



Release Notes for Cisco 4G LTE WWAN EHWICs

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This Release Notes document describes the Cisco® Fourth-Generation Long Term Evolution Wireless WAN Enhanced High-Speed WAN Interface Cards (Cisco 4G LTE WWAN EHWICs). This document should be used with the documents listed in the “[Related Documentation](#)” section on page 11.

This document is updated as needed. To ensure that you have the latest version of the Release Notes document, go to

http://www.cisco.com/en/US/partner/products/ps10083/tsd_products_support_series_home.html.

Choose **Release and General Information** > **Release Notes**, and locate the latest release notes pertaining to your release.

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Introduction

The Cisco 4G LTE WWAN EHWICs are the first, enterprise-class 4G Multimode LTE WWAN solution for Cisco Integrated Services Routers Generation 2 (ISR G2). The EHWICs can support 3GPP Release 8 LTE standards. Cisco 4G Multimode LTE WWAN EHWICs also support 3GPP-based and 3GPP2-based



3G and 2G access technologies and seamless handoff from 2G and 3G to 4G LTE. The 4G LTE mobile specifications provide multi-megabit bandwidth, more efficient use of the radio network, latency reduction, and improved mobility. This feature is supported on the Cisco ISR G2 modular platform, which delivers secure data, voice, video, and mobility services. The Cisco 4G LTE WWAN EHWICs are single-wide EHWICs supported on the Cisco 819 Series ISRs, Cisco 1900 Series ISRs, Cisco 2900 Series ISRs, and Cisco 3900 Series ISRs. The EHWICs operate over the over 4G LTE and 3G cellular networks.

Summary of Changes Cisco IOS Release 15.2(4)M3 and Later

For Cisco IOS Release 15.2(4)M3 image or later, the external link recovery script is not required. Ensure that the link recovery script is removed from Flash before upgrading to Cisco IOS Release 15.2(4)M3 or later, which also contains an embedded modem link recovery mechanism that eliminates the need for link recovery scripts. Ensure that the *cell_recovery_vx.tcl* and *cel_cli_vx.tcl* scripts are removed from router flash, where *x* stands for the script version number that is in use, for example, *cell_recovery_v2.tcl* and *cel_cli_v2.tcl*.

The Cisco IOS Release 15.2(4)M3 or later image also requires a mandatory upgrade to the latest versions of modem firmware. The new modem firmware versions contain significant modem stability enhancements. Cisco IOS Release 15.2(4)M3 or later should not be installed without upgrading the LTE eHWIC modem firmware to the appropriate 3.x release. The following are the new firmware versions supported on the LTE SKUs in Cisco IOS Release 15.2(4)M3 or later:

- EHWIC-4G-LTE-V : 3.5.10.6
- EHWIC-4G-LTE-A : 3.5.10.2
- EHWIC-4G-LTE-G : 3.5.19.4

Cisco IOS Release 15.2(4)M3 or later also includes an upgrade to a newer and more stable version of vendor-provided SDK Version 1.8.0 that provides support for the new modem firmware.

The modem firmware files and the associated documentation for upgrading the modems are available at the following locations:

- EHWIC-4G-LTE-V : 3.5.10.6 -
<http://software.cisco.com/download/release.html?mdfid=284772061&flowid=40082&softwareid=284285628&release=3.5.10.6&relind=AVAILABLE&rellifecycle=&reltype=latest>
- EHWIC-4G-LTE-A : 3.5.10.2 -
<http://software.cisco.com/download/release.html?mdfid=284772058&flowid=39842&softwareid=284285628&release=3.5.10.2&relind=AVAILABLE&rellifecycle=&reltype=latest>
- EHWIC-4G-LTE-G : 3.5.19.4 -
<http://software.cisco.com/download/release.html?mdfid=284772598&flowid=39503&softwareid=284285628&release=3.5.19.4&relind=AVAILABLE&rellifecycle=&reltype=latest>

System Requirements

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Memory Requirements

Cisco 4G LTE WWAN EHWICs require platforms with 512 MB of SDRAM to run the Cisco IOS software and the Linux operating system.

