Release Notes for Cisco MWR 2941 Mobile Wireless Edge Router for Cisco IOS Release 12.2(33)MRB

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These release notes are for the Cisco MWR Mobile Wireless Edge Router for Cisco IOS Release 12.2(33)MRB. These release notes are updated as needed to describe new features, memory requirements, hardware support, software platform deferrals, and changes to the microcode.

For a list of the software caveats that apply to Cisco IOS Release 12.2(33)MRB, see the "Caveats in Cisco IOS Release 12.2(33)MRB" section on page 18.

To review all Cisco MWR 2941 release notes, including *Release Notes for Cisco MWR 2941 Mobile Wireless Edge Router for Cisco IOS Release 12.2(33)MRB,* go to:

http://www.cisco.com/en/US/products/ps9395/prod_release_notes_list.html

To review release notes for the Cisco IOS Software Release 12.2SR, go to:

http://www.cisco.com/en/US/products/ps6922/prod_release_notes_list.html

Contents

This document contains the following sections:

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Introduction

The Cisco MWR 2941 Mobile Wireless Router is a cell-site access platform specifically designed to aggregate and transport mixed-generation radio access network (RAN) traffic. The router is used at the cell site edge as a part of a 2G, 3G, or 4G radio access network (RAN). The Cisco MWR 2941 includes the following models:

- Cisco MWR 2941-DC
- Cisco MWR 2941-DC-A

The Cisco MWR 2941 router helps enable a variety of RAN solutions by extending IP connectivity to devices using Global System for Mobile Communications (GSM), General Packet Radio Service (GPRS), Node Bs using HSPA or LTE, base transceiver stations (BTSs) using Enhanced Data Rates for GSM Evolution (EDGE), Code Division Multiple Access (CDMA), CDMA-2000, EVDO, or WiMAX, and other cell-site equipment. It transparently and efficiently transports cell-site voice, data, and signaling traffic over IP using traditional T1 and E1 circuits, as well as alternative backhaul networks such as Carrier Ethernet and DSL, Ethernet in the First Mile (EFM), and WiMAX. It also supports standards-based Internet Engineering Task Force (IETF) Internet protocols over the RAN transport network, including those standardized at the Third-Generation Partnership Project (3GPP) for IP RAN transport. Custom designed for the cell site, the Cisco MWR 2941 features a small form factor, extended operating temperature, and cell-site DC input voltages.

System Requirements

Table 1 lists the supported system configurations for the Cisco MWR 2941:

Memory Requirements

Table 1 lists the required memory for using this software.

Table 1 Cisco IOS Release 12.2(33)MRB Memory Requirements

Platform	Feature Set	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs From
Cisco MWR 2941 Mobile Wireless Edge Router	RAN Optimization	mwr2941-adviprank9-mz.122-33.MRB.bin	128 MB	512 MB	RAM
Cisco MWR 2941 Mobile Wireless Edge Router	RAN Optimization	mwr2941-advipran-mz.122-33.MRB.bin	128 MB	512 MB	RAM

Determining the Software Version

To determine the image and version of Cisco IOS software running on your Cisco MWR 2941 router, log in to the router and enter the **show version** EXEC command:

```
router> show version
Cisco IOS Software, 2900 Software (MWR2900-ADVIPRANK9-M), Version 12.2(33)MRB, RELEASE
SOFTWARE (fc1)
```

Upgrading to a New Software Release

Release 12.2(33)MRB does not support the following features that were supported in Release 12.4(20)MR1:

- GSM Abis optimization
- IP Header Compression (IPHC)
- Reduced HWIC support—Release 12.2(33)MRB does not support the HWIC-1GE-SFP, HWIC-4SHDSL, HWIC-1ADSL, and HWIC-1 ADSL-I HWICs.
- GRE offload

For general information about upgrading to a new software release, refer to the *Software Installation and Upgrade Procedures* at:

http://www.cisco.com/en/US/products/hw/routers/ps259/products_tech_note09186a00801fc986.shtml

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco MWR 2941 router.

New Hardware Features in Release 12.2(33)MRB

Release 12.2(33)MRB introduces support for the HWIC-D-9ESW.

Note Software Release 12.2(33)MRB is compatible with FPGA version 0x71 and later; ensure that the HWIC-D-9ESW card has FPGA version HWIC-D-9ESW FPGA version 0x71 or later in order to ensure compatibility with Release 12.2(33)MRB.

New Software Features in Release 12.2(33)MRB

Release 12.2(33)MRB introduces support for the following new software features.

Multicast Features

The Release 12.2(33)MRB introduces support for the following multicast features:

- Support for multicast traffic on VLANs and Ethernet interfaces, including the HWIC-D-9ESW. Multicast traffic is not supported on other interface types.
- Protocol Independent Multicast (PIM)
  - PIM Sparse Mode—Multicast routing uses a unidirectional shared tree whose root node is called the rendezvous point (RP). We recommend that you use PIM Sparse mode.
  - PIM Sparse-Dense Mode—Treats the interface in either sparse mode or dense mode of operation, depending on which mode the multicast group operates in.

Note PIM Dense mode is not supported.

  - Support for PIM version 2 for PIM join/leave messaging
- Source Specific Multicast—An extension of IP multicast described in RFC 3569 which forwards datagram traffic to receivers from only those multicast sources that the receivers have explicitly joined. For multicast groups configured for SSM, only source-specific multicast distribution trees (not shared trees) are created.
- Internet Group Management Protocol (IGMP)—12.2(33)MRB supports the following IGMP features.
  - Support for Internet Group Management Protocol (IGMP) versions 1 and 2 for multicast join and leave messaging
  - Support for IGMP version 2 for SSM multicast join and leave messaging
- Multicast VPN
- Multicast VPN Routing and Forwarding (MVRF)

For more information about how to configure multicast, see the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB* and the Cisco IOS IP Multicast Configuration Guide, Release 12.2SR.

Note The MWR 2941 does not support all of the commands described in the IOS Release 12.2SR documentation.

New Commands

Release 12.2(33)MRB introduces support for the following multicast commands:

Global Commands

- **ip multicast-routing**
- **ip pim bsr-candidate**

- **ip pim register-source**
- **ip pim rp-address**
- **ip pim rp-candidate**
- **ip pim send-rp-announce**
- **ip pim send-rp-discovery**
- **ip pim ssm**

Interface-level Commands

- **ip igmp join-group**
- **ip igmp query-interval**
- **ip igmp query-max-response-time**
- **ip igmp static-group**
- **ip igmp version**
- **ip pim**
- **ip pim bsr-border**
- **ip pim query-interval**
- **ip pim version**

IP VRF Configuration Mode Commands

- **mdt data group-address-range**
- **mdt default group-address**

MBGP Configuration Mode Commands

- **address-family ipv4 mdt**

Sample Configurations

The following sample configurations show how to configure multicast on the Cisco MWR 2941.

Note These sections provide partial configurations in order to demonstrate a specific feature.

