Cisco Connected Grid ISDN GRWICs Hardware Installation Guide

Last Revised: May 16, 2012
OL-26961-01

This document provides a hardware overview for Cisco Connected Grid ISDN Basic Rate Interface (BRI) interface cards that provide connectivity to the Wide Area Network (WAN) for the Cisco 2010 Connected Grid Router (*hereafter* referred to as the Cisco CGR 2010).

This document includes the following sections:

Information About the Connected Grid ISDN GRWICs

Each of the following ISDN interface cards is a single-wide, grid router WAN interface card (GRWIC).

- Cisco Connected Grid 1-port ISDN BRI S/T High-speed GRWIC

  The 1-port ISDN BRI S/T requires an external network terminator 1 (NT1) device for connection to the phone company.

- Cisco Connected Grid 1-port ISDN BRI U High-speed GRWIC

  The 1-port ISDN BRI U has a built-in network terminator 1 (NT1) device that accepts a two-wire signal from the phone company and converts it into a four-wire signal. The NT1 interface is also known as a U interface.

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> **Note** For details on software configuration for these GRWICS, please refer to the appropriate document listed in Software Configuration, page 8.

Hardware Overview

This section covers the following topics:

- Hardware Specifications
- Front Panels
- LEDs

Hardware Specifications

Table 1 summarizes the hardware specifications of the two Connected Grid ISDN GRWICs supported on the Cisco CGR 2010 Router.

Table 1   *Hardware Specifications for the Connected Grid ISDN GRWICs*

Item	ISDN BRI S/T	ISDN BRI U
Dimensions (H x W x D) in inches	3 x 2 x 6.5	3 x 2 x 6.5
Slot Restrictions	None	None
Number of ports	1-port	1-port
Connector	RJ-48C	RJ-49C
Subscriber service	ISDN over leased line and dialup	ISDN over leased line and dialup
Transport rate	144 kb/s (2B+D) B = 64 kb/s, bearer channel D = 16 kb/s, signalling channel	144 kb/s (2B+D)
Operating temperature (external to chassis)	0C to 40C	0C to 40C

Front Panels

Figure 1 shows the front panel for the Connected Grid ISDN BRI S/T version 3 (ISDN-1B-S/T V3) GRWIC.

Figure 2 shows the front panel for the Connected Grid ISDN BRI U (ISDN-1B-U) GRWIC.

Figure 1   *Front Panel for Connected Grid ISDN BRI S/T V3 GRWIC*
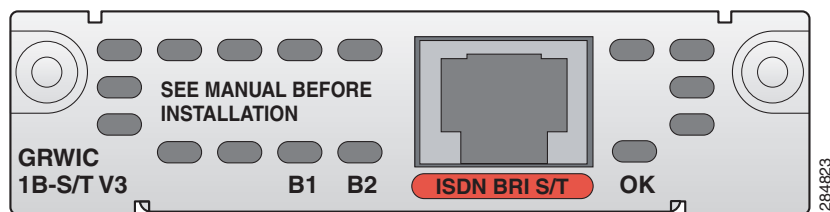
Figure 2   *Front Panel for Connected Grid ISDN BRI U GRWIC*
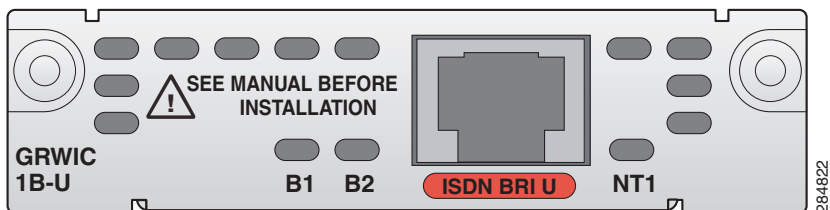
LEDs

Table 2 shows the LEDs for the Connected Grid ISDN BRI S/T GRWIC.

Table 3 shows the LEDs for the Connected Grid ISDN BRI U GRWIC.

Table 2   *LEDs for Connected Grid ISDN BRI S/T V3 GRWIC*

LED	Color	Description
B1	Green	ISDN call is active on the B1 channel.
B2	Green	ISDN call is active on the B2 channel.
OK	Green	ISDN port has established a connection with the central office switch on the D channel.

Table 3   *LEDs for Connected Grid ISDN BRI U GRWIC*

LED	Color	Description
B1	Green	ISDN call is active on the B1 channel.
B2	Green	ISDN call is active on the B2 channel.
NT1	Green	ISDN port has established a connection with the NT1.

