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Upgrading MEC and C2MEC Type 5.1 Cards to Microcode Version 2.4 or Version 10.3

Product Numbers: MC-MEC5.1-V2.4= and MC-MEC5.1-V10.3=

This publication describes how to upgrade the Type 5.1 multiport Ethernet controller cards to Microcode Version 2.4 or Microcode Version 10.3.

Microcode Version 2.4 is compatible only with the first generation ciscoBus controller card (CSC-CCTL). Microcode Version 10.3 is compatible with, and required for use with, the second-generation ciscoBus controller card (CSC-CCTL2). If you are replacing a CSC-CCTL card with a CSC-CCTL2 card, you must upgrade the microcode on all ciscoBus interface cards to Version 10.0 or later.

Compatibility requirements for the CSC-CCTL2 are described in the section “Verifying CCTL2 Compatibility—Microcode Version 10.0 or Later Only.”

In the following sections of this publication, the term *MEC* is used to indicate the CSC-MEC (used with first-generation ciscoBus) and CSC-C2MEC (used with second-generation ciscoBus) cards, unless otherwise indicated.

Microcode Version 2.4 and Microcode Version 10.3 are used with the Type 5.1 MEC card (Revision E or above). Earlier revisions of the card (Revisions A, C, or D, all of which are MEC card Type 5.0) are not compatible with the microcode versions described in this publication.

If you have a MEC Type 5.0 card, you must upgrade the card to a Type 5.1 card before installing either of these microcode versions. Instructions for determining the revision level of your current card are provided in the section “System Compatibility.”

The upgrade procedure is the same for both microcode versions; only the component part numbers are different. References to part number tables are provided in the appropriate steps in the procedure.

Prerequisites

Read the requirements and procedures in this section to ensure that your MEC card is compatible with the new microcode and that you have the proper tools and parts to complete this procedure without interruption.

System Compatibility

Your current system must meet the following compatibility requirements before you install the new microcode:

- If your system contains a first-generation ciscoBus controller card (CSC-CCTL), the MEC card must be a Type 5.1 (card revision level E or above). You are installing Microcode Version 2.4, and there is no minimum version requirement for your system software.
- If your system contains a second-generation ciscoBus controller card (CSC-CCTL2), or if you are installing a new CSC-CCTL2, ensure the following:
 - The C2MEC must be a Type 5.1 (Revision E or above).
 - Your system is running Software Release 9.1 or later.
 - All other ciscoBus interface cards are running Microcode Version 10.0 or later (or you are upgrading them at the same time as the MEC). CSC-CCTL2 compatibility requirements are described in the section “Verifying CCTL2 Compatibility—Microcode Version 10.0 or Later Only.”

The *Microcode Release Note* publication (Document Number 78-1069-xx—where xx is the latest version) provides the latest information on both the recommended and minimum required microcode versions for using all cards with Software Release 8.2 through Software Release 9.21. If the latest microcode version implements features that you are not using in your system and you already have the minimum required microcode version installed, there is no requirement to update the microcode.

New microcode versions occasionally fix bugs and provide performance enhancements in addition to implementing new features, and you will obtain maximum performance and reliability by upgrading to the latest recommended version.

Note Refer to the latest *Microcode Release Note* (Document Number 78-1069-xx) for current microcode requirements and recommendations, and for a microcode revision history for each card, which describes the new features, fixed bugs, and compatibility requirements for each microcode revision.

Verifying the Card Type

Determine the card type (5.0 or 5.1) and microcode version (1.6 through 10.1) of all installed MEC cards with the **show controller cbus** command. You can also view the card type and the card revision level (A, C, D, E, or above) printed on the part number label, which is located on one of the ejector tabs and is visible when the card is installed in the card cage.

To display card type and microcode version, enter the **show controller cbus** command. The first line of the display for each installed MEC card (MEC 0, MEC 1, and so forth) should indicate a card Type 5.1.

The following example shows an MEC card and a first generation ciscoBus card (CSC-CCTL):

```
Router# show cont cbus

cBus 1, controller type 3.0, microcode version 2.0
[text omitted]
MEC 0, controller type 5.1, microcode version 2.3
```

Verify that the MEC card type is 5.1, and the microcode version is 2.1 or later. If not, you must upgrade your card before proceeding. Contact a customer service representative for upgrade information.

The label showing the version is affixed to one of the ejector tabs on the front edge of the card; it is not necessary to remove the card to see the label. To view the label, you must first remove the chassis front access panel as described in steps 1 and 2 of the section “Microcode Upgrade Procedure.”

Verifying CCTL2 Compatibility—Microcode Version 10.0 or Later Only

The CSC-CCTL2 card is required to run ciscoBus network interface cards (with the C2 designator). The C2 indicates that a ciscoBus card is running Microcode Version 10.0 or later and is, therefore, compatible with the CSC-CCTL2 card.

