Product Overview

The Cisco MWR 1941-DC-A Mobile Wireless Edge Router is a general purpose router platform specializing in 2/2.5G Global System for Mobile Communication (GSM) and 3G Universal Mobile Telecommunication System (UMTS) Radio Access Network (RAN) backhaul transport and optimization.

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Introduction

A typical RAN is composed of thousands of Base Transceiver Stations (BTSs)/Node Bs, hundreds of Base Station Controllers/Radio Network Controllers (BSCs/RNCs), and several Mobile Switching Centers (MSCs). The BTSs/Node Bs and BSCs/RNCs are often separated by large geographic distances, with the BTSs/Node Bs located in cell sites uniformly distributed throughout a region, and the BSCs, RNCs, and MSCs located at suitably chosen Central Offices (COs) and/or Mobile Telephone Switching Offices (MTSOs). The traffic generated by a BTS/Node B is transported to the corresponding BSC/RNC across a network, referred to as the backhaul network, which is often a hub-and-spoke topology with hundreds of BTSs/Node Bs connected to a given BSC/RNC by point-to-point TDM trunks. These TDM trunks may be leased line T1/E1s or their logical equivalents, such as microwave links or satellite channels. The interface between the BTS and BSC in GSM and CDMA systems is called the Abis interface. The interface between the Node B and RNC in a UMTS system is called the Iub interface.

RAN Optimization Implementation

In RAN Optimization (RAN-O), the Cisco MWR 1941-DC-A router extends IP connectivity to the cell site and base transceiver station (BTS). The router provides bandwidth-efficient IP transport of GSM and UMTS voice and data bearer traffic, as well as maintenance, control, and signaling traffic, over the leased line backhaul network between the BTS and leased line termination and aggregation node via compression (including Abis Optimization over IP, Iub Optimization over IP, and eRTP/cUDP) and packet multiplexing (Multilink PPP).

Figure 1-1 shows an example of the placement of and connections for the Cisco MWR 1941-DC-A router in a RAN.

Figure 1-1  Example of Cisco MWR 1941-DC-A Router in a RAN

The BTS site consists of a pair of Cisco MWR 1941-DC-A routers. The pair of routers provides an active router and a standby router for redundancy. A failure of the active router causes the standby router to take over as the active router for the BTS site.

Each pair of Cisco MWR 1941-DC-A routers at the BTS site is identical in hardware configuration. The two routers connect to each other through the Fast Ethernet interfaces. The individual backhaul links to a Cisco MWR 1941-DC-A router are cabled from a single T1/E1 termination block in the BTS, connecting to both the active and standby routers by means of a Y cable. The redundancy design to control the active/standby transitions of the router pair leverages Hot-Standby Router Protocol (HSRP) to control the relays on the VWIC-2T1/E1-RAN (for more information, see Cisco 2-port T1/E1 RAN Optimization VWIC Installation Instructions) in each router to ensure that the relays on the active router are closed while the relays on the standby router are open, thus avoiding double termination of the T1 (or E1).
Cisco Abis and lub Optimization over IP Implementation

One solution that mobile wireless operator’s find of value is Cisco’s ability to optimize RAN backhaul efficiency (see Figure 1-2). For example, Cisco’s GSM Abis Optimization solution increases the T1/E1 bandwidth efficiency by as much as 50%. This means the current traffic loads can be carried using half as many T1/E1 trunks as are presently used. This allows more voice and data calls to be carried over the existing RAN backhaul network, eliminating the need for the operator to add expensive new T1/E1 trunks as traffic demands grow. It will also allow a number of existing trunks to be decommissioned, putting an end to their recurring costs.

Another equally important benefit is that substantial excess capacity is now available in the existing RAN backhaul network. The operator can reallocate this recovered bandwidth to carry traffic from other radios, such as UMTS Node Bs, GPRS, EDGE, 1xEV-DO, PWLANs, and other data overlays. This capability reduces the deployment and operating costs for new technologies, since the operator avoids the up-front and recurring costs of supplementing backhaul capacity. It also accelerates time to revenue from deployments of new radio technologies since there is no need for the operator to wait for additional microwave licenses or leased lines to be supplied.