- PIM Sparse Mode with a Static Rendezvous Point
- Source-Specific Multicast

PIM Sparse Mode with a Static Rendezvous Point

The following configuration uses PIM sparse mode with a static rendezvous point.

```
!
ip multicast-routing
!
interface VLAN2
 description Ethernet Backhaul
 ip pim sparse-mode
 ip pim query-interval 2
 ip pim version 2
```

```
!
interface VLAN3
 description Ethernet Shorthaul
 ip pim sparse-mode
 ip pim version 2
 ip igmp query-max-response-time 5
 ip igmp query-interval 7
!
ip pim register-source Loopback0
ip pim rp-address 1.1.1.1 2 override
!
access-list 2 permit 239.193.0.0 0.0.255.255
access-list 2 permit 239.194.0.0 0.0.255.255
!
```

Source-Specific Multicast

The following configuration uses source-specific multicast.

```
!
ip multicast-routing
!
interface VLAN2
 description Ethernet Backhaul
 ip pim sparse-mode
 ip pim query-interval 2
 ip pim version 2
!
interface VLAN3
 description Ethernet Shorthaul
 ip pim sparse-mode
 ip pim version 2
 ip pim bsr-border
 ip igmp static-group 239.193.0.3 source 10.234.0.125
 ip igmp static-group 239.193.0.3 source 10.234.45.133
 ip igmp static-group 239.193.0.3 source 10.234.45.137
 ip igmp static-group 239.193.0.3 source 10.234.45.141
 ip igmp static-group 239.193.0.3 source 10.234.45.129
 ip igmp static-group 239.193.0.12 source 10.234.0.125
 ip igmp static-group 239.193.0.12 source 10.234.45.133
 ip igmp static-group 239.193.0.12 source 10.234.45.137
 ip igmp static-group 239.193.0.12 source 10.234.45.141
 ip igmp static-group 239.193.0.12 source 10.234.45.129
 ip igmp query-max-response-time 5
 ip igmp query-interval 7
!
ip access-list standard SSM
 permit 239.193.0.0 0.0.255.255
 permit 239.194.0.0 0.0.255.255
!
ip pim register-source Loopback0
ip pim ssm range SSM
!
```

Multicast VPN

The following configuration uses Multicast VPN with BGP.

```
vrf definition myvrf
rd 55:2222
route-target export 55:2222
route-target import 55:2222
mdt default 232.0.0.1
mdt data 232.0.1.0 0.0.0.255 threshold 500 list 101
!
ip multicast-routing
ip multicast-routing vrf myvrf
!
router bgp 55
!
address-family vpnv4
neighbor 192.168.1.1 activate
neighbor 192.168.1.1 send-community both
!
address-family ipv4 mdt
neighbor 192.168.1.1 activate
neighbor 192.168.1.1 send-community both
```

For more information about how to configure multicast, see the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB* and the Cisco IOS IP Multicast Configuration Guide, Release 12.2SR.

Note The MWR 2941 does not support all of the commands described in the IOS Release 12.2SR documentation.

Static Pseudowire Labels

Static pseudowire labels allow you to use locally configured pseudowire labels instead of dynamically exchanging pseudowire labels using MPLS Label Distribution Protocol (LDP). Static pseudowire labels provide a simplified configuration for sites that do not support LDP. You can use static pseudowire labels with SAToP or CESoPSN pseudowires over Frame Relay, TDM, ATM, Ethernet, PPP, and HDLC connections.

This feature introduces the following new commands.

- **mpls label range**—Defines a new MPLS label.
- **mpls label**—Defines local and remote circuit labels on an MPLS pseudowire interface.
- **mpls control-word**—Configures (or disables) an MPLS control word. This command is optional.

Note When implementing a static pseudowire label configuration, ensure that each side has the same MPLS label, control word, and MTU settings. These settings must match for the pseudowire connection to function properly.

The following partial sample configuration shows how to configure static pseudowire labels.

```
!
xconnect logging pseudowire status
mpls label range 200 8191 static 16 199
!
```

```
controller T1 0/0
 framing esf
 clock source internal
 linecode b8zs
 mode atm
!
interface ATM0/0
 no ip address
 no scrambling-payload
 no atm enable-ilmi-trap
 no atm ilmi-keepalive
 xconnect 20.20.1.2 50 encapsulation mpls manual
  mpls label 50 50
  no mpls control-word
!
interface Vlan30
 no ip address
 no ptp enable
 xconnect 20.20.1.2 30 encapsulation mpls manual
  mpls label 30 30
  no mpls control-word
!
```

You can use the **show mpls l2transport vc detail** and **ping mpls pseudowire** commands to verify your configuration.

For more information about how to configure static pseudowire, see the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB*.

1PPS Input and Output Using RS-422

This feature enables 1PPS input and output using RS422 via the BITS/SYNC port. This feature modifies the **ptp input** command syntax to include the **rs422** parameter:

```
Router(config)# ptp input {[10M | 2.048M | 1.544M]} {[1pps] | [1pps rs422]}
```

For more information about how to configure static pseudowire, see the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB*.

Support for the tx-limit Command

Release 12.2(33)MRB introduces support for the **tx-limit** command, which allows you to specify the number of transmit buffers for an ATM virtual circuit (VC). Tuning the number of transmit buffers on theATM VC can help eliminate transmit congestion and dropped packets in the transmit queue on the ATM VC. You can use this command in ATM VC, VC-bundle, VC-class, or VC-range configuration mode.

The following example shows an ATM VC being configured for a maximum of 500 buffers:

```
Router# configure terminal
Router(config)# interface atm 4/0/0.10 point-to-point
Router(config-subif)# pvc 10/101
Router(config-if-atm-vc)# tx-limit 500
Router(config-if-atm-vc)#
```

For more information about the **tx-limit** command, see the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB*.

New Hardware Features in Release 12.2(33)MRA

Software Release 12.2(33)MRA introduces support for the MWR-2941-DC-A.

Note Software Release 12.4(20)MR1 does not support the MWR-2941-DC-A. For more information about compatibility, see System Requirements.

New Software Features in Release 12.2(33)MRA

The following sections describe the features supported in Release 12.2(33)MRA.

- Carrier Ethernet features—Release 12.2(33)MRA introduces support for the following Carrier Ethernet features.
  - Resilient Ethernet Protocol (REP)—REP is a Cisco proprietary protocol that provides an alternative to Spanning Tree Protocol (STP) to control network loops, handle link failures, and improve convergence time. REP controls a group of ports connected in a segment, ensures that the segment does not create any bridging loops, and responds to link failures within the segment. REP provides a basis for constructing more complex networks and supports VLAN load balancing.
  - Ethernet Operations, Administration, and Maintenance (OAM)—Ethernet OAM is a protocol for installing, monitoring, and troubleshooting Ethernet networks to increase management capability within the context of the overall Ethernet infrastructure. Release 12.2(33)MRA includes support for IEEE 802.1ag Connectivity Fault Management (CFM) draft version 1.0, Ethernet Local Management Interface (E-LMI), and IEEE 802.3ah Ethernet OAM discovery, link monitoring, remote fault detection, and remote loopback.
- Hybrid PTP Clocking—Release 12.2(33)MRA supports a hybrid clocking mode that uses clock frequency obtained from the synchronous Ethernet port while using phase (ToD or 1PPS) obtained using PTP.
- Network Clock Quality Selection using REP—Release 12.2(33)MRA provides an alternative to the Ethernet Synchronization Message Channel (ESMC) utilizing REP ring topology changes to trigger network clock quality selection.

Note Release 12.2(33)MRA does not support the G.8264 standard.

- Timing port commands—Release 12.2(33)MRA supports the following commands for the 1PPS, 10Mhz, 2.048Mhz, and 1.544Mhz timing ports that are included on the 2941-DC-A.

Note The following commands are only supported on the Cisco MWR 2941-DC-A as the Cisco MWR 2941 does not have these timing ports.

