Installing Cisco uBR-MC28U/X and uBR-E-28U Cable Interface Line Cards

1 Purpose

2 Feature Description

3 Prerequisites

4 Installing the Card

5 Removing the Card

6 Troubleshooting

7 Technical Specifications

8 Related Documentation

⚠ **Warning**   **Only trained and qualified personnel should be allowed to install, replace, or service this product; and should be properly grounded before handling this ESD-sensitive product.**

1 Purpose

This quick start guide shows you how to install a Cisco uBR-MC28 cable interface line card in the Cisco uBR7200 series router.

2 Feature Description

The Cisco uBR-MC28 cable interface line card improves RF performance, supports spectrum management, increases system performance and supports online insertion and removal (OIR). The line card is available in three configurations:

- Cisco uBR-MC28U—with an onboard upconverter and green end tabs
- Cisco uBR-MC28X—without an onboard upconverter and with yellow end tabs
- Cisco uBR-E-28U—with an onboard upconverter and slate blue end tabs

3 Prerequisites

- The Cisco NPE-400 or Cisco NPE-G1 or Cisco NPE-G2 must be used with this card.
- If you are replacing a Cisco uBR-MC28C card with a Cisco uBR-MC28U/X/E card, you must reconfigure the card. We strongly recommend that you reload the Cisco 7200 series router when replacing a cable interface line card with a card of a different type.

4 Installing the Card

✎ **Note**   The uBR-E-28U is an entry-level version of MC28U, for the uBR7225 chassis. The extra guide pins in the line card prevents it from being plugged into a different chassis.

Step 1   Make sure that you are grounded.

Step 2   Use both hands to grasp the card by its metal carrier edges and align the card with the slot guides, component side up.
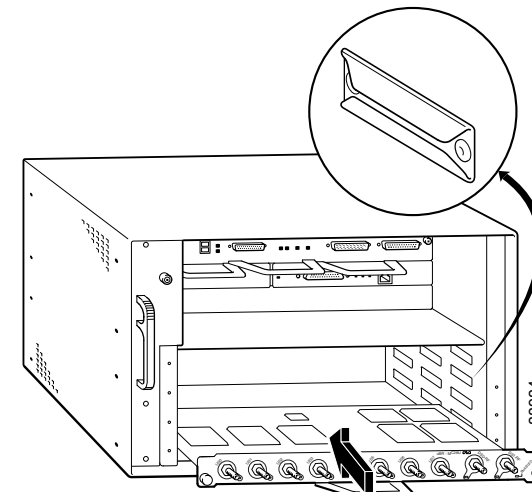
Step 3   With the metal carrier aligned in the slot guides (see Figure 1), gently slide the card into the card slot until you can feel it seated in the backplane connectors.

Step 4   Tighten the captive screws.

✎ **Note**   The captive screws provide grounding for the electromagnetic interference (EMI) shielding.

Figure 1   Installing the Card in the Chassis
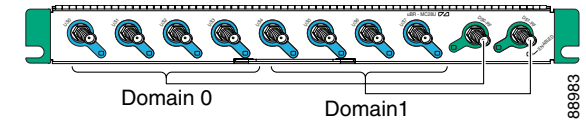

✎ **Note**   The cable interface line card insertion/removal method is the same for all Cisco uBR7200 series routers.

Cabling

⚠ **Caution**   Do not mix upstream (US) ports in domain 0 with US ports in domain 1 (see Figure 2).

Figure 2   Domain 0 and Domain 1

Domain 0   Domain1

Cabling the Cisco uBR-MC28U/E-28U

The Cisco uBR-MC28U/E-28U line card has an onboard upconverter. To cable the card:

Step 1   Connect the downstream (DS) cables to the DS ports (DS0–DS1). RF DS port rings and end tabs are green (slate blue in the case of E-28U card). See Figure 5.

Step 2   Connect the upstream cables to the US ports (US0–US7).

Cabling the Cisco uBR-MC28X

The Cisco uBR-MC28X line card does not have an onboard upconverter. The card may require up to 10 dB of attenuation due to a higher IF output power (higher then legacy Cisco line cards). To cable the card:

Step 1   Connect the DS cables to the DS ports on the card (DS0–DS1).

IF DS port rings and end tabs are yellow. See Figure 3.

Step 2   Add RF attenuators as required to get the correct IF output. Insert the attenuator between the DS IF output cable and the upconverter. See Figure 3.

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Step 3 Connect the US cables to the US ports on the card (US0–US7). All US ports are light blue.

**Figure 3** Inserting an Attenuator
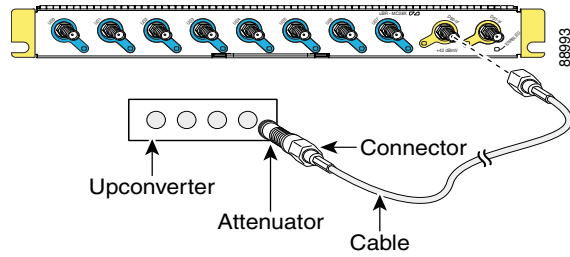
5 Removing the Card

To prevent the alarms from activating, administratively shut down the card using the **shutdown** command in interface configuration mode before removing it from the chassis.