Compliance with 3GPP2 and 3GPP R5 and R6 transport standards is another appealing aspect of Cisco’s RAN Optimization solution. Cisco converts today’s CDMA transport networks into 3GPP2-compliant IP RAN transport networks, and GSM and R4/R99 UMTS transport networks into R5/R6 IP RAN transport networks now—and adds multi-radio backhaul compression as well. This means operators can enjoy the benefits of IP transport in their CDMA, GSM, and R4/R99 UMTS RANs today.

Figure 1-2 Example of Cisco MWR 1941-DC-A Router in a GSM Abis and UMTS lub Optimization over IP
Cisco GSM Abis Optimization over IP

The Cisco GSM Abis Optimization over IP technology improves T1/E1 bandwidth efficiency by 33% to 50%, corresponding to a GSM voice call capacity gain of 50-100% per T1/E1, depending on the nature of the traffic on the Abis interface.

In a GSM RAN, the interface between the BTS and BSC is a 3GPP reference interface called the Abis interface. The physical trunk connecting a BTS and BSC is typically a T1 or E1 circuit, and carries 24 (T1) or 32 (E1) separate 64 kbps DS0 channels. One or two of these DS0 channels is used to carry control and signaling traffic, while the remainder is used to carry bearer traffic—voice and data from mobile users. Each DS0 bearer channel carries up to four sub-multiplexed 16 kbps channels, termed sub-rate DS0s. The voice and data bearer traffic is carried over the sub-rate DS0s in transcoder and rate adaptor (TRAU) frames in accordance with 3GPP TS 08.60 v8.2.1, “In-band control of transcoders and rate adaptors for Enhanced Full Rate (EFR) and full rate traffic channels.” There are several types of TRAU frames: full-rate (FR) or enhanced full-rate (EFR) GSM vocoder frames; adaptive multi-rate (AMR) vocoder frames; silent speech frames; and OAM frames. When a sub-rate DS0 is assigned to a call, TRAU frames are generated in accordance with 3GPP TS 08.60 v8.2.1, “In-band control of transcoders and rate adaptors for Enhanced Full Rate (EFR) and full rate traffic channels.” When a sub-rate DS0 is idle, that is, not assigned to a call, a repeating idle pattern is transmitted in accordance with 3GPP TS 08.54 v8.0.1, “Base Station Controller-Base Transceiver Station (BSC-BTS) interface; Layer 1 structure of physical circuits.”

The transcoder and rate adaptation control function that specifies the TRAU frames provides several opportunities to optimize the Abis interface, and thus optimize the backhaul bandwidth efficiency. For example, when Discontinuous Transmission (DTX) is employed over the air interface, the TRAU frames that are transported on the Abis interface contain standardized redundant bit patterns, known as idle (silent) speech frames (FR and EFR) or “no data” frames (AMR), whenever a voice user is silent (typically 40-60% of the time). As another example, bearer channels that are not assigned to calls each carry known idle bit patterns on the Abis interface as mentioned previously. Thus, even though no radio transmissions are made during silent and idle periods, redundant information is nevertheless transported across the backhaul network thereby unnecessarily consuming precious bandwidth.

Cisco Iub Optimization over IP

The Cisco Iub Optimization over IP technology for R4/R99 (ATM) UMTS RANs improves bandwidth efficiency by as much as 15% to 40%, corresponding to a UMTS voice call capacity gain of 18% to 67%, depending on the type of Iub header and ATM Adaptation Layer traffic sub-cell multiplexing performance. For R5/R6 IP UMTS RANs, Cisco provides compression and low-overhead encryption.

Intelligent Cell Site IP Services

Cisco's RAN-O solutions also open up the possibility to deliver new profit-enhancing services. This is achieved through the rich set of IP networking features supported in Cisco IOS Software that are now extended to the cell site (see Figure 1-3 on page 1-5).

Cell Site Points-of-Presence (POPs)

Since many cell sites are located in and around downtown areas, hotels, airports, and convention centers, they make attractive sites for colocating public wireless WAN (PWLAN) access points and other wireless data overlays. Many of these wireless data radios are IP-based. IP networking features, like Mobile IP, VoIP, IP Multicast, VPN, and content caching, enable delivery of new revenue-generating services over these radios. Cisco also provides a wide range of low-latency IP-based QoS and traffic shaping models to allow flexible mixing of multiple traffic types across the same backhaul network.
Thus, the cell site becomes a physical Point-of-Presence or POP from which to offer hotspot services, or voice and wired ISP services to nearby enterprises and residences. The corresponding traffic “rides for free” on the spare backhaul bandwidth made available by Cisco’s Abis and Iub Optimization solutions.