  - **ptp input**—Enables PTP input clocking using the 1.544Mhz, 2.048Mhz, or 10Mhz timing interface or time of day messages using the 1PPS interface.
  - **ptp output**—Enables PTP output clocking using the 1.544Mhz, 2.048Mhz, or 10Mhz timing interface or time of day messages using the 1PPS interface.
  - **network-clock-select**—This command is modified to include timing sources using the 10Mhz, 2.048Mhz, or 1.544Mhz.

  - **ptp tod**—Configures the time of day message format used by the 1PPS interface.
  - **ptp update-calendar**—Configures the router to periodically update the system calendar to match the PTP clock.
- Hot Standby Master Clock—Allows the Cisco MWR 2941 to measure recovered clock quality from two PTP master clocks and switch dynamically between them without entering holdover mode. To configure a hot standby master clock, configure two **ptp clock source** statements on a VLAN interface.
- Slave mode transparent clock termination—Allows the Cisco MWR 2941 to use the correction field in PTP clocking messages to recover accurate clock.

Note Release 12.2(33)MRA does not formally support transparent clocking as it does not set the correction field in PTP clocking messages.

- Slave mode unicast delay-request while in PTP multicast mode—Enables the router to send PTP Delay_Req messages in unicast fashion while in PTP multicast slave mode. This setting eliminates unnecessary traffic generated by multicast messages that are dropped by all recipients except one.
- Bidirectional Failure Detection (BFD) support for static routes
- Increased VLAN capacity—This release allows you to configure up to 255 VLANs on the Cisco MWR 2941.

Supported Software Features in Release 12.2(33)MRA

The following software features were introduced in previous software releases for the Cisco MWR 2941 and are supported in 12.2(33)MRA.

Routing Features

- BGP routing
- IS–IS routing
- Open Shortest Path First (OSPF) routing
- Bidirectional Failure Detection (BFD) support for BGP, IS–IS, and OSPF routing protocols
- Generic Routing Encapsulation (GRE)—GRE is a tunneling protocol developed by Cisco that can encapsulate a wide variety of protocol packet types inside IP tunnels, creating a virtual point-to-point link to Cisco routers at remote points over an IP internetwork. GRE tunneling allows you to transport a pseudowire over an IP backhaul network when MPLS routing is not available between a cell site (BTS or Node-B) and an aggregation point (BSC or RNC).
- Multiprotocol Label Switching (MPLS)
- Label Distribution Protocol (LDP)

Clocking and Timing Features

- Clocking features—Cisco IOS Release 12.2(33)MRA supports the following clocking features:
  - Precision Time Protocol (PTP)—Clocking and clock recovery based on the IEEE 1588-2008 standard; allows the Cisco MWR 2941 router to receive clocking from another PTP-enabled device or provide clocking to a PTP-enabled device.

This feature includes a variety of new global commands: **ptp domain**, **ptp mode**, **ptp priority1**, and **ptp priority2**; the following interface commands: **ptp announce**, **ptp clock-destination**, **ptp clock-source**, **ptp delay-req**, **ptp enable**, **ptp master**, **ptp slave**, and **ptp sync**; and the following show commands: **show ptp clock**, **show ptp foreign-master-record**, **show ptp parent**, **show ptp port**, and **show ptp time-property**.

  - Adaptive Clock Recovery (ACR)—Pseudowire-based Timing over Packet (TOP) that allows the MWR 2941 to use in-band or out-of-band clocking on a virtual or regular TDM pseudowire interface. ACR allows the Cisco MWR 2941 to recover clocking from the headers of a packet stream and is compliant with the G.823 and G.824 standards. You can use the **recovered-clock slave** command to configure out-of-band clock recovery and the **recovered-clock recovered adaptive** command to configure adaptive clock recovery.
  - Synchronous Ethernet—Allows the network to transport frequency and time information over Ethernet. You can use the **network-clock-select** command to configure synchronous Ethernet.

Note The RTM module is not required to use Synchronous Ethernet.

  - BITS Clocking

- PTP redundancy—This release supports PTP redundancy using multicast as defined in the IEEE 1588-2008 standard. This feature allows the Cisco MWR 2941 to use multicast routing to establish redundant paths between an external PTP client and one or more PTP multicast master clocks.

Note The Cisco MWR 2941 does not offer general support for multicast.

Pseudowire Features

- PWE3 Circuit Emulation over PSN (Packet Switched Network)—Allows you to create pseudowires (PWs) that emulate unstructured and structured T1s and E1s over an MPLS infrastructure, down to NxDS0 circuits. The Cisco MWR 2941 supports the following PWE3 standards:
  - Structure-agnostic TDM over Packet (SAToP)—Encapsulates TDM bit-streams (T1, E1, T3, E3) as PWs over PSNs; the feature is compliant with RFC 4553.
  - Structure-aware TDM Circuit Emulation Service over Packet-Switched Network (CESoPSN)—Encapsulates structured (NxDS0) TDM signals as PWs over PSNs; the feature is compliant with RFC 5086.
  - Transportation of Service Using ATM over MPLS—Uses an Asynchronous Transfer Mode (ATM) PW to carry cells over an MPLS network; the feature is compliant with RFCs 4717 and 4816.
  - Transportation of Service Using Ethernet over MPLS—This release supports EoMPLS pseudowires for VLANs.

VPN Features

- Layer 3 VPNs— Layer 3 VPNs provide an alternative to traditional VPNs that is easier to manage and expand than conventional VPNs through use of layer 3 communication protocols and a peer architecture.
- VPN Routing and Forwarding (VRF) Lite for OSPF

MLPPP Features

- Distributed Multilink Point-to-Point Protocol (dMLPPP)—dMLPPP allows you to combine T1 or E1 connections into a bundle that has the combined bandwidth of all of the connections in the bundle, providing improved capacity and CPU utilization over MLPPP.The dMLPPP offload feature improves the performance for traffic in dMLPPP applications such as PWE3 over MLPPP and IP over MLPPP by shifting processing of this traffic from the main CPU to the network processor. dMLPPP also uses interleaving to improve processing of delay-sensitive packets.The MWR 2941 supports dMLPPP for up to 16 T1/E1 links per MLPPP bundle and up to 12 bundles per router.
- Multiclass MLPPP—The MWR 2941 implementation of dMLPPP also supports Multiclass MLPPP. Multiclass MLPPP is an extension to MLPPP functionality that allows you to divide traffic passing over a multilink bundle into several independently sequenced streams or classes. Each multiclass MLPPP class has a unique sequence number, and the receiving network peer processes each stream independently. The multiclass MLPPP standard is defined in RFC 2686.
- Larger MTU size—This release includes support for MTU sizes of up to 4470 bytes on switched virtual interfaces (SVIs). The default MTU size is 1500 bytes, and the maximum MTU size supported over MLPPP links is 1536 bytes.

Note The Cisco MWR 2941 does not support some PPP and MLPPP options because the bundle is offloaded to the network processor. For more information, see Limitations and Restrictions or the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRA*.

T1/E1 Features

- Channel-Associated Signaling (CAS)—This release supports CAS signaling, a form of in-band digital signaling for T1 and E1 connections. CAS transmits signaling information inside each DS0 channel rather than in a separate channel and can also be described as robbed bit signaling. The Cisco MWR 2941 supports CAS for SAToP and CESoPSN pseudowires and is compliant with the ITU G.704 standard for CRC-4 and non-CRC-4 formats and the ANSI T1.403 standard for SF and ESF frame formats.

