New Features in Cisco IOS XE 3.7S Releases

This chapter provides information about the new features introduced in the Cisco IOS XE Release 3.7S.

Note Cisco IOS XE 3.7S inherits all supported features from Cisco IOS Release 3.5, which is not described in this document. For more information about Cisco IOS Release 3.5, see the Release Notes for Cisco IOS XE Release 3S.

This chapter includes the following sections:

New Hardware Features in Cisco IOS XE Release 3.7(4)S

The IOS XE 3.7(4)S Release for the Cisco ASR 903 Router does not introduce any new hardware features.

New Hardware Features in Cisco IOS XE Release 3.7(3)S

The IOS XE 3.7(3)S Release for the Cisco ASR 903 Router does not introduce any new hardware features.

New Hardware Features in Cisco IOS XE Release 3.7(2)S

The IOS XE 3.7(2)S Release for the Cisco ASR 903 Router does not introduce any new hardware features.

New Hardware Features in Cisco IOS XE Release 3.7(1)aS

The IOS XE 3.7(1)aS Release for the Cisco ASR 903 Router introduces the following hardware features:

- AC Power Supply—Release 3.7(1)aS3.7(1)aS introduces support for the AC power supply. For more information about the AC power supply, see the *Cisco ASR 903 Hardware Guide*.

New Hardware Features in Cisco IOS XE Release 3.7(0)S

Release 3.7 introduces support for the ONS-SC-155-EL SFP module.

New Software Features in Cisco IOS XE Release 3.7(4)S

The IOS XE 3.7(4)S Release for the Cisco ASR 903 Router does not introduce any new software features.

New Software Features in Cisco IOS XE Release 3.7(3)S

The IOS XE 3.7(3)S Release for the Cisco ASR 903 Router does not introduce any new software features.

New Software Features in Cisco IOS XE Release 3.7(2)S

The IOS XE 3.7(2)S Release for the Cisco ASR 903 Router does not introduce any new software features.

New Software Features in Cisco IOS XE Release 3.7(1)aS

Release 3.7(1) introduces support for QoS policies on egress MLPPP interfaces on the T1/E1 interface module. For more information about how to configure QoS policies on MLPPP interfaces, see the *Cisco ASR 903 Router Chassis Configuration Guide, Release 3.7*.

New Software Features in Cisco IOS XE Release 3.7(0)S

The following are the new software features introduced in Cisco IOS XE Release 3.7(0)S:

- BGP Graceful Shutdown—The BGP Graceful Shutdown feature reduces or eliminates the loss of traffic along a link being shut down for maintenance. Routers always have a valid route available during the convergence process. This feature is used primarily for maintenance on a link between a PE and CE. For more information, see
http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_bgp/configuration/xe-3s/irg-grace-shut.html.

- Channelization Support—This release introduces support for channelization on the OC-3 interface module using the **channel-group** command. For more information, see
http://www.cisco.com/en/US/docs/routers/asr903/software/guide/chassis/Release3.7.0S/ASR903-Chassis-SW-37.html.

- DHCP Option 82—In residential, metropolitan Ethernet-access environments, DHCP can centrally manage the IP address assignments for a large number of subscribers. When the DHCP option-82 feature is enabled on a switch, a subscriber device is identified by the switch port through which it connects to the network in addition to its MAC address. Multiple hosts on the subscriber LAN can be connected to the same port on the access switch and are uniquely identified.For more information, see http://www.cisco.com/en/US/docs/wireless/asr_900/feature/guides/dhcp82.html.

- DHCP Snooping—DHCP snooping is a DHCP security feature that provides network security by filtering untrusted DHCP messages and by building and maintaining a DHCP snooping binding database, also referred to as a DHCP snooping binding table. DHCP snooping acts like a firewall between untrusted hosts and DHCP servers. You use DHCP snooping to differentiate between untrusted interfaces connected to the end user and trusted interfaces connected to the DHCP server or another switch. For more information, see
http://www.cisco.com/en/US/docs/wireless/asr_900/feature/guides/dhcp82.html.

- Dynamic ARP Inspection—Dynamic ARP inspection determines the validity of an ARP packet based on valid IP-to-MAC address bindings stored in a trusted database, the DHCP snooping binding database. This database is built by DHCP snooping if DHCP snooping is enabled on the bridge-domains and on the router. If the ARP packet is received on a trusted interface, the router forwards the packet without any checks. On untrusted interfaces, the switch forwards the packet only if it is valid. For more information, see
http://www.cisco.com/en/US/docs/wireless/asr_900/feature/guides/dynarp.html.

- E2E Transparent Clocking—A transparent clock is a network device such as a switch that calculates the time it requires to forward traffic and updates the PTP time correction field to account for the delay, making the device transparent in terms of timing calculations. The transparent clock ports have no state because the transparent clock does not need to synchronize to the grandmaster clock. An end-to-end transparent clock measures the residence time of a PTP message and accumulates the times in the correction field of the PTP message or an follow-up message. For more information, see
http://www.cisco.com/en/US/docs/routers/asr903/software/guide/chassis/Release3.7.0S/ASR903-Chassis-SW-37.html.

- GOLD—Generic Online Diagnostic (GOLD) is a health monitoring feature implemented on the Cisco ASR 903 Router. The GOLD functionality is developed to provide online diagnostic capabilities that run at bootup, in the background on a periodic basis, or based on demand from the CLI. For more information, see
http://www.cisco.com/en/US/docs/wireless/asr_900/feature/guides/GOLD.html.