**Figure 1-3** Example of Cisco MWR 1941-DC-A Router in a Cell Site POP and Cell Site DCN

![Diagram showing cell site and network components](image-url)
**Hardware Description**

Contained in a standard shelf-rack enclosure, the Cisco MWR 1941-DC-A router weighs 10.5 pounds (4.77 kg). It measures 1.72 inches high x 17.5 inches wide x 12.5 inches deep (4.37 cm x 44.45 cm x 31.75 cm). These dimensions do not include the rack-mount brackets (installed at the factory or provided in the rack-mount bracket kit, Cisco part number 69-0791-01).

**Note**
The rack-mount brackets are normally installed at the factory, however, if you received your router without the rack-mount brackets installed, see the “Attaching the Rack-Mounting Brackets” section on page 3-3 for how to install the rack-mount brackets.

The Cisco MWR 1941-DC-A router is mounted in a standard (EIA-310D) 19-inch (48.3 cm) equipment rack (using the rack-mount brackets provided).

The Cisco MWR 1941-DC-A router includes the following features:

- Two DIMM-168 synchronous dynamic RAM (SDRAM), 4 banks or sockets (256 MB factory installed)
- SysAD bus speed and SDRAM local bus speed are 80 Mhz
- Fixed compact flash (CF) memory, 128 MB (located on front panel), not field upgradeable
- Built-in (fixed) high performance advanced integration module for ATM (AIM-ATM or AIM-ATM-8) daughter card providing ATM segmentation and reassembly (SAR) (see the “Advance Integration Module for ATM” section on page 1-10 for more information)

**Note**
The AIM-ATM or AIM-ATM-8 daughter card is an option that is only installed at the factory to the motherboard of a Cisco MWR 1941-DC-A router.

- Two fixed LAN 10/100Base-T Ethernet Ports (located on front panel)
- Three integrated VWIC expansion slots each supporting 2T1/E1
- One network module slot supporting two VWIC-2T1/E1-RANs
- Redundancy support via a VWIC-2T1/E1-RAN capable of port switching on/off via relays
- Console EIA/TIA-232 port
- Auxiliary serial port with hardware flow control
- Front (left and right side) to rear airflow using four 40-mm, 10-cfm exhaust fans (located on rear panel)
- + 27/-48 VDC (+/-20 to 60 VDC supply tolerance) universal power supply, see the “Power Supply” section on page 1-12 for a description and specifications
Hardware Description

- Front access cabling
- Three green chassis LEDs (see the “Cisco MWR 1941-DC-A Router Front View” section on page 1-7 for a description):
  - Power, labeled PWR (indicates whether power supply is operational)
  - Status, labeled STAT (indicates whether software is up and running)
  - Activity, labeled ACT (indicates whether interrupts or packet transfers are running)
- The Cisco MWR 1941-DC-A Router is normally shipped with:
  - Mounting rack-mount brackets already installed (as described previously) that allow the Cisco MWR 1941-DC-A router to be positioned in an equipment rack.

Cisco MWR 1941-DC-A Router Front View

On the front panel, viewing from right to left, the Cisco MWR 1941-DC-A router (see Figure 1-4) shows the orientation of the following components:

- A 2-port T1/E1-RAN, installed in two of the three 2-port T1/E1-RAN (positions 0 and 1) slots.
- Auxiliary and Console ports.
- Fixed Compact flash slot.
- FE (FastEthernet) ports.
- A blank panel, installed in the network module slot.
- Various LEDs (chassis, Fast Ethernet, and 2-port T1/E1-RANs), see the “LEDs” section for a description of the all the LEDs.

Note

The location of the rack-mounting brackets is also shown facing front on the left and right sides of the router. Note how the brackets are attached to the left and right sides by wrapping around the air vent (see the “Mounting the Cisco MWR 1941-DC-A Router” section on page 3-2 for instructions on how to install the mounting brackets).
LEDs

Tables 1-1, 1-2, and 1-3 describe the Cisco MWR 1941-DC-A LEDs located on the front panel.