ATM Features

- Inverse Multiplexing for ATM (IMA)—This feature allows you to connect one or more interfaces to an ATM network using Inverse Multiplexing ATM (IMA). You can define IMA groups that can contain up to 8 bundles, with up to 24 links per bundle.
- ATM—This release includes ATM support with AAL0 and AAL5 encapsulation, F4 and F5 OAM (Operation, Administration, and Maintenance) monitoring, and Virtual Path (VP) shaping.
- ATM cell switching
- ATM Class of Service (CoS) commands—Release 12.2(33)MRA supports the following ATM CoS commands:
  - **ubr+**—Allows you to configure an unspecified bit rate (UBR) quality of service (QoS) and specify the output peak cell rate and output minimum guaranteed cell rate for an ATM permanent virtual circuit (PVC), PVC range, switched virtual circuit (SVC), virtual circuit (VC) class, or VC bundle member.

  - **vbr-nrt**—Allows you to configure the variable bit rate-nonreal time (VBR-NRT) quality of service (QoS) and specify output peak cell rate (PCR), output sustainable cell rate (SCR), and output maximum burst cell size for an ATM permanent virtual circuit (PVC), PVC range, switched virtual circuit (SVC), VC class, or VC bundle member.
  - **vbr-rt**—Allows you to configure the real-time variable bit rate (VBR) for VoATM voice connections.

LAN Features

- IEEE 802.1d Ethernet Switching
- IEEE 802.1q VLANS
- VLAN Trunking Protocol (VTP)
- Per-VLAN Spanning Tree (PVST)+
- Flexlink—Backup switchport interfaces using the **switchport backup interface** command.
- Dynamic Trunking Protocol (DTP)

QoS Features

- Quality of Service (QoS) support—This release includes support for QoS features on some interfaces. For more information, see the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRA*.

Network Management Features

- Cisco Networking Services (CNS)—CNS is a collection of services that can provide remote configuration of Cisco IOS networking devices and remote execution of some command-line interface (CLI) commands. CNS allows a Cisco MWR 2941 deployed and powered on in the field to automatically download its configuration. The Cisco MWR 2941 supports CNS on all Gigabit Ethernet interfaces except HWIC interface module interfaces.

Limitations and Restrictions

Caution The Cisco MWR 2941 router does not support online insertion and removal (OIR) of WAN interface cards. Any attempt to perform OIR on a card in a powered-on router might cause damage to the card.

Cisco IOS Release 12.2(33)MRB for the Cisco MWR 2941 router has the following limitations and restrictions:

- GSM Abis optimization not supported—Release 12.2(33)MRB does not support GSM Abis optimization feature that was supported in Release 12.4(20)MR1.
- Reduced HWIC support—Release 12.2(33)MRB does not support the HWIC-1GE-SFP, HWIC-4SHDSL, HWIC-1ADSL, and HWIC-1ADSL-I HWICs that were supported in Release 12.4(20)MR1.
- GRE offload not supported— 12.2(33)MRB does not support the GRE offload feature that was supported in Release 12.4(20)MR1.
- UMTS Iub Optimization not supported—Release 12.2(33)MRB does not support UMTS Iub optimization.

- L2TP not supported—The MWR 2941 currently does not support L2TP.
- Multicast used for PTP redundancy only—This release provides support for multicast in order to establish PTP redundancy; the Cisco MWR 2941 does not support multicast for other uses.
- Out-of-band master mode not supported—This release does not support out-of-band master mode for Timing over Packet/adaptive clock recovery. If your network design requires out-of-band master clocking, you can use the CEoPs SPA on the 7600 router for this purpose.
- ACR out-of-band payload limitation—The MWR 2941 only supports the payload-size values 486 (625 packets per second) or 243 (1250 packets per second) for out-of-band clock recovery.
- T1 SAToP is not supported on the HWIC-4T1/E1.
- Limited OAM support—ATM OAM (Operation, Administration, and Maintenance) is not supported on the short haul side of the Cisco MWR 2941.
- The Cisco MWR 2941 does not support the **mpls traffic-eng tunnels** command at the global or interface level.
- QoS Limitations—The Cisco MWR 2941 provides limited QoS support. For more information, see the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB*.
- The Cisco MWR 2941 does not support the following options on offloaded dMLPPP bundles:
  - **ppp multilink idle-link**
  - **ppp multilink queue depth**
  - **ppp multilink fragment maximum**
  - **ppp multilink slippage**
  - **ppp timeout multilink lost-fragment**

Note If you have a bundle that requires the use of these options, contact Cisco support for assistance.

For more information about configuring dMLPPP, see the *Cisco MWR 2941-DC Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB*.

- MPLS pseudowire ping not supported—This release does not support the **ping mpls pseudowire** command. We recommend that you use the **ping mpls ipv4** command for operation and maintenance of MPLS connections.
- CAS limitations—The Cisco MWR 2941 implementation of CAS has the following limitations:
  - CAS is not supported on T1 and E1 HWICs.
  - When configuring a CESoPSN pseudowire to use CAS, you must configure the controller to use CAS signalling prior to creating a cem group, tdm group, or channel group. Otherwise the Cisco MWR 2941 rejects the **mode cas** command.
  - CAS is only supported on pseudowire connections between two Cisco MWR 2941 routers; the 7600 router does not currently support CAS.
- PTP only supported on Gigabit Ethernet interfaces—The Cisco MWR 2941 only supports PTP traffic on onboard Gigabit Ethernet interfaces.
- PPPoA not supported—This release does not provide support for PPPoA.
- ADSL not supported—This release does not support ADSL.

- PTP Master clocking not supported—Release 12.2(33)MRB contains commands to configure the Cisco MWR 2941 as a Master clock. These commands are intended for trial use only and are not designed for use in a production network.
- IP Header Compression not supported—Release 12.2(33)MRB does not support IP Header Compression or distributed IP Header Compression.
- BFD interface support limitations—Release 12.2(33)MRB only supports BFD on switched virtual interfaces (SVIs).
- Multicast interface limitations—Multicast is only supported on VLANs and Ethernet interfaces. Multicast routing is not supported on other interface types.
- Release 12.2(33)MRB supports up to 64 VLANs if the HWIC-D-9ESW card is in use; otherwise it supports a maximum of 255 VLANs as in previous releases.
- The Cisco MWR 2941 does not support access control lists (ACLs) for layer 3 forwarding through the network processor.
- The **show interfaces** command displays inaccurate information when used with the **counters** keyword. The counters for multicast packets display as 0 even if multicast traffic is passing on the router. To display correct multicast counters, use the **show interfaces** command without the **counters** keyword.
- The multicast packet counters in the **show interfaces** *type number* **counters** command output are set to 0 even if multicast traffic is enabled. To see accurate counters for multicast traffic, use the **show interfaces** command without the **counters** keyword.
- Virtual path-to-virtual path local switching is not supported.
- Need to add the restriction of BFD only allowed on SVI interfaces to the MWR-2941 Software Configuration Guide.
- Bidirectional Forwarding Detection (BFD) is only supported on SVI interfaces; BFD is not supported on VLAN interfaces.

Supported Hardware—Cisco MWR 2941-DC Router

The Cisco MWR 2941 supports the following interface cards:

- HWIC-4T1/E1
- HWIC-D-9ESW

Note Release 12.2(33)MRB does not support the HWIC-1GE-SFP, HWIC-4SHDSL, HWIC-1ADSL, and HWIC-1ADSL-I HWICs that were supported in Release 12.4(20)MR1.