Step 1 Make sure that you are properly grounded.

Step 2 Disconnect all the cables from the cable interface line card.

Step 3 Unscrew the captive installation screws on the faceplate.

Figure 4 Removing the Card from the Chassis
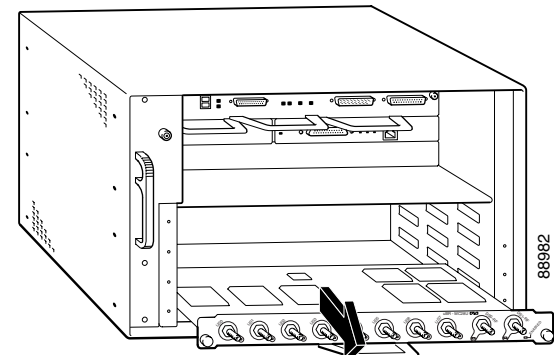
Step 4 Grasp the handle and carefully pull the card out of its slot (see Figure 4).

⚠ **Caution** Always handle the card by the carrier edges and handle; never touch the cable interface line card's components or connector pins. For proper cooling and airflow, always install a line card cover in an empty line card slot.

Step 5 Place the card on an antistatic surface with its components facing upward.

✎ **Note** If the card is being returned to the factory, immediately place it in a static shielding bag and proper packaging for protection.

6 Troubleshooting

1. Make sure that the card is securely seated in the chassis.

If the captive screws do not tighten all the way, the card is not properly seated in the chassis or backplane. Carefully pull the card halfway out of the slot, reinsert it, and tighten the captive installation screws.

⚠ **Caution** A partially seated line card can cause the router to reboot.

2. Are *all* enabled LEDs on? If yes, the system is operational.

If no, check the following possibilities:

a. If the card has been enabled and configured for operations, the enabled LED remains on.

b. If a port is enabled but its enabled LED is still off, check if the card has pulled away from the router. Reseat the card in its slot. (Do not have to turn off the system power to do this.} After the system reinitializes the interfaces, the enabled LED on the card should come on.

3. If the enabled LED remains off after the above checks, it is likely that the system has detected a processor hardware failure. Go to the Cisco TAC website http://www.cisco.com/tac for further information and help.

Figure 5 LEDs
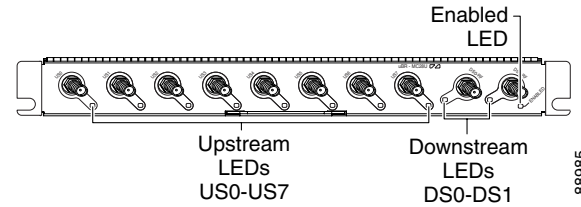
Table 1 LEDs/Status

LED/Status	Description
ENABLED—green ENABLED—off	Card operating normally Card not enabled
US—green US—off	Upstream enabled Upstream not enabled
DS—green DS—off	Downstream enabled Downstream not enabled

7 Technical Specifications

Table 2 Technical Specifications

Description	Order Num/ Specifications
Cisco uBR-MC28U, with upconverter	UBR-MC28U, UBR-MC28U=
Cisco uBR-MC28X, without upconverter	UBR-MC28X, UBR-MC28X=
Cisco uBR-E-28U, with upconverter	UBR-E-28U UBR-E-28U=
Blank covers	UBR-MC-COVER=
Weight—MC28U/E-28U Weight—MC28X	6 lbs (2.72 kg) 4.75 lbs (2.15 kg)
Power consumption	
MC28U/E-28U MC28X	80 Watts (273 BTU/h) 50 Watts (170.6 BTU/h)

Table 2 Technical Specifications (continued)

Description	Order Num/ Specifications
Output—MC28U/E-28U	+50 to 61 dBmV at RF
Output—MC28X	+42 dBmV at IF (+/-2 dB)
Modulation	
Upstream (US0–US7)	QPSK 8–, 16–, 32–, 64–QAM
Downstream (DS0–DS1)	64–QAM, 256–QAM
RF output power range—50 to 61 dBmV	
Frequency range	
Upstream Downstream	5–65 MHz 70–860 MHz

The Cisco uBR-MC28U/X/E-28U line card is compatible with most cable systems worldwide, including but not limited to—Asia Pacific, Europe, and the Americas. See Cisco IOS release notes for more information.

8 Related Documentation

For more information, refer to the following at Cisco.com:

- *Cisco uBR7200 Universal Broadband Series Hardware Installation Guide*
- *Cisco uBR7200 Series Cable Interface Line Card Hardware Installation Guide*
- *Cisco uBR7200 Series Universal Broadband Routers*
- For the 1–year warranty information, visit the following URL:

  http://www.cisco.com/en/US/products/prod_warranties_listing.html