Hardware Supported

The latest certified firmware version for your carrier Cisco IOS is available at http://www.cisco.com/en/US/prod/collateral/modules/ps5949/ps7272/datasheet_c78-710314.html.

Table 1 shows the antennae supported in Cisco 4G LTE WWAN EHWICs.



Note

The Cisco 4G Indoor/Outdoor Active GPS Antenna (GPS-ACT-ANTM-SMA) will be available at a later date.

Table 1 **Supported Antennae**

SKU	Description
4G-LTE-ANTM-D (Antenna)	Indoor 4G dipole antenna
4G-ANTM-OM-CM (Antenna)	Indoor omnidirectional antenna
ANT-4G-OMNI-OUT-N (Antenna)	Outdoor omnidirectional stick antenna
ANT-4G-SR-OUT-TNC (Antenna)	Outdoor omnidirectional saucer antenna
CGR-LA-NF-NF (Lightning Arrestor Female-to-Female)	Lightning arrestor kit
CGR-LA-NM-NF (Lightning Arrestor Male-to-Female)	Lightning arrestor kit



Note

The -N antennae, cables, and lightning arrestors can be ordered only as spare; they work together as an accessories bundle. For details on -N accessories, refer to Table 1-3 in the Chapter "Cisco CGR 1000 and 2000 Series Connected Grid Antennas Overview" of the [Connected Grid Antennas Installation Guide](#).

Table 2 shows cables and accessories supported in Cisco 4G LTE WWAN EHWICs.

Table 2 **Supported Cables and Accessories**

SKU	Description
4G-CAB-LMR240-25	25-foot low-loss LMR-240 cable
4G-CAB-LMR240-50	50-foot low-loss LMR-240 cable
4G-CAB-LMR240-75	75-foot low-loss LMR-240 cable
4G-CAB-LMR240-25N	Non-plenum rated 25-foot outdoor cable
4G-CAB-ULL-20	20-foot cable with Threaded Neill–Concelman (TNC) connectors
4G-CAB-ULL-50	50-foot cable with TNC connectors
CAB-L400-20-TNC-N	20-foot cable with N-type and TNC connectors
CAB-L400-50-TNC-N	50-foot cable with N-type and TNC connectors
CAB-L400-20-N-N	20-foot cable with N-type connectors on both ends
4G-AE010-R	Extension base with 10-foot cable
4G-AE015-R	Extension base with 15-foot cable

Software Compatibility

For ISRs with EHWIC-4G-LTE-V and C819(H)G-4G-V-K/9, the use of Cisco IOS Release 15.2(4)M3 or later requires LTE modem firmware 3.5.10.6.



Note

Do not use Cisco IOS Release 15.2(4)M3 or later on ISRs with LTE eHWICs until the LTE modem is upgraded.

Cisco IOS Release 15.2(4)M3 or later includes Verizon Wireless LTE modem drivers that operate with the latest MC7750 LTE modem firmware. Due to backward compatibility issues with the existing LTE modem firmware (1.0.9.3), Cisco IOS Release 15.2(4)M3 or later should be used only after upgrading the existing LTE modem firmware to the Release 3.5.10.6, or with the new EHWIC-4G-LTE-V and C819(H)G-4G-V-K/9 units with firmware 3.5.10.6 factory loaded.

Check the LTE modem firmware using the Cisco IOS command **show cellular 0/x/0 hardware** (for EHWIC-4G-LTE-V, with *x* being the EHWIC slot number) or the **show cellular 0 hardware** command (for C819(H)G-4G-V).

The latest certified firmware version for your carrier having Cisco IOS compatibility is available at http://www.cisco.com/en/US/prod/collateral/modules/ps5949/ps7272/datasheet_c78-710314.html.

Platforms

The EHWICs will be supported only in the following ISR G2 platforms that provide EHWIC slots:

- Cisco 819 Series ISRs
- Cisco 1900 Series ISRs
- Cisco 2900 Series ISRs
- Cisco 3900 Series ISRs

- Cisco 3900e Series ISRs

Table 3 lists the Cisco 4G WWAN EHWICs supported on Cisco ISR G2 Modular Platforms.