The Cisco MWR 2941 router supports the following SFP modules:

- CWDM-SFP-1470
- CWDM-SFP-1490
- CWDM-SFP-1510
- CWDM-SFP-1530
- CWDM-SFP-1550
- CWDM-SFP-1570
- CWDM-SFP-1590

- CWDM-SFP-1610
- DWDM-SFP-4612
- DWDM-SFP-4692
- DWDM-SFP-4772
- DWDM-SFP-4851
- DWDM-SFP-5012
- DWDM-SFP-5092
- DWDM-SFP-5172
- DWDM-SFP-5252
- DWDM-SFP-5413
- DWDM-SFP-5494
- DWDM-SFP-5575
- DWDM-SFP-5655
- DWDM-SFP-5817
- DWDM-SFP-5898
- DWDM-SFP-5979
- DWDM-SFP-6061
- GLC-ZX-SM-RGD
- GLC-LX-SM-RGD
- GLC-SX-MM-RGD
- SFP-GE-L
- SFP-GE-S
- SFP-GE-Z

Other hardware interfaces are not supported.

Caution The Cisco MWR 2941 router does not support online insertion and removal (OIR) of WAN interface cards. Any attempt to perform OIR on a card in a powered-on router might cause damage to the card.

For instructions on how to install HWICs and SFPs, see the documentation included with the product. For information about how to configure HWICs and SFPs, see the *Cisco MWR 2941 Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB*.

Supported MIBs

The Cisco MWR 2941 router supports the following MIBs:

- CISCO-ACCESS-ENVMON-MIB
- CISCO-CDP-MIB
- CISCO-CONFIG-COPY-MIB
- CISCO-CONFIG-MAN-MIB
- CISCO-ENHANCED-MEMPOOL-MIB
- CISCO-ENTITY-EXT-MIB
- CISCO-ENTITY-FRU-CONTROL-MIB
- CISCO-ENTITY-SENSOR-MIB
- CISCO-ENTITY-VENDORTYPE-OID-MIB
- CISCO-ENVMON-MIB
- CISCO-FLASH-MIB
- CISCO-IETF-PW-MIB
- CISCO-IETF-PW-TC-MIB
- CISCO-IF-EXTENSION-MIB
- CISCO-IMAGE-MIB
- CISCO-MEMORY-POOL-MIB
- CISCO-PROCESS-MIB
- CISCO-PRODUCTS-MIB
- CISCO-RESILIENT-ETHERNET-PROTOCOL-MIB
- CISCO-RTTMON-MIB
- CISCO-SMI
- CISCO-SYSLOG-MIB
- CISCO-TC
- CISCO-VTP-MIB
- ENTITY-MIB
- HCNUM-TC
- IANAifType-MIB
- IF-MIB
- IMA-MIB
- INET-ADDRESS-MIB
- MPLS-VPN-MIB
- OLD-CISCO-CHASSIS-MIB
- OLD-CISCO-INTERFACES-MIB
- OLD-CISCO-SYS-MIB
- OLD-CISCO-TS-MIB
- PerfHist-TC-MIB
- RFC1213-MIB
- RMON2-MIB
- RMON-MIB
- SNMP-FRAMEWORK-MIB
- SNMP-TARGET-MIB
- SNMPv2-CONF
- SNMPv2-MIB
- SNMPv2-SMI
- SNMPv2-TC

Caveats

This section documents the open and resolved caveats for the Cisco MWR 2941 router running Cisco IOS Release 12.2(33)MRA and later.

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats, severity 2 caveats are less serious, and severity 3 caveats are the least serious of these three severity levels. Only select severity 3 caveats are listed.

For information on caveats in Cisco IOS Software Releases 12.2SR, go to:

http://www.cisco.com/en/US/products/ps6922/prod_release_notes_list.html

Note If you have an account with Cisco.com, you can use the Bug Toolkit to find caveats of any severity for any release. To reach the Bug Toolkit, log in to Cisco.com and click the **Support** tab and select **Support** from the drop-down menu. Under Frequently Used Resources, click **Bug Toolkit**. You must then log in. Another option is to go directly to: http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

The following sections document the opened and resolved caveats by Cisco IOS release:

- Caveats in Cisco IOS Release 12.2(33)MRB, page 18
- Caveats in Cisco IOS Release 12.2(33)MRA, page 24
- Troubleshooting, page 28

Caveats in Cisco IOS Release 12.2(33)MRB

The following caveats apply to Cisco IOS Release 12.2(33)MRB.

Open Caveats

- CSCtc31618

  Description: An LDP session over MLPPP remains down even after MLPPP congestion clears.

  Conditions: Occurs when you configure static routes to establish LSP for MPLS over MLPPP and the MLPPP link experiences congestion.

  Workaround: Clear the MLPPP interface using the **clear interface multilink** command.

- CSCtd58271

  Description: When **mpls ldp explicit-null** is configured on the MWR 2941 router, MPLS packets on a PWE3 circuit are not received. The **show mpls l2 vc 1000 detail** command output shows zero packets received, as in the following example.

```
mwr2941-1# sh mpls l2 vc 1000 det
Local interface: CE0/0 up, line protocol up, CESoPSN Basic up
  Destination address: 10.0.40.1, VC ID: 1000, VC status: up
    Output interface: Vl555, imposed label stack {45 56}
    Preferred path: not configured
    Default path: active
    Next hop: 10.55.55.1
  Create time: 19:39:24, last status change time: 19:38:00
  Signaling protocol: LDP, peer 10.0.40.1:0 up
    MPLS VC labels: local 16, remote 56
    Group ID: local 0, remote 0
```

```
    MTU: local 0, remote 0
    Remote interface description: Provider-0
  Sequencing: receive enabled, send enabled
  Sequencing resync disabled
  VC statistics:
    packet totals: receive 0, send 70823102
    byte totals:   receive 0, send 3121119161
    packet drops:  receive 0, seq error 0, send 0
```

Conditions: Occurs when **mpls ldp explicit-null** is configured.

Workaround: Use the **no mpls ldp explicit-null** command to resolve the issue.

- CSCtd79038

  Description: When **cns config notify diff interval** is configured, the following error occurs.

```
router-2941#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
router-2941(config)#cns config notify diff interval 5
router-2941(config)#class-map match-any Voice
router-2941(config-cmap)#match  dscp ef
router-2941(config-cmap)#policy-map in-qos
router-2941(config-pmap)#class Voice
router-2941(config-pmap-c)#set cos 5
class Voice
     ^
% Invalid input detected at '^' marker.
```

  Conditions: This error is observed only when **cns config notify diff interval** is configured.

  Workaround: Remove the **cns config notify diff interval** command.

- CSCtf46499

  Description: The **verify** command fails when testing the integrity of the 12.2(33)MRX image because it cannot find the embedded hash signature. The router displays output similar to the following example.

```
Router# verify flash:mwr2941-adviprank9-mz.122-33.MRB
Verifying file integrity of flash:mwr2941-adviprank9-mz.122-33.MRB
Embedded hash not found in file flash:mwr2941-adviprank9-mz.122-33.MRB.

Router#
Mar  8 17:13:04.426 EST: %SIGNATURE-4-NOT_PRESENT: %WARNING: Signature not found in
file flash:mwr2941-adviprank9-mz.122-33.MRB.
Mar  8 17:13:04.426 EST: %SIGNATURE-4-NOT_PRESENT: %WARNING: Signature not found in
file flash:mwr2941-adviprank9-mz.122-33.MRB.
```

  Conditions: Occurs in MWR2941 12.2(33)MRX k9 and non-k9 image.

  Workaround: None.