Table 1-1  Chassis LEDs

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (labeled PWR)</td>
<td>Green</td>
<td>On</td>
<td>Operating voltages on the mainboard are within acceptable ranges.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>The router is not connected to a power supply, or an error condition has been detected in the operating voltages.</td>
</tr>
<tr>
<td>Status (labeled STAT)</td>
<td>Green</td>
<td>On</td>
<td>The router software has booted up, and the system is operational.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>The router has not yet booted, or an error condition has been detected in the boot process.</td>
</tr>
<tr>
<td>Activity (labeled ACT)</td>
<td>Green</td>
<td>On</td>
<td>Packets are being transferred.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No activity is occurring.</td>
</tr>
</tbody>
</table>
Chapter 1      Product Overview

Hardware Description

Note
In a redundant configuration, when the relays of the 2-port T1/E1-RAN close, the Data Carrier Detect LED on the T1 ports will remain on and the ALARM LED will go off. When the router is inactive, the Alarm LED will be on (as a result of no framing) and the Data Carrier Detect LED will be off.

Cisco MWR 1941-DC-A Rear View

The Cisco MWR 1941-DC-A router power connector (see the “Wiring the DC-Input Power Source” section on page 3-7), grounding nut/screw (see the “Connecting the Chassis Ground and Power” section on page 3-5, and the four fans are located on the rear panel (see Figure 1-5).
**Advance Integration Module for ATM**

The 2-port T1/E1-RAN Optimization (VWIC-T1/EI-RAN) interface card provides redundancy support where the incoming bit stream is forwarded to a built-in (fixed) high performance advanced integration module for ATM (AIM-ATM or AIM-ATM-8) daughter card located on the motherboard of the Cisco MWR 1941-DC-A router.

The AIM for ATM cards perform framing and enhanced ATM segmentation and reassembly (SAR). This functionality includes normal SAR functions for ATM Adaptation Layer traffic as well as indications for resource management (RM) and operation and maintenance (OAM) cells. The AIM for ATM card then interrupts the CPU with reassembled ATM Adaptation Layer traffic packets for backhaul.

The AIM-ATM card supports up to four independent ATM links, or two Inverse Multiplexing over ATM (IMA) groups. The AIM-ATM-8 card supports up to eight independent ATM links, or four IMA groups.

To determine which AIM is installed in your Cisco MWR-1941-DC-A router, use the `show diagnostics` command in privileged EXEC mode.

**Fixed Interfaces**

The Cisco MWR 1941-DC-A router has two fixed LAN ports for 10/100Base-T Ethernet attachment. The ports are fully compliant with the IEEE 802.3 and 802.3U standards. The ports integrate the MAC functions and a dual-speed media-dependent interface (MDI). Both ports can operate in half- or full-duplex mode and can run independently of one another. For each Fast Ethernet (FE) interface, there are two green LEDs, one for Link Integrity and one for Link Activity (for LED information, see Table 1-2 on page 1-9).
Chapter 1  Product Overview

Cisco Network Modules

Interface Cards

The Cisco MWR 1941-DC-A router supports the following interface cards:

- 2-port T1/E1-RAN Optimization Interface Card: VWIC-2T1/E1-RAN for GSM and UMTS T1/E1 and IP Backhaul T1/E1

VWIC-2T1/E1-RAN

The 2-port T1/E1-RAN Optimization (VWIC-T1/E1-RAN) interface card supports GSM, UMTS, and IP Backhaul T1/E1. For UMTS, the RAN sends T1/E1 Iub ATM calls to the AIM for ATM SAR functions for ATM Adaptation Layer traffic for processing.

These cards are dual-port, T1/fractional T1 or E1/fractional E1, drop and insert multiplexers with integrated T1 CSU/DSUs or E1 DSUs. Each port can be used as either a T1 or an E1 interface.

The VWIC-2T1/E1-RAN will allow you to compress, multiplex, and optimize your GSM-Abis radio traffic transmission across T1/E1 WAN connections used for backhaul between the cell site BTS and the BSC.

The Cisco MWR 1941-DC-A router provides three VWIC interface slots.

