Fourth-Generation LTE Wireless WAN Cards for Cisco Integrated Services Routers Generation 2

Product Overview

Q. What are the Cisco® Fourth-Generation LTE Wireless WAN Enhanced High-Speed WAN Interface Cards (Cisco 4G LTE WWAN EHWICs)?

A. The Cisco 4G LTE WWAN EHWICs are the first enterprise-class 4G Multimode Long-Term Evolution (LTE) WWAN solution for the ISR G2. They can support the latest 3GPP Release 8 LTE standards. Cisco 4G Multimode LTE WWAN EHWICs also support 3GPP and 3GPP2 based 3G and 2G access technologies and seamless handoff from 2G/3G to 4G LTE. The Cisco 4G LTE WWAN EHWICs have three variants:

- Part number EHWIC-4G-LTE-V: Dedicated Multimode LTE for Verizon Wireless networks. Multimode LTE EHWIC is backwards compatible with Evolved High Rate Packet Data (EHRPD), EVDO Rev A/Rev0, and 1xRTT.
- Part number EHWIC-4G-LTE-A: Multimode LTE for North American and other carriers that operates LTE on 1700/2100 MHz, 700 MHz or 2100 MHz. Multimode LTE EHWIC is backward compatible with DC-HSPA, HSPA+, HSPA, UMTS, EDGE and GPRS. Availability Q4-CY2012.
- Part number EHWIC-4G-LTE-G: Multimode LTE for carriers that operates LTE on 800 MHz, 900 MHz, 1800 MHz, 2100 MHz or 2600 MHz. Multimode LTE Global EHWIC is backward compatible to DC-HSPA, HSPA+, HSPA, UMTS, EDGE and GPRS. Availability Q4-CY2012

The Cisco 4G LTE WWAN EHWICs are tightly integrated with the services available on the Cisco Integrated Services Routers Generation 2 (ISR G2), which deliver secure data, voice, video, and mobility services. The Cisco 4G LTE WWAN EHWICs are supported on the modular Cisco 1900, 2900, and 3900 Series ISR G2 routers.

Q. What are the available models of the new Cisco 4G LTE WWAN EHWICs?

A. Table 1 lists the Cisco 4G LTE WWAN EHWICs supported on the Cisco Integrated Services Routers Generation 2.

Table 1. Cisco 4G WWAN HWICs Supported on Cisco ISR G2 Routers

Part Number	Description
EHWIC-4G-LTE-V	Dedicated 4G LTE EHWIC for Verizon Wireless Network, US (Verizon SKU)
EHWIC-4G-LTE-A	Dedicated 4G LTE EHWIC for North America & other carriers that operates LTE on 1700/2100 MHz, 700 MHz or 2100 MHz. **Available in Q4CY2012**
EHWIC-4G-LTE-G	Dedicated 4G LTE EHWIC for all global LTE carriers (Global SKU) that operates LTE on 800 MHz, 900 MHz, 1800 MHz, 2100 MHz or 2600 MHz. **Available in Q4CY2012**

In addition to the Cisco 4G LTE WWAN EHWICs, Cisco also provides a range of 4G LTE antenna solutions to accommodate a variety of installation environments; the antennas are backward compatible to 3G antennas.

Q. Are the antennas included with the Cisco 4G LTE WWAN EHWICs, or do we need to place a separate order?

A. Cisco 4G LTE WWAN EHWICs support 2x2 MIMO antenna and single active GPS antenna. By default Cisco 4G LTE EHWIC ships with two 4G/3G/2G multiband swivel mount dipole antenna (4G-LTE-ANTM1919D) & two extended low loss RF cable as part of LTE EHWIC packaged. Active GPS antenna with 17' feet cable is offered as an accessory item and not included in the LTE EHWIC package.

Q. What are the 4G LTE performance and latency?

A. Cisco 4G LTE EHWICs support LTE Category 3 (LTE CAT3) with peak uplink and downlink speeds of 50 and 100 Mbps, respectively, on the 20- x 20-MHz channel. Round-trip time (RTT) on the LTE is less than 50 ms.

Note: These performance numbers are theoretical limits and may not be seen in production networks; contact your preferred wireless carrier for expected performance rates.

Q. What features are supported on the Cisco 4G LTE WWAN EHWICs?

A. The following features are supported on the Cisco 4G LTE EHWICs:

- Cisco Network Mobility (NeMo, Mobile IP, Mobile Router)
- Short Message Service (SMS)
- 2 x 2 multiple input, multiple output (MIMO) antenna
- Evolved high-rate packet data (eHRPD) for smooth handoff (HO) between LTE and EVDO
- Inter-remote access Trojan (RAT) for smooth HO between LTE and HSPA and non-Third-Generation Partnership Project (3GPP) networks
- 4G Simple Network Management Protocol (SNMP) MIB will be available in CY 2013
- SMS over IMS (using IPv6 IMS bearer)—Service Provider dependent, available in CY 2013
- Client-based mobility with Mobile IP Version 6 (MIPv6)—available in CY 2013
- Voice over IP (VoIP) over IP Multimedia Subsystem (IMS)—Service provider dependent feature
- Global Positioning System (GPS)—will be available in CY 2013

Please note that all IPv6 features will be introduced in the future once service provider enables it in the network. It will be a software upgrade via Cisco IOS image.

Q. Are different firmware versions available for the Cisco 4G LTE WWAN EHWICs?

A. Yes. Different firmware versions may be introduced to address feature enhancements or carrier-specific functions. It will be made available on CCO to download similar to Cisco IOS images.