- CSCtf79922

  Description: The MWR 2941 displays traceback and error messages when you delete and reconfigure a VLAN. The router displays output similar to the following example.

```
Mar 24 03:18:32.203 HKT: %LINEPROTO-5-UPDOWN: Line protocol on Interface Vlan441,
changed state to up
Mar 24 03:18:32.203 HKT: Error Traceback:
        File = ../sources/iw/classifier/wpi_iw_dfc.c
        Function=WPI_IwSystemCreateEmc
        Line = 1485
        error_index=575 [WP_INVALID_IW_EMC_FLOW_EXISTS_IN_HASH]
```

```
Mar 24 03:18:32.203 HKT: -Traceback= 261314C 26B0BC8 273B3B8 26FEA78 27649B4 2633520
26336B8 2633B98 2633F38 25FE1B8 25FE678 25FF538 30C36B4 3095110 3095780 30DE8A0
Mar 24 03:18:32.203 HKT: Error Traceback:
        File = ../sources/iw/core/wpi_iw_flow_aggregation.c
        Function=WP_IwFlowAggregationDelete
        Line = 2790
        error_index=483 [WP_ERR_IW_FLOW_AGG_NOT_EMPTY]
Mar 24 03:18:32.203 HKT: -Traceback= 261314C 26B0BC8 2726D70 26336F4 2633B98 2633F38
25FE1B8 25FE678 25FF538 30C36B4 3095110 3095780 30DE8A0 30DEAB8 3C69C30 2067A08
```

Conditions: Occurs when you quickly delete and reconfigure VLANs.

Workaround: Wait several seconds before reconfiguring a VLAN with identical attributes to a deleted VLAN.

- CSCtf98946

  Description: The MWR 2941 displays the following traceback error when you connect an Ethernet cable between a MWR 2941 and Cisco 7206 router.

  ```
  Apr  1 08:26:56.989 HKT: %SM-4-BADEVENT: Event 'link_up' is invalid for the current
  state 'trunk': pm_port 0/3
  -Traceback= 2F2CA40 2F2D164 4195610 22FB548 22A7A24 2568834 2568CA4 2178F84 216F1C8
  ```

  Conditions: Occurs when you take the following steps.

  1. Configure 29 VRF instances between the MWR 2941 and Cisco 7206 router
  2. Remove the Ethernet cables between the routers
  3. Replace the Ethernet cables

  Workaround: None.

- CSCtg30671

  Description: The MWR 2941 displays the following message when you attempt to configure an ATM PVC passing traffic that uses cell packing.

  ```
  ATMCMDFAIL:Unable to Configure PVC(1) 1/40 on ATM0/IMA0.1.Possibly multiple users
  configuring IOS simultaneously
   Further info about other user:
   Process id: 256, Process: AToM manager, TTY: 0, Location: Console
  ```

  Conditions: The issue occurs in MWR2 in the following topology.

  MWR1---MPLS---MWR2---MPLS---MWR3----MPLS---7600

  The issue occurs when the network has the following configurations:

  - MWR2 and MWR3 have IMA PVCs configured.
  - MWR2 has a PVC with cell packing configured that is passing traffic.
  - MWR3 has a PVC with cell packing that is passing traffic.
  - The 7600 router has cell packing configured for both PVCs.

  After you reload the router, the MWR 2941 displays the ATMCMDFAIL error if you attempt to modify the configuration of the PVC with cell packing enabled.

  This issue does not occur on Cisco 12.4(20)MRX releases.

  Workaround: None.

Resolved Caveats

- CSCtc42045

  Description: The router displays an invalid class_index: error when you apply a service policy to an MLPPP connection.

  Conditions: Occurs during congestion when you take the following actions:

  - Configure no priority on a priority class within a policy
  - Change the class map back to a priority class
  - Remove the service-policy from an MLPPP interface
  - Re-apply the service-policy

  Workaround: Remove the **class-map** statement from the policy-map and restore it, then configure priority and apply it to the MLPPP policy map.

- CSCtd14511

  Description: An ATM PW VC configured for port mode under IMA interface stays down after the IMA interface is reset several times.

  Conditions: Occurs when you IMA interface is reset or shut/no shut several times.

  Workaround: Remove and restore the port mode VC xconnect configuration.

- CSCtd29692

  Description: The output clock for an MWR 2941 acting as a 1588 slave can exceed the specified MTIE requirements in ITU-T G.813 transient response (option 2) when switching from one master clock reference to another.

  Conditions: Occurs only on MWR 2941s with RTM hardware revision 2.0. Use the **show diag** command to obtain the RTM hardware revision.

  Workaround: None

- CSCtd77552

  Description: In-Band ACR clock recovery failure occurs because the router uses the wrong MPLS label, as identified by this console message:

  FRI DEC 11 00:11:06 2009: Clock Stream not found. Index: 4294967295 Label: 52 Start of Payload: 0

  Conditions: Occurs when there are multiple cem groups configured and multiple groups (including the one used by RTM) become active at the same time. The RTM can use the MPLS label supplied by the wrong CEM group.

  Workaround: Disable all CEM groups except the group used by the RTM.

- CSCtd83103

  Description: The MWR 2941 can intermittently display an `Unexpected exception to CPU: vector 200` log error after the flash disk is removed.

  Conditions: Occurs when the flask disk is manually removed or is defective.

  Workaround: None.

  Follow these steps to recover from this error.

  1. Power cycle the router
  2. If there is more than one image in flash memory, verify that the router boots the correct image.

- CSCtd89944

  Description: Once one compressed packet is missed on an IPHC flow, all packets on the flow are dropped until the bundle drops and recovers.

  Conditions: Occurs when the MWR 2941 is configured for IPHC.

  Workaround: None.

- CSCte26615

  Description: The **show platform hardware rtm** and **show controller rtm** commands do not display the PTP protocol status (ACQUIRING, HOLDOVER, LOCK) when the MWR 2941 is in ptp-syncE hybrid mode.

  Conditions: Occurs when the router is configured as a PTP slave in ptp-syncE hybrid mode. After the initial phase alignment, the hybrid state displays as DONE_ALIGN as long as the syncE source is active, even when the PTP connection is lost due to an interface shutdown or because the PTP master is down.

  Workaround: None.

- CSCte43602

  Description: The router displays WP_ERR_HOST_CMD_FAILED and P_ERR_WMM_HOST_CMD_FAILED traceback messages similar to the following.

```
Jan 14 13:12:58.259: Error Traceback:
        File = ../sources/core/wpi_host_cmd.c
        Function=WPI_HostCommand
        Line = 583
        error_index=290 [WP_ERR_HOST_CMD_FAILED]
 -Traceback= 0x4958E88 0x49FDEF0 0x4A25744 0x4BF1048 0x49EE20C 0x49FA488 0x4922D64
0x4923CA0 0x4345D8C 0x4345E20 0x50DCD30 0x50DCDCC 0x434651C 0x4341924 0x4344DF0
0x2478F28
Jan 14 13:12:58.267: Error Traceback:
        File = ../../sources/hardware/core/wpi_hw_wmm.c
        Function=WPI_WmmHostCmdLocal
        Line = 867
        error_index=287 [WP_ERR_WMM_HOST_CMD_FAILED]
 -Traceback= 0x4958E88 0x49FDEF0 0x4C2B754 0x4C16D78 0x4C2B56C 0x4C2DCD4 0x4C2B448
0x49EF028 0x49F9DC8 0x4922694 0x492310C 0x4923CA0 0x4345D8C 0x4345E20 0x50DCD30
0x50DCDCC
```

  Telnet sessions to the router fail leaving only console access.