Additionally, by inserting an NM-2W network interface module into the network interface slot of the Cisco MWR 1941-DC-A router, you can add two more VWIC-2T1/E1-RAN cards.

Information is provided in separate publications.

- For information on the VWIC-2T1/E1-RAN VWICs, see the Cisco 2-port T1/E1-RAN Optimization Installation Instructions.
- For software configuration information, see the Cisco MWR 1941-DC-A Mobile Wireless Edge Router Software Configuration Guide.

These manuals are on Cisco.com (see the “Obtaining Documentation, Obtaining Support, and Security Guidelines” section on page xvi for more information).

Cisco Network Modules

For implementation in a RAN-O solution with Cisco IOS Release 12.4(2)MR, the Cisco MWR 1941-DC-A router also supports the following Cisco network module:

- 2-port WAN Card Slot Network Module (no LAN): NM-2W(=)
  - Supports up to two additional VWIC-2T1/E1-RAN cards

Additional information is provided in separate publications.

- For instructions on installing the network module and for details on the network module and its interfaces, see the Cisco Network Modules Hardware Installation Guide.
- For software configuration information (see the Cisco MWR 1941-DC-A Mobile Wireless Edge Router Software Configuration Guide).

These manuals are available online at Cisco.com (see the “Obtaining Documentation, Obtaining Support, and Security Guidelines” section on page xvi for more information).
Compact Flash Memory

One internal 128MB fixed compact flash (CF) device is used on the Cisco MWR 1941-DC-A router. This CF device is not field upgradeable, it is only installed at the factory. This CF device is required for the Cisco MWR 1941-DC-A router to function because the Cisco IOS image and troubleshooting logs reside on the flash memory.

Power Supply

The Cisco MWR 1941-DC-A router is equipped with a +27/-48 VDC (±20 to 60 VDC supply tolerance) universal power supply.

Safety Precautions

Observe the following general safety precautions and recommendations in planning the source power requirements for the Cisco MWR 1941-DC-A router (for additional safety information, see the “Safety Guidelines” section on page 2-2):

- Check the power at your site before router installation (and periodically after installation) to ensure clean power is being received.
- Always disconnect the power source and unplug the power cable before working on the router.
- Install proper grounding for the site to avoid damage from lightning and power surges.

Warning

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ -45 connectors. Use caution when connecting cables. Statement 1021

Table 1-4 lists DC power supply specifications for the Cisco MWR 1941-DC-A router.

<table>
<thead>
<tr>
<th>Specification</th>
<th>+27/-48 VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage, DC power supply</td>
<td>+27/-48 VDC (±20 to 60 VDC supply tolerance) universal power supply</td>
</tr>
<tr>
<td>Maximum input current</td>
<td>3.5 A</td>
</tr>
<tr>
<td>Note</td>
<td>If the input voltage drops below 18.5 VDC, the router will go into shut down mode.</td>
</tr>
<tr>
<td>Wire gauge for DC input power</td>
<td>18 AWG</td>
</tr>
<tr>
<td>connections</td>
<td></td>
</tr>
<tr>
<td>Power dissipation</td>
<td>70 W (maximum), 35 W (typical)</td>
</tr>
</tbody>
</table>
The Cisco MWR 1941-DC-A router uses a small, three-wire connector (Phoenix Contact part number 1756272) for input to the power supply. The connector ships in the accessory kit.

With the connector installed in the chassis, the pins from top to bottom are 1, 2, and 3, respectively. Table 1-5 and Table 1-6 list the pinout configurations for the connector, based on the power source.

Table 1-5  Power Supply Connector Pinouts (+27 VDC Application)

<table>
<thead>
<tr>
<th>Pin</th>
<th>+27 VDC Power Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+27 VDC</td>
</tr>
<tr>
<td>2</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>RTN</td>
</tr>
</tbody>
</table>

Table 1-6  Power Supply Connector Pinouts (-48 VDC Application)

<table>
<thead>
<tr>
<th>Pin</th>
<th>-48 VDC Power Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RTN</td>
</tr>
<tr>
<td>2</td>
<td>Ground</td>
</tr>
<tr>
<td>3</td>
<td>-48 VDC</td>
</tr>
</tbody>
</table>

Environmental Monitoring Temperature Sensor

The Cisco MWR 1941-DC-A router has a temperature sensor to detect overtemperature conditions inside the chassis. The overtemperature detection trips at 75°C +/- 5%. This condition is reported to the processor as an interrupt, where software takes action to generate the appropriate alarms. If the router reaches a temperature of 90°C, the power supply will cycle to prevent the router from exceeding that temperature while being powered up.