Installing and Removing the Connected Grid ISDN GRWICs

This section describes how to install and remove a Connected Grid ISDN GRWICs in the Cisco CGR 2010 Router and includes the following topics:

- Safety Warnings
- Installing a Connected Grid Single-Wide ISDN GRWIC
- Removing a Connected Grid Single-Wide ISDN GRWIC

Safety Warnings

This section includes the basic installation warning statements for the Connected Grid ISDN BRI S/T and ISDN BRI U GRWICs. For regulatory compliance and safety information for the Cisco CGR 2010, refer to the *Connected Grid Router 2000 Series Regulatory Compliance and Safety Information* document.

http://www.cisco.com/en/US/docs/routers/access/2000/CGR2010/hardware/rcsi/rcsiCGR2000series.html

Warning   **Only trained and qualified personnel should be allowed to install, replace, or service this equipment.** Statement 1030

Warning   **Do not work on the system or connect or disconnect cables during periods of lightning activity.** Statement 1001

Warning   **Read the installation instructions before connecting the system to the power source.** Statement 1004

Warning   **Hazardous network voltages are present in WAN ports regardless of whether power to the unit is OFF or ON. To avoid electric shock, use caution when working near WAN ports. When detaching cables, detach the end away from the unit first.** Statement 1026

Warning   **The ISDN connection is regarded as a source of voltage that should be inaccessible to user contact. Do not attempt to tamper with or open any public telephone operator (PTO)-provided equipment or connection hardware. Any hardwired connection (other than by a nonremovable, connect-one-time-only plug) must be made only by PTO staff or suitably trained engineers.** Statement 23

The following warning, Statement 44, only applies to the Connected Grid ISDN BRI S/T GRWIC.

Warning   **Network hazardous voltages are present in the BRI cable. If you detach the BRI cable, detach the end away from the router first to avoid possible electric shock. Network hazardous voltages also are present on the system card in the area of the BRI port, regardless of when power is turned off.** Statement 44

The following caution and warning only apply to the Connected Grid ISDN BRI U GRWIC.

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Caution   To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the 1-port ISDN BRI U only to intra-building or non-exposed wiring or cabling.

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Warning   **To comply with the Telcordia GR-1089 NEBS standard for electromagnetic compatibility and safety, connect the 1-port ISDN BRI WIC with S/T interface, version 3 (WIC-1B-S/T-V3) only to intra-building or non-exposed wiring or cabling. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.**

Installing a Connected Grid Single-Wide ISDN GRWIC

The Connected Grid ISDN GRWICs are single-wide interface cards. The router can accommodate four single-wide GRWICs or two single-wide GRWICs with one double-wide GRWIC, or two double-wide GRWICs at any one time.

A single-wide GRWIC installs in to one of four slots on the cable side of the router.

Each GRWIC is enclosed within a carrier enclosure with bars that extend outward from the front panel (see Figure 3).

Figure 3   Side View of GRWIC Carrier Enclosure

Cisco Connected Grid ISDN GRWICs Hardware Installation Guide
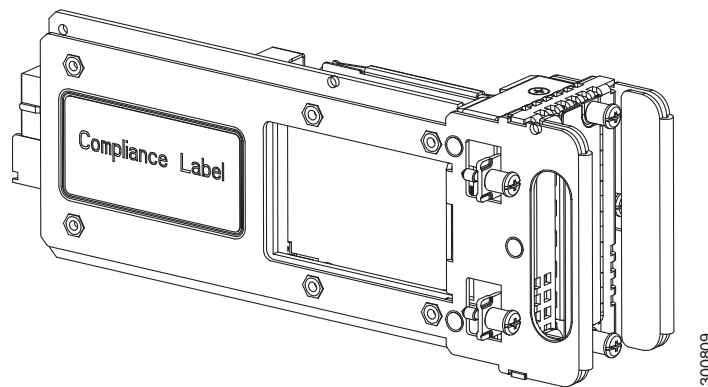
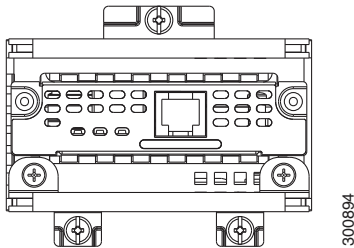To install a single-wide GRWIC, follow these steps:

Step 1   Stand the GRWIC on end to slide the single-wide GRWIC in to the router slot (see Figure 4).