  Conditions: The error occurs under the following conditions:

  - The router is running Release 12.4(20)MR1 or 12.2(33)MRA software
  - The router is processing high rates of Ethernet-routed traffic (IP or MPLS)
  - The router is running a routing protocol such as OSPF or BFD
  - The router is sending traffic with small packet sizes (mostly less than 100 bytes) at a high traffic rate (200 Mbps or more)

  The WP_ERR_HOST_CMD_FAILED and WP_ERR_WMM_HOST_CMD_FAILED traceback messages can display after several days.

  Workaround: None.

- CSCte49396

  Description: When you enable CPU utilization statistics collection, the MWR 2941 can reload due to chunk corruption.

Conditions: Occurs when you use the **process cpu statistics limit entry-percentage number** command to enable CPU utilization statistics collection.

Workaround: Use the **no process cpu statistics limit** command to disable CPU utilization statistics collection.

- CSCte67461

  Description:

  When an external device uses the MWR 2941-DC-A 10MHz output clock as a clock source and the external device's TDM clock is not synchronized to the MWR 2941-DC-A's TDM clock, both devices can experience timing slips.

  Conditions: Occurs under the following conditions.

  - The MWR2941-DC-A is configured as a PTP slave device
  - PTP is the only valid clock source
  - PTP slave is in FREERUN mode.

  Workaround: Use T1/E1 interface for clock output instead of 10MHz.

- CSCte98034

  Description: Motherboard Controller entries are missing from ENTITY-MIB Physical table after the **card type** command is issued.

  Conditions: Occurs on the MWR 2941-DC or 2941-DC-A with the 12.2(33)MRA image.

  Workaround: Reload the router using the **reload** command after applying the **card type** command during initial configuration.

- CSCtf02790

  Description: The MWR 2941 displays the following error message and traceback when the link to the 7600 router is shut down.

  ```
  Feb  2 16:35:22.851 EST: %REP-4-LINKSTATUS: GigabitEthernet0/1 (segment 100) is
  non-operational due to port become non-trunk
  Feb  2 16:35:23.140 EST: %SM-4-BADEVENT: Event 'pre_empt_ind' is invalid for the
  current state 'OPEN_PORT': rep_pr Gi0/0 - pr
  -Traceback= 2F28708 2F28E2C 41913BC 2374CAC 2377DCC 2377ED8 2595670 25958C8 2378210
  23784CC 237426C 4191684 23746D8 23783F4 2379378 259482C
  ```

  Conditions: Occurs in a REP ring with 5 MWR 2941 routers and 2 7600 routers with the 7600 routers configured as REP edge devices and VLAN load balancing configured to block VLANs between the MWR1 and MWR2 router. The topology can be summarized as follows:

  7600-1---MWR1----MWR2----MWR3----MWR4---MWR5---7600-2

  Workaround: None.

- CSCtg35849

  Description: Console becomes unresponsive after a routing change under a heavy traffic load. Most traffic is dropped and the console can be unresponsive until the traffic load is reduced or the router is power cycled.

  Conditions: Occurs when the router is processing more than 6 Megabits of traffic with small (64 byte) IP packets and the destination route is removed or changes. The error has been observed when an MLPPP backhaul with multiple links switches to a redundant MLPPP bundle path while carrying 20 Mbps of 64-byte IP packets.

  Workaround: None.

Caveats in Cisco IOS Release 12.2(33)MRA

The following caveats apply to Cisco IOS Release 12.2(33)MRA.

Open Caveats

This section lists the open caveats in Cisco IOS Release 12.2(33)MRA.

- CSCtc31618

  Description: LDP session over MLPPP stays down even if the congestion over MLPPP clears.

  Conditions: When the user configures static routes to enable LDP for MPLS over MLPPP and the MLPPP path is congested, the LDP session goes down. If congestion clears or there is no congestion, LDP remains down.

  Workaround: Clear the MLPPP interface using the **clear interface multilink** command.

- CSCtc42045

  Description: An Invalid class_index: error displays when you apply service policy on MLPPP.

  Conditions: When you apply no priority to a priority class in a policy, and no service policy, service policy is applied on the mLPPP, an invalid class_index error displays.

  Workaround: Apply a **shutdown/no shutdown** to the MLPPP interface.

- CSCtd29692

  Description: The output clock for an MWR 2941 acting as a 1588 slave may exceed the specified MTIE requirements in ITU-T G.813 transient response (option 2) when switching from one master clock reference to another.

  Conditions: The issue is only observed on MWR 2941s with RTM hardware revision 2.0. You can view the RTM hardware revision by issuing the **show diag** command.

  Workaround: None

- CSCtd58271

  Description: When you configure **mpls ldp explicit-null** on the MWR 2941 router, MPLS packets on a PWE3 circuit are not received. The output of the **show mpls l2 vc 1000 detail** shows zero packets received, as in the following example.

```
Router# show mpls l2 vc 1000 det
Local interface: CE0/0 up, line protocol up, CESoPSN Basic up
  Destination address: 1.0.40.1, VC ID: 1000, VC status: up
    Output interface: Vl555, imposed label stack {45 56}
    Preferred path: not configured
    Default path: active
    Next hop: 30.55.55.1
  Create time: 19:39:24, last status change time: 19:38:00
  Signaling protocol: LDP, peer 1.0.40.1:0 up
    MPLS VC labels: local 16, remote 56
    Group ID: local 0, remote 0
    MTU: local 0, remote 0
    Remote interface description: Provider-0
  Sequencing: receive enabled, send enabled
  Sequencing resync disabled
  VC statistics:
    packet totals: receive 0, send 70823102
    byte totals:   receive 0, send 3121119161
    packet drops:  receive 0, seq error 0, send 0
```

Conditions: Occurs when you configure the **mpls ldp explicit-null** command.

Workaround: Enter **no mpls ldp explicit-null** to disable the command.

- CSCtd77552

  Description: In-Band ACR clock recovery failure is caused by using the wrong MPLS label, identified by the following console message:

  ```
  FRI DEC 11 00:11:06 2009: Clock Stream not found. Index: 4294967295  Label: 52  Start
  of Payload: 0
  ```

  Conditions: Occurs when you configure multiple CEM groups and multiple groups (including the group used by the RTM) become active at the same time. The RTM may use the MPLS label supplied by the wrong CEM group.

  Workaround: Disable all CEM groups except the one used by RTM.

- CSCtd79038

  Description: The router returns the following error when you configure the **cns config notify diff interval** command.

  ```
  Router# conf t
  Enter configuration commands, one per line.  End with CNTL/Z.
  router-2941(config)# cns config notify diff interval 5
  router-2941(config)# class-map match-any Voice
  router-2941(config-cmap)# match  dscp ef
  router-2941(config-cmap)# policy-map in-qos
  router-2941(config-pmap)# class Voice
  router-2941(config-pmap-c)# set cos 5
  class Voice
        ^
  % Invalid input detected at '^' marker.
  ```

  Conditions: This error is observed only when you configure the **cns config notify diff interval** command.

  Workaround: Disable the **cns config notify diff interval** command.

- CSCtd83103

  Description: The following symptoms can occur:

  - The MWR 2941 intermittently experiences an unexpected exception after the flash disk is removed. The following log message is observed:

    ```
    Unexpected exception to CPU: vector 200
    ```

  - The console is not responsive and the router cannot boot an image.

  Conditions: Occurs when the flash disk is manually removed or the flash disk is bad.

  Workaround: There is no workaround. To recover from this error, take the following actions:

  1. Power cycle the router.
  2. Verify that router boots the correct image if there is more than one image in flash memory.

  You can also take the following actions to decrease the possibility of encountering this error:

  - Remove the flash disk completely, such that the disk is completely out of the slot.
  - Remove the flash disk within 2 seconds.
  - Do not re-insert the flash disk for at least 2 seconds after removing the disk.