Table 3 *Cisco 4G WWAN EHWICs Supported on Cisco ISR G2 Modular Platforms*

Part Number	Description
EHWIC-4G-LTE-V	Dedicated multimode LTE for Verizon Wireless networks. Multimode LTE EHWIC is backwards compatible with Evolved High Rate Packet Data (eHRPD), EV-DO Rev A/Rev0, and 1xRTT.
EHWIC-4G-LTE-A	Dedicated multimode LTE for AT&T Wireless networks. Multimode LTE EHWIC is backwards compatible with HSPA+, HSPA, UMTS, EDGE, and GPRS.
EHWIC-4G-LTE-G	Dedicated multimode LTE for global wireless networks. Multimode LTE EHWIC is backwards compatible with HSPA+, HSPA, UMTS, EDGE, and GPRS.

Feature Set Tables

Use Cisco Feature Navigator to find information about platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

Table 4 lists the feature information for Cisco 4G LTE WWAN EHWICs.

Table 4 Feature Information for Cisco 4G LTE WWAN EHWICs

Feature Name	Release	Feature Information
Dual-Mode LTE Support for ISR G2	Cisco IOS 15.1(4)M4, 15.2(4)M, and later	<p>Cisco 4G LTE WWAN EHWIC (EHWIC-4G-LTE-V) support 4G LTE and 3G cellular networks. The 4G LTE mobile specifications provide multi-megabit bandwidth, more efficient use of the radio network, latency reduction, and improved mobility.</p> <p>This feature was introduced for the Cisco ISR G2 modular platforms.</p> <p>The following commands were also introduced or modified as a part of this feature:</p> <ul style="list-style-type: none"> cellular slot lte controller cellular unit: default lte, lte event, lte radio, lte sim, no lte
Multimode 4G LTE Support for ISR G2	Cisco IOS 15.2(4)M1 and later	<p>The following 4G LTE WWAN EHWICs were released as a part of this feature:</p> <ul style="list-style-type: none"> EHWIC-4G-LTE-A—Dedicated multimode LTE for AT&T Wireless networks. EHWIC-4G-LTE-G—Dedicated multimode LTE for global wireless networks. <p>This feature was introduced for the Cisco ISR G2 modular platforms.</p> <p>Multimode LTE EHWIC is backwards compatible with HSPA+, HSPA, UMTS, EDGE, and GPRS.</p>

Hardware SKUs

Table 5 shows the hardware SKUs for Cisco 4G LTE WWAN EHWICs.

Table 5 Cisco 4G EHWICs by Mode, Operating Region, and Frequencies

SKU	Mode	Operating Region	Frequency Band	Description
EHWIC-4G-LTE-V	LTE—DOrA ¹	North America	700 MHz (band 13) for LTE 800 and 1900 MHz for CDMA ² 1xRTT, 1xEVDO ³ Rev A	Verizon LTE (using Sierra Wireless MC7750)
EHWIC-4G-LTE-A	LTE—HSPA+, HSPA, UMTS, EDGE, and GPRS	North America	700 MHz (band 17), AWS (band 4), and 2100 MHz (band 1) for LTE 800, 850, 1900, and 2100 MHz for UMTS, HSPA+, and HSPA 850, 900, 1800, and 1900 MHz GSM, EDGE, and GPRS	AT&T LTE (using Sierra Wireless MC7700)
EHWIC-4G-LTE-G	LTE—HSPA+, HSPA, UMTS, EDGE, and GPRS	Global	800 MHz (band 20), 900 MHz (band 8), 1800 MHz (band 3), 2100 MHz (band 1), 2600 MHz (band 7) for LTE 900 and 2100 MHz for UMTS, HSPA+, and HSPA 900, 1800 and 1900 MHz for GSM, EDGE, and GPRS	Global LTE (using Sierra Wireless MC7710)

1. DOrA = Evolution Data Only (EVDO) Revision A

2. CDMA = Code Division Multiple Access

3. 1xEVDO = Evolution Data Only

New Software Features in 15.3(3)M

- 4G SMS
- SMS initiated data callback
- 3G/4G Simple Network Management Protocol (SNMP) MIB.