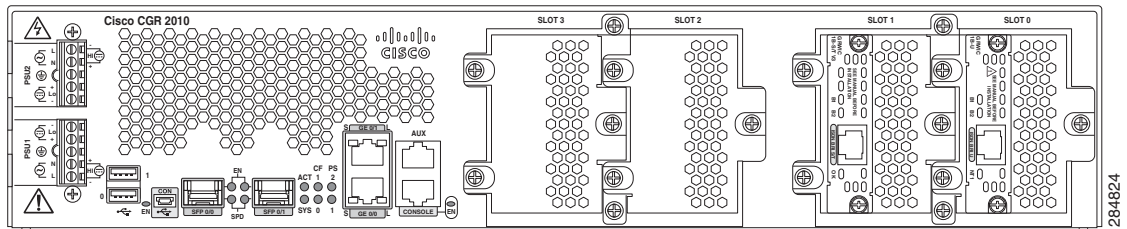*Figure 4*   ***Installing a Single-wide GRWIC in the Cisco CGR 2010 Router***
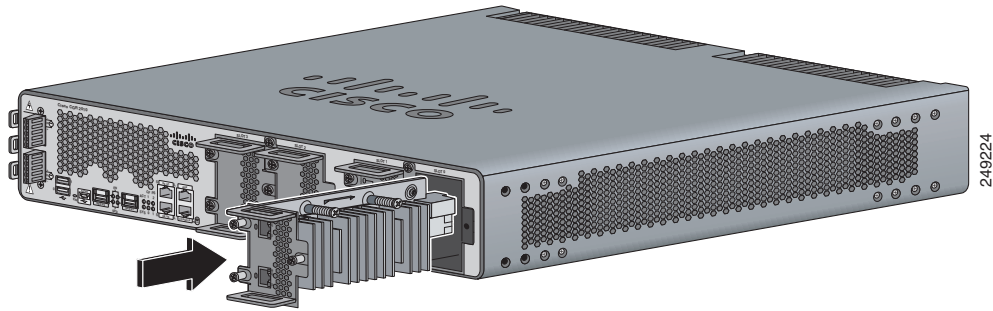
Step 2   Tighten the three captive screws on the front of the GRWIC (see Figure 5).

Figure 5   ***Front View of GRWIC Within Carrier Enclosure***

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Note   When installing multiple GRWICs at a time, the GRWICS must overlap as seen in Figure 6.

Figure 6   ***Installing Multiple GRWICs***

Removing a Connected Grid Single-Wide ISDN GRWIC

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Caution The module CANNOT be hot swapped—however, you do not need to power down the system to insert the module.

Step 1 Using a screwdriver, loosen the three captive screws on the Connected Grid ISDN GRWIC.

Step 2 Gently pull the module out of the slot.

Connecting Connected Grid ISDN GRWICs to the Network

This section provides the steps for connecting the ISDN BRI GRWICS to the ISDN network and includes the following topics:

- Connecting the ISDN BRI S/T GRWIC to a Network
- Connecting the ISDN BRI U GRWIC to a Network

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Caution Please review all Safety Warnings in this document before connecting the ISDN GRWICs to the network.

Connecting the ISDN BRI S/T GRWIC to a Network

To connect an ISDN BRI S/T GRWIC to a network, follow these steps:

Step 1 Power off the Cisco CGR 2010 Router.

Step 2 Connect one end of a straight-through RJ-48C-to-RJ-48C cable to the RJ-48C port on the ISDN BRI S/T GRWIC and connect the other end of the cable to the NT1 device (S/T port).

Step 3 Connect the NT1 device to the ISDN wall jack according to the documentation that came with the NT1 device.

Step 4 Power on the router.

Connecting the ISDN BRI U GRWIC to a Network

To connect an ISDN BRI U GRWIC to a network, follow these steps:

Step 1   Power off the Cisco CGR 2010 Router.

Step 2   Connect one end of a straight-through RJ-49C-to-RJ-49C cable to the RJ-49C port on the ISDN BRI U GRWIC and connect the other end of the cable directly to the ISDN wall jack.

These ports are color-coded red.

Step 3   Power on the router.

Software Configuration

For software configuration details for the Connected Grid ISDN GRWICs, see the "Configuring ISDN BRI" chapter (within the ISDN Configuration section) of the *Dial Configuration Guide, Cisco IOS Release 15.2M&T*

Related Documents

For hardware details on the Cisco 2000 Series Connected Grid Routers, see *Cisco Connected Grid Routers 2010 Hardware Installation Guide*

Obtaining Documentation, Obtaining Support, and Security Guidelines

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