- CSCte26615

Description: The **show platform hardware rtm** and **show controller rtm** commands do not display the PTP protocol status (ACQUIRING, HOLDOVER, LOCK) in PTP-syncE hybrid mode.

Conditions: Occurs when the router is configured as a PTP slave device in PTP-synchE hybrid mode. After the initial phase alignment, the hybrid state displays as DONE_ALIGN as long as the syncE clock frequency source is stable, even if the PTP phase connection is lost, such as by shutting the PTP interface or a disrupted connection to the PTP master device.

Workaround: None.

Resolved Caveats

This section lists resolved caveats from Cisco IOS Release 12.4(20)MR1 that are resolved in for Cisco IOS Release 12.2(33)MRA.

- CSCta98701

  Description: Ingress QoS packet counters can display an invalid value.

  Conditions: Occurs when dynamically adding or removing class-maps in an ingress QoS policy applied on a Gigabit Ethernet interface.

  Workaround: Issue the **clear counters** command.

- CSCtb89206

  Description: MWR 2941 triggers a software-forced reload indicating WINPATH_2941-2-SYSTEMERR in the console log.

  Conditions: The conditions for this reload are extremely rare and the condition is not reproducible. The reload can occur during periods of low traffic volume with at least one ATM pseudowire configured.

  Workaround: None

- CSCtc09497

  Description: The Cisco MWR 2941-DC returns WP_ERR_WMM_FIFO_GET and WP_ERR_ATMSW_TX_CHANNEL_NEEDS_RX_HANDLE traceback messages when ATM CoS commands are applied to existing Cell Switching ATM PVCs. In addition, the **show controller atm** command displays the following message for some PVCs that were active before ATM CoS commands were applied: `Channel is not created on SAR yet`.

  Conditions: Occurs when the user updates the configuration of a PVC with an ATM CoS configuration, such as by enabling, disabling, or removing an ATM connection.

  Workaround: Remove and restore the PVC configuration.

- CSCtc73643

  Description: Tracebacks can display when you delete and reconfigure an SVI interface.

  Conditions: The issue can occur when you delete and reconfigure an SVI interface configured with the **xconnect** command.

  Workaround: None

- CSCtc79736

  Description: When the VLAN interface MTU size is set to greater than 1600, the router can drop large egress packets.

  Conditions: Occurs when the VLAN interface MTU size is set to greater than 1600.

  Workaround: Set the VLAN interface MTU size smaller or use the default MTU setting of 1500.

- CSCtc97859

  Description: The MWR2941 transmits an ARP request to the ptp-clock source on all configured VLANs. This message can trigger proxy-ARP replies from devices on VLANs on which this ARP request should not be seen.

  Conditions: Occurs when the Cisco MWR 2941 is configured as a 1588 PTP client and the **ptp clock-source** command is configured on a single VLAN.

  Workaround: No workaround

- CSCtd02352

  Description: The Cisco MWR 2941 router can crash during CEM interface configuration when the number of dejitter buffers requested exceeds the available number of buffers in the shared pool.

  Conditions: The Cisco MWR 2941 router has a shared pool of buffers that are used for CEM dejitter buffers. You can use the **show platform hardware winpath iw qnodes | include Local Free Buffer Count** command to display the number of available buffers in the shared pool.

  ```
  Router# show platform hardware winpath iw qnodes | include Local Free Buffer Count
  Local Free Buffer Count: 4096
  ```

  Each CEM interface creates dejitter buffers from this shared pool. For example, the following configuration takes 65 buffers from the shared pool:

  ```
  interface CEM 0/0
  cem 0
  dejitter 64
  ```

  Each CEM interface will deplete the shared pool of buffers. When the number of requested dejitter buffers for a CEM interface configuration exceeds the number of buffers available in the shared pool, the router can crash.

  Workaround: Use the **show platform hardware winpath iw qnodes | include Local Free Buffer Count** command to ensure that the CEM configuration does not exceed the number of buffers available in the shared pool.

- CSCtd14234

  Description: The ATM pseudowire VC remains UP on the router when the Shorthaul IMA interface is down due to an alarm condition.

  Conditions: Occurs when the shorthaul IMA interface has an AIS or LOS alarm condition.

  Workaround: Apply a **shutdown/no shutdown** to the IMA interface.

- CSCtd44830

  Description: The console may display an WP_ERR_CH_NOT_DISABLED error when shutting down a multilink bundle.

  Conditions: This problem can occur when the output hold queue is explicitly configured to be greater than 256 and there is congestion on the bundle causing packets to be queued by the outbound channel.

  Workaround: Use the default output hold queue value or configure the output hold queue to be less than or equal to 256. The interface command to configure the output hold queue is **hold-queue 256 output**.

- CSCtd44864

  Description: Under certain conditions, IS-IS adjacencies are not formed on an SVI interface.

  Conditions: The issue occurs on Cisco IOS Release 12.2(33)MRA when IS-IS is configured on an SVI interface with MTU set to 4470 bytes.

Workaround: Set the interface MTU size to the default 1500 bytes.

- CSCtd47439

  Description: Under certain conditions, the MWR 2941 may experience a software reload upon enabling link noise monitor on a controller.

  Conditions: This issue only occurs upon enabling link noise monitor on an HWIC controller.

  Workaround: Do not configure link noise monitor on an HWIC controller.

- CSCtd58232

  Description: The PTP protocol times out and the PTP slave device cannot lock to the PTP master device.

  Conditions: Can occur when unicast PTP master or mixed mode ptp slave performs multiple ARP requests back-to-back, usually after the 2941 reboots when multiple PTP peers begin PTP negotiation with the 2941.

  Workaround: Restart the failing PTP peer(s) one at a time, in order to avoid simultaneous ARP requests by 2941.

Troubleshooting

The following sections describe troubleshooting commands you can use with the Cisco MWR 2941.

Collecting Data for Router Issues

To collect data for reporting router issues, issue the following command:

- **show tech-support**—Displays general information about the router if it reports a problem.

Collecting Data for ROMmon Issues

To collect data for ROMmon issues, issue the following command while in EXEC mode:

- **show rom-monitor**—Displays currently selected ROM monitor.

Note If you contact Cisco support for assistance, we recommend that you provide any crashinfo files stored in flash memory. For more information about crashinfo files, see http://www.cisco.com/en/US/products/hw/routers/ps167/products_tech_note09186a00800a6743.shtml.

Related Documentation

Related documents for implementing the Cisco MWR 2941 mobile wireless edge router are available on Cisco.com

To access the related documentation on Cisco.com, go to:

http://www.cisco.com/en/US/products/ps9395/tsd_products_support_series_home.html

Documents related to the Cisco MWR 2941-DC mobile wireless edge router include the following guides:

- Cisco MWR 2941 Mobile Wireless Edge Router documents
  - *Cisco MWR 2941 Mobile Wireless Edge Router Hardware Installation Guide*

  - *Cisco MWR 2941 Mobile Wireless Edge Router Software Configuration Guide, Release 12.2(33)MRB*
  - *Regulatory Compliance and Safety Information for the Cisco MWR 2941 Mobile Wireless Edge Routers*
- Release Notes—*Release Notes for Cisco MWR 2941 Mobile Wireless Edge Router for Cisco IOS Release 12.2(33)MRB*
- Cisco Interface Cards Installation Guides
  - *Quick Start Guide: Interface Cards*
  - Cisco Interface Cards Installation Guide

Services and Support

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New* in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

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