Note

GPS is not supported in Cisco IOS Release 15.3(3)M. GPS will be supported in Cisco IOS Release 15.3(3)M1.

Software Features in Release 15.2(4)M3

- IPv4 bearer
- MIPv4, NEMOv4 and RFC 3025
- IPv4 subnet behind the LTE User Equipment (UE) interface
- eHRPD, which allows seamless handoff between LTE and 3G services (in EHWIC-4G-LTE-V only)
- Seamless handoff between LTE and the eHRPD network (in EHWIC-4G-LTE-V only)
- Support for the UMTS service as a fallback option from the LTE service (in EHWIC-4G-LTE-A and EHWIC-4G-LTE-G only)
- Seamless handoff between the LTE and the UMTS service (in EHWIC-4G-LTE-A and EHWIC-4G-LTE-G only)
- Over the Air Device Management (OTA-DM) including wireless configuration Firmware over the Air (FOTA) (in EHWIC-4G-LTE-V only)

Limitations and Restrictions

- Currently, cellular networks support only outgoing calls.
- Throughput—Due to the shared nature of wireless communications, the experienced throughput varies depending on the number of active users or congestion in a given network.
- Cellular networks have higher latency compared to wired networks. Latency rates depend on the technology and carrier. Latency may be higher because of network congestion.
- Any restrictions that are part of the terms of service from your carrier.
- Public Land Mobile Network (PLMN) CLIs exist but the feature is not supported in this release.
- SMS—Only one text message up to 160 characters to one recipient at a time is supported. Larger texts are automatically truncated to the proper size before being sent.
- For the router that runs the SNMP agent, you must configure appropriate access control (for example, SNMP-server community) using the Cisco IOS CLI for the NMS and agent to work properly.
- It is strongly recommended that you configure SNMP V3 with authentication/privacy when implementing SNMP SET operation.
- GPS is not supported in Release 15.3(3)M.

Caveats

- [Open Caveats—Release 15.3\(3\)M, page 8](#)
- [Resolved Caveats—As of Release 15.3\(3\)M and Later, page 10](#)

Open Caveats—Release 15.3(3)M

- CSCui61199
Modem Type: All LTE modems.

Symptom: Inability to configure the cellular profile username and password through the CLI if a 32 character password is required. This problem will be fixed in 15.3(3)M1.

Condition: The username and password configuration issue occurs when a 4G modem connects in UMTS mode to a 3G network.

Workaround: None

- CSCug04917

Modem Type: AT&T and Global LTE.

Symptom: The cellular interface may reset after deleting SMS messages from a full SMS SIM.

Condition: When the system sends traffic over cellular link, the LTE modem continues to receive SMS messages even though the SIM card has reached its full capacity.

Workaround: Setup the FTP server path for auto SMS archiving when the SIM/USIM is full, or delete SMS messages before the SIM is full.

- CSCue48693

Modem Type: Verizon

Symptom: Low throughput is seen when uplink carries traffic.

Condition: Send IMIX traffic rate 16 Mbps and greater to the uplink.

Workaround: None.

- CSCue41706

Modem Type: All LTE modems.

Symptom: UUT SMS special characters sent does not match receiving device.

Condition: When a special character ('\'', '\$', '@') is sent by way of SMS from different carriers.

Workaround: None

- CSCts51164

Modem Type: All LTE modems

Symptom: Modem becomes unresponsive.

Condition: This symptom is observed when a small packet traffic (64 B) goes downlink at the rate of 35 Mb/s.

Workaround: In the context of small packet traffic (64 B), lower the downlink rate to 25 Mb/s.

- CSCtw47467

Modem Type: AT&T

Symptom: The MC7700 modem fails to ping to the network.

Condition: This symptom is observed in the context of pings when a packet size of 1045 B or greater is present and has the Access Point Name (APN) set to Broadband.