Q. Is the firmware bundled with the Cisco IOS® Software image?

A. The firmware comes preloaded with the Cisco 4G WWAN EHWIC; it is not bundled with the Cisco IOS Software image. When a new firmware version is released, it is made available at the Cisco website. To upgrade the firmware of your modem, download the correct firmware and copy it to the router flash memory. Then use the Cisco IOS Software command-line interface (CLI) to complete the upgrade process.

Q. Does the Cisco 4G LTE WWAN EHWIC ship preloaded with subscriber-identity-module (SIM) cards?

A. No. The SIM cards must be obtained from a supported wireless carrier, and they must be associated with an appropriate rate plan.

Q. Can I use the SIM card from my personal digital assistant (PDA) in the Cisco 4G LTE WWAN EHWIC?

A. No. Typically the service providers have different data plans for different devices. Please check with your service providers for the appropriate data plans for your usage.

Features and Applications

Q. What are the applications for the new Cisco 4G LTE WWAN EHWICs?

A. The Cisco 4G LTE WWAN EHWICs are suitable for primary WAN connectivity considering the available bandwidth and latency.

They are suitable for applications that need high data bandwidth, low latency, and high security requirements such as interactive business video and TelePresence. They are also ideal for traditional applications such as bank ATMs, gas station kiosks, and telemetry sites.

The Cisco 4G LTE WWAN EHWIC offers a highly secure, simplified, and cost-effective WAN alternative to DSL or Frame Relay. In areas where terrestrial broadband services (cable, DSL, or T1) are not available or are expensive, 4G LTE WWAN connectivity can be a viable alternative. For businesses requiring rapid setup or temporary connectivity, the Cisco 4G LTE WWAN EHWICs enable you to bring up a new site quickly and cost-effectively. Using the integrated services available on the Cisco Integrated Services Routers Generation 2, Cisco 4G LTE WWAN EHWICs can provide instant and mobile communications during disasters and service outages.

Q. What management capabilities are available for the Cisco 4G LTE WWAN HWICs?

A. You can configure and monitor the Cisco 4G LTE WWAN EHWICs from the router CLI using Cisco IOS Software commands.

For remote management capabilities, the interface MIB also provides traps for interface up and down events. 4G MIB will be available in future release as software upgrade.

Q. Can I use IP Security (IPsec) with the Cisco 4G LTE WWAN EHWICs?

A. Yes. All security features of the Cisco ISR G2 routers are supported on the Cisco 4G WWAN EHWIC: Site-to-Site IPsec Tunnel, Dynamic Multipoint VPN (DMVPN), and Group Encrypted Transport VPN, GRE tunnel.

Q. What is Cisco NEtwork Mobility (NEMO)?

A. Cisco NEMO is a robust network capability for 4G LTE that enables service providers to transform the way they integrate and scale wireless to wireline VPNs. Cisco NEMO Versions 4 is for service providers that deploy the MIP solution, and NEMO V6 will be available as software upgrade in future release.

- Simplified design: Cisco ISR G2 routers with integrated LTE and NEMO provide the intelligence to enable new applications and allow new business functions, and they make it easier to offer suites of new services to the end customer.
- Enhanced customer experience: With Cisco NEMO, the operational experience is significantly simplified, because it integrates the LAN, WAN, and WLAN to provide a true borderless network experience.

Ease of operation: Cisco NEMO is the differentiator that delivers ease of operation for service providers. It allows them to tightly couple wireless with wireline-managed services, thereby providing faster, quicker, and easier “converged wired and wireless managed services”.

Q. Where can I find configuration and installation guides for the Cisco 4G WWAN EHWICs?

A. 4G home page on Cisco.com is at: http://www.cisco.com/go/4g.

Hardware installation guide can be found at:
http://www.cisco.com/en/US/docs/routers/access/interfaces/ic/hardware/installation/guide/EHWIC-4G-LTEHW.html
The software configuration guide can be found at:
http://www.cisco.com/en/US/docs/routers/access/interfaces/software/feature/guide/EHWIC-4G-LTESW.html

Q. My cellular connection is not coming up or appears to be connected but not passing any traffic or stays down for longer periods. What is the problem?

A. On a small subset of Cisco ISR 3G/4G deployments on the Verizon Wireless Network, an anomaly is seen where the cellular interface stops communicating with the cellular network for up to two hours. (Until the Mobile IP/PDP session keep alive from the wireless network refreshes the connection). During this time, the 3G interface appears as up/up. Although a manual reset of the 3G/4G modem and/or a clearing of the cellular interface (via shut/no shut) can often resolve this, on rare occasions, a reload of the ISR is needed to clear the condition. While the root cause is being determined, Cisco is providing an automated mitigation script to restore service more quickly.

The two scripts offer an automated method, versus a manual method of mitigation. The scripts attempt the least disruptive method for service restoral, and check if that has succeeded. If it has not, then the next least disruption method is executed. The scripts reset when service is restored so detection and restoration can be executed again if needed, without manual intervention. Below is a flow chart of the script logic, along with two scripts. One script is for use with Verizon Mobile Private Network/Dynamic Mobile Network Routing (MPN/DMNR) service; the other script is for use with Verizon Wireless 3G Internet connection service. The instructions for each script (also below) provide detail on how to load the TCL script onto the ISR flash, and the few commands to be added to the ISR configuration to automate execution. Please find the script and guidelines at:

Cellular Recovery Script
<http://www.cisco.com/cisco/software/release.html?mdfid=283733571&softwareid=284194160&release=LTE_RECOVERY_1.0&relind=AVAILABLE&rellifecycle=&reltype=latest>

If you are unsure whether using this script is appropriate for your site, please contact your Cisco representative, or the Cisco Technical Assistance Center at 800-553-2447

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