indicate if there has been a model revision. The README.md file in the same github location highlights changes that have been made in the release.

  For more information on the Programmability features, see the Programmability Configuration Guide, Cisco IOS XE Fuji 16.8.x.

- **Support for Alarm Profiling**

  The alarm profiling feature enables you to create a unique alarm profile for chassis, card or interface module, and port. Each alarm profile, for example, chassis alarm profile, is defined with an alarm name. Each alarm profile is classified based on controller types such as SONET, SDH, DS1, and DS3. For each controller type, there are a set of alarms defined with default severity. You can overwrite the default severity using the alarm profile and suppress the syslog facility based on your preference. By default, the syslog facility is enabled for the alarm profile.

  For more information on performance monitoring, see:

  - 48-Port T1/E1 CEM Interface Module Configuration Guide
  - 48-Port T3/E3 CEM Interface Module Configuration Guide
  - 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
  - 1-Port OC-192 or 8-Port Low Rate CEM Interface Module Configuration Guide

  The following new commands are introduced for this feature:

  - alarm-profile
  - alarm-profile attach
  - attach profile-name
  - show alarm-profile

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

- **Support for Seven Level Priority Queues on Cisco RSP2 Module**

  The Cisco ASR 900 RSP2 module now supports seven priority levels: level 1 (high) to level 7 (low). The device places traffic with a high-priority level on the outbound link ahead of traffic with a low-priority level. High-priority packets, therefore, are not delayed behind low-priority packets.

  For more information, see the QoS: Congestion Management Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900).

- **Support of DS1 Framed Structure-Agnostic TDM over Packet (SAToP)**

  Framed Structure-Agnostic TDM over Packet (SAToP) detects an incoming AIS alarm in the DS1 SAToP mode. Framed SAToP helps in the detection of a packet drop and enhances performance by detecting the alarm earlier in the network. This feature is supported on the following interface modules:

  - 48-Port T1/E1 CEM Interface Module
  - 48-Port T3/E3 CEM Interface Module
  - 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
  - 1-Port OC-192 or 8-Port Low Rate CEM Interface Module

Note BERT is not supported in system direction for framed SAToP.

For more information on loopback remote configuration, see:

- 48-Port T1/E1 CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series)
- 48-Port T3/E3 CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series)
- 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 16.8.x (Cisco ASR 900 Series)
- 1-Port OC-192 or 8-Port Low Rate CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series)

The **cem-group group-number** command is updated with the new keyword framed as follows:

- cem-group *group-number framed*

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

- **Support of DS3 Circuit Emulation over Packet (CEP)**

  DS3 Circuit Emulation over Packet (CEP) feature is introduced to achieve STS-1 or VC4 CEP configuration on the interface module. Here, T3 or E3 can be mapped to either STS-1 or VC4 to be emulated on a packet network.

  This feature is supported on the following interface module:

  - 48-Port T3/E3 CEM Interface Module
  - 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

  For more information on loopback remote configuration, see:

  - 48-Port T3/E3 CEM Interface Module Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series)
  - 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 16.8.x (Cisco ASR 900 Series)

  The **show controllers t3** command is updated with the new keyword path as follows:

  - show controllers t3 *path*

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

- **VPLS over Backup Pseudowire**

Pseudowire redundancy allows you to detect any failure in the network and reroute the Layer 2 service to another endpoint that can continue to deliver service by providing additional backup pseudowire. This feature enables recovery from a failure of either the remote provider edge (PE) router or the link between the PE and customer edge (CE) routers.

For more information, see the MPLS Layer 2 VPNs Configuration Guide, Cisco IOS XE Fuji 16.8.x (Cisco ASR 900 Series).