- Hot Standby Pseudowire Support—The Hot Standby Pseudowire feature provides faster failover of a backup pseudowire and reduced traffic loss during failover by setting the backup pseudowire to a hot standby state, such that it can immediately take over if the primary pseudowire fails. This feature is supported for Ethernet only; TDM and ATM interfaces are not supported. For more information, see:

  - http://www.cisco.com/en/US/docs/routers/7600/install_config/ES40_config_guide/es40_chap6.html.

- http://www.cisco.com/en/US/docs/ios/12_0s/feature/guide/fspseudo.html

- http://www.cisco.com/en/US/partner/docs/ios/mpls/configuration/guide/mp_hspw_for_atm.html#wp1054150

- **Hybrid Clocking Support**—Hybrid clocking mode that uses clock frequency obtained from the synchronous Ethernet port while using phase (ToD or 1PPS) obtained using PTP. The combination of multiple time and phase sources for the same master clock improves performance over using PTP alone. The router can act as a hybrid clock in both master ordinary clock and slave ordinary clock. For more information, see
http://www.cisco.com/en/US/docs/routers/asr903/software/guide/chassis/Release3.7.0S/ASR903-Chassis-SW-37.html.

- **IPv6 ACL**—IPv6 Access Control Lists (ACLs) determine what traffic is blocked and what traffic is forwarded at device interfaces. ACLs allow filtering based on source and destination addresses, inbound and outbound to a specific interface. For more information, see
http://www.cisco.com/en/US/docs/wireless/asr_900/feature/guides/IPv6_ACL.html.

- **Layer 2 QoS for ATM**—This feature introduces support for support cbr and vbr on ATM interfaces. For more information, see
http://www.cisco.com/en/US/partner/docs/ios-xml/ios/mp_l2_vpns/configuration/xe-3s/qos-atm-vp-support-xe.html

- **Link Path Through**—This feature enables a local EoMPLS PE router to detect a failure in the path between the remote PE and CE routers. The local PE router propagates the failure to the local CE router such that it brings down the pseudowire connection and can more quickly reestablish the connection when the remote CE-PE connection is restored. This feature is enabled automatically and does not introduce any new CLI commands.

- **MAC Address Security for EVC Bridge-Domain**—MAC address security for EVCs. Provides the capability to control and filter the MAC address learning behavior at the granularity of a single EVC service instance. For more information, see:

  - http://www.cisco.com/en/US/docs/ios-xml/ios/cether/configuration/xe-3s/asr903/ce-mac-addlmt-bdsin.html

  - http://www.cisco.com/en/US/docs/ios-xml/ios/cether/configuration/xe-3s/ce-mac-addlmt-bdsin.html

- **MAC Limiting**—Mac address limiting per bridge-domain restricts the number of MAC addresses that the router learns in bridge-domain on an EFP, pseudowire or switch port. For more information, see http://www.cisco.com/en/US/docs/wireless/asr_900/feature/guides/mac_limiting.html.

- **MPLS VPN**—The MPLS VPN Inter-AS with ASBRs Exchanging VPN-IPv4 Addresses feature allows a Multiprotocol Label Switching (MPLS) Virtual Private Network (VPN) to span service providers and autonomous systems. For more information, see
http://www.cisco.com/en/US/docs/ios/mpls/configuration/guide/mp_vpn_connect_asbr.html.

- **Multicast Static MAC Addresses**— Static MAC addresses allow you to enable multicast at the layer 2 level. You can use multicast static MAC addresses to forward multicast packets to specific EFPs on a network. For more information, see
http://www.cisco.com/en/US/docs/wireless/asr_900/feature/guides/evc.html.

- **Multi-Level Priority Queues (MPQ)**—This feature allows you to configure multiple priority queues for multiple traffic classes by specifying a different priority level for each of the traffic classes in a single service policy map. You can configure multiple service policy maps per router. Having multiple priority queues enables the router to place delay-sensitive traffic (for example, voice) on the outbound link before delay-insensitive traffic. As a result, high-priority traffic receives the lowest latency possible on the router. For more information, see:

- – http://www.cisco.com/en/US/docs/ios-xml/ios/qos_conmgt/configuration/xe-3s/asr903/qos-conmgt-multilevel-pq.html

- – http://www.cisco.com/en/US/docs/ios-xml/ios/qos_conmgt/configuration/xe-3s/qos-conmgt-multilevel-pq.html

- • N:1 PVC mapping to PWE with non-unique VPI—This feature allows you to map one or more ATM permanent virtual circuits (PVCs) to a single pseudowire. For more information, see http://www.cisco.com/en/US/docs/ios-xml/ios/atm/configuration/15-2s/atm-n1pvc-mapping.html.

- • Onboard Failure Logging—The Onboard Failure Logging (OBFL) feature collects data such as operating temperatures, hardware uptime, interrupts, and other important events and messages from system hardware installed in a Cisco router or switch. The data is stored in nonvolatile memory and helps technical personnel diagnose hardware problems. For more information, see http://www.cisco.com/en/US/docs/wireless/asr_900/feature/guides/onboard_failure_logging.html.

- • PTP Redundancy—PTP redundancy allows a PTP slave clock to select the best master from multiple available master clocks based on clock quality and availability. For more information, see http://www.cisco.com/en/US/docs/routers/asr903/software/guide/chassis/Release3.7.0S/ASR903-Chassis-SW-37.html.

- • Time of Day Selection—You can use the time of day (ToD) and 1PPS ports on the Cisco ASR 903 Series Router to exchange ToD clocking. In master mode, the router can receive time of day (ToD) clocking from an external GPS unit; the router requires a ToD, 1PPS, and 10Mhz connection to the GPS unit. For more information, see http://www.cisco.com/en/US/docs/routers/asr903/software/guide/chassis/Release3.7.0S/ASR903-Chassis-SW-37.html