System Specifications

Table 1-7 lists the system specifications for Cisco MWR 1941-DC-A router.

Table 1-7  Cisco MWR 1941-DC-A Router System Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (H x W x D)</td>
<td>1.72 x 17.5 x 12.5 in. (4.368 x 44.45 x 31.75 cm) 1 RU (rack unit) in a 19-in. rack</td>
</tr>
<tr>
<td>Weight</td>
<td>10.5 lb (4.77 kg)</td>
</tr>
<tr>
<td>Console and Auxiliary ports</td>
<td>RJ-45 connector</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>14 to 131°F (-10 to + 55°C)</td>
</tr>
<tr>
<td>Non-Operational Temperature</td>
<td>-40 to 185°F (-40 to 85°C)</td>
</tr>
<tr>
<td>Operating Humidity</td>
<td>5 to 90% RH (non-condensing)</td>
</tr>
<tr>
<td>Operating Altitude</td>
<td>9,842.5 ft. (3000 m) at 113°F (45°C)</td>
</tr>
</tbody>
</table>
Cisco MWR 1941-DC-A Router Interface Numbering

Each network interface on a Cisco MWR 1941-DC-A router is identified by a slot number and a port number. Figure 1-6 shows an example of the interface numbering on a Cisco MWR 1941-DC-A router.

### Slot and Port Numbering

The Cisco MWR 1941-DC-A router chassis contains the following LAN and WAN interface types:
- Two built-in Fast Ethernet LAN interfaces (labeled FE0 and FE1)
- Three slots for installing 2-port T1/E1-RANs (labeled W0, W1, and W2)
- One slot for installing a network module

The logical slot numbers are as follows:
- 0 for all built-in interfaces
- 0 for all built-in 2-port T1/E1-RAN slots
- 1 for the network module slot

The numbering format is:

*Interface type Slot number/Interface number*

Interface (port) numbers begin at logical 0 for each interface type; ports are numbered from right to left.
• The two built-in Ethernet 10/100 interfaces are Fast Ethernet 0/0 and Fast Ethernet 0/1.

• The logical slot number for all 2-port T1/E1-RAN interfaces in the built-in 2-port T1/E1-RAN slot is always 0. (The W0, W1, and W2 slot designations are for physical slot identification only.) Interfaces in the 2-port T1/E1-RANs are numbered from right to left, starting with logical 0/0 for each interface type, regardless of the physical slot in which the 2-port T1/E1-RANs are installed.

For example, if you have a 2-port T1/E1-RAN in two of the 2-port T1/E1-RAN slots (physical W0 and W1), then the logical interfaces are:

- Serial 0/0 and Serial 0/1 in physical slot W0
- Serial 0/2 and Serial 0/3 in physical slot W1

However, if you install a 2-port T1/E1-RAN in physical slot W1 (leaving slot W0 empty), the logical interfaces in slot W1 are Serial 0/0 and Serial 0/1. If you later add a 2-port T1/E1-RAN to slot W0, the interface numbering shifts. The configuration that you created for logical interfaces Serial 0/0 and Serial 0/1 will now be applied to the 2-port T1/E1-RAN in physical slot W0, and you will need to create a new configuration for the logical interfaces that you previously configured on W1 (which will now be Serial 0/2 and Serial 0/3).

• The slot number of WIC/VWIC interfaces installed in slot 1 using a WAN network module is always 1, and the interfaces are always numbered from the right to left.

• The logical slot number for all network module interfaces is always 1, and the interfaces are always numbered from right to left, starting with 1/0.

Regulatory Compliance

For regulatory compliance and safety information, see the Cisco Regulatory Compliance and Safety Information for the Cisco MWR 1941-DC-A Mobile Wireless Edge Router document. This document is available online at Cisco.com (see the “Obtaining Documentation, Obtaining Support, and Security Guidelines” section on page xvi for more information).