Workaround: Use packet size of 1044 B or smaller.

Resolved Caveats—As of Release 15.3(3)M and Later

Table 6 lists the resolved caveats for the Cisco 4G LTE WWAN EHWICs.

Table 6 *Resolved Caveats for Cisco 4G LTE WWAN EHWICs*

Defect ID	Modem Type	Summary
CSCty52922	Global	The MC7710 modem always shows -110 dBm RSSI.
CSCub86032	All LTE modems	Update to RSSI callback and get functions.
CSCuc17938	All LTE modems	Incorrect value for Packet Service and Session status in show cellular command.
CSCuc20331	All LTE modems	Heartbeat timeout message on console with the test cell-host 0 usb-to-dm command.
CSCuc40100	All LTE modems	SDK process stuck and no calls, until console messages were flushed.
CSCuc79143	All LTE modems	Cellular Profile Inactive should bring down the Cellular Interface.
CSCud06180	All LTE modems	CWAN_SHIM/SDK crash EHWIC-4G-LTE-V.
CSCtn24365	All LTE modems	Line speed is not being updated.
CSCue19242	All LTE modems	4G Cellular Interface RSSI is not updated after temporary network outage.
CSCts38674	All LTE modems	UTT cannot establish a call using Dialer with no IP address.
CSCtq22132	Verizon	EVDO LED does not come up when UUT is in EHRPD mode.
CSCtq79411	Verizon and AT&T	Sometimes ping fails after the test cellular 0/x/0 modem-reset command.
CSCtw71369	All LTE modems	The SIM status is incorrect after unblocking the SIM.
CSCts84019	All LTE modems	Technology preference mode is not saved after router reload.
CSCtw50379	All LTE modems	The sh cell <x> network command shows "Current Service Status = Emergency Only".
CSCtr21366	All LTE modems	LTE EHWIC FPGA download done; sequence check does not correspond to the hardware specifications.
CSCtu28648	Not applicable. Specific to EHWIC hardware.	Router bootup error.
CSCtx20754	Not applicable. Specific to EHWIC hardware.	FPGA Critical Error: Kirkwood CPU Watchdog Event.
CSCto12629	All LTE modems	LTE LED is ON even when there is no LTE service.
CSCtx81919	All LTE modems	Firmware upgrade on MC77xx failed.
CSCty39273	All LTE modems	Current Service Status and MCC/MNC display data may be incorrect after a modem reset.
CSCtx84262	All LTE modems	MCC and MNC information are invalid after router reload.
CSCuc09975	Verizon	IMSI value incorrectly displays as 0000 when cellular interface is power cycled or reset.

Table 6 **Resolved Caveats for Cisco 4G LTE WWAN EHWICs**

Defect ID	Modem Type	Summary
CSCue09818	Verizon	Even after saving the Release 15.2(4)M-specific configuration changes, the values fall back to default after a reload.
CSCue09823	Verizon	Clears the counters without clearing the input drops field in the show cellular 0/0/0 logs dm-log command output.

Related Documentation

- *Cisco 4G LTE Wireless WAN EHWIC*
Provides instructions for installing and upgrading Cisco 4G LTE WWAN EHWICs.
<http://www.cisco.com/en/US/docs/routers/access/interfaces/ic/hardware/installation/guide/EHWIC-4G-LTEHW.html>
- *Configuring Cisco 4G LTE Wireless WAN EHWIC*
Provides instructions for configuring Cisco 4G LTE WWAN EHWICs.
<http://www.cisco.com/en/US/docs/routers/access/interfaces/software/feature/guide/EHWIC-4G-LTESW.htm>
- *Open Source License—Open Source Used In Cisco 4G-LTE Wireless WAN EHWIC Release 1.0*
Provides information about the open source licenses used in Cisco 4G LTE WWAN EHWICs.
http://www.cisco.com/en/US/docs/routers/access/interfaces/License/Cisco_4G_LTE_Wireless_WAN_EHWIC_Release_1.0_Open_Source_Documentation.pdf

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

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