For example, when the microcode on an MEC card is first changed to Version 10.0, the name of the card changes from *CSC-MEC* to *CSC-C2MEC* to indicate that it is CCTL2-compatible. If you are installing a new CSC-CCTL2, you must upgrade all ciscoBus interface cards to Microcode Version 10.0 or later. These cards and their compatibilities are listed in Table 1.

Table 1 ciscoBus Interface Card Compatibility Requirements

CCTL Card	CCTL2 Card	Description
CSC-CCTL	CSC-CCTL2	ciscoBus controller card
CSC-FCI	CSC-C2FCI	Fiber Distributed Data Interface (FDDI)
	CSC-C2FCIT	FDDI with translational bridging
CSC-HSCI	CSC-C2HSCI	High-Speed Serial Interface (HSSI)
	CSC-C2CTR	ciscoBus Token Ring interface, 4/16 megabits per second (Mbps)
CSC-MEC	CSC-C2MEC	Multiport Ethernet controller interface

Display a description of the current ciscoBus card and ciscoBus interface cards with the **show controller cbus** command. The name and controller type of each ciscoBus card, the ciscoBus slot in which it is installed, and the microcode version of each card is displayed. (Additional statistical information is also displayed for each interface card, but is omitted from the example that follows.)

When installing Microcode Version 10.3 (or later), the ciscoBus controller card (listed first) must be Type 6.0 or later, and all other ciscoBus interface cards must be running Microcode Version 10.0 or later (or you must upgrade the microcode on those cards to at least 10.0). The following sample display shows a CCTL2 card with all ciscoBus interface cards upgraded to Microcode Version 10.0 or later.

```
Router# show cont cbus

ciscoBus 1, controller type 6.0, microcode version 11.0
  512 Kbytes of main memory, 128 Kbytes cache memory
  [text omitted]
FDDI-T 0, controller type 7.1, microcode version 10.1
  Interface 0 - Fddi0, station address 0000.0c02.6aa3 (bia
  [text omitted]
CTR 1, controller type 9.0, microcode version 10.2
  Interface 8 - TokenRing0, station address 0000.3040.e004 (bia
  [text omitted]
HSCI 2, controller type 10.0, microcode version 10.0
  Interface 16 - Hssi0, electrical interface is Hssi DTE
  [text omitted]
MEC 3, controller type 5.1, microcode version 10.1
  Interface 24 - Ethernet2, station address 0000.0c02.61b7
  [text omitted]
```

Verifying the Software Version

Display the current software version and the type of processor card installed with the **show version** command. The current software version is displayed in the first line of the output followed by a list of the installed interface cards. For Microcode Version 2.4 (on the CSC-MEC card), there is no minimum version requirement for software; however, if you are installing Microcode Version 10.3 (on the CSC-C2MEC card), you must be running Software Release 9.1 or later.

In the following example, the system is running Maintenance Release 9.1(9):

```
Router# show version

GS Software (GS3-BFX), Version 9.1(9)
Copyright (c) 1986-1994 by cisco Systems, Inc.
```

Microcode Upgrade Procedure

Before opening the chassis, refer to the section “System Compatibility” on page 2 and ensure that your system meets the minimum requirements for the microcode version you are installing.

Tools and Parts Required

To perform this upgrade, you need the following:

- One set of Microcode Version 2.4 or 10.3 for each Type 5.1 card to be upgraded
- ESD-preventive wrist strap and an antistatic mat or antistatic foam
- Chip extractor or removal tool (If one is not available, you can use a small flat-blade screwdriver to remove the components, although this is not recommended.)
- A medium flat-blade screwdriver if the chassis front access panel has not yet been opened. (The thumb fasteners are torqued for shipping.)
- Needle-nose pliers

Preventing Electrostatic Discharge Damage

Electrostatic discharge damage (ESD) occurs when electronic printed circuit cards are improperly handled and can result in complete or intermittent failures. ESD can impair electronic circuitry and equipment. Always follow ESD prevention procedures when removing and replacing cards.

Following are steps for handling printed circuit cards:

- Step 1** Slip on an ESD-preventive wrist strap, ensuring that it makes good skin contact.
- Step 2** Connect the strap to an unpainted chassis frame surface or another proper grounding point or surface to safely channel unwanted ESD voltages to ground.
- Step 3** Use the ejectors to remove the card. Handle the card by its sides. Place the card on an antistatic surface or in a static shielding bag. To prevent further damage to the card by ESD voltages, defective cards must remain in the static shielding bag when returned for repair or replacement.
- Step 4** Handling the new card by its edges only, insert it into the chassis. Avoid contact between the card and clothing. The wrist strap only protects the card from ESD voltages on the body; ESD voltages on clothing can still damage the card.



Warning Use an ohmmeter to check the ESD-preventive wrist strap to ensure that the resistor is providing proper ESD protection. For safety, the measurement should be between 1 to 10 mega ohms.

Upgrading the Microcode

Following are the procedures for upgrading the microcode on the MEC and C2MEC Type 5.1 cards:



Caution Before performing these installation procedures, turn off power to the system because removing or installing a card in the backplane while the system power is on can severely damage the card and can also damage other system components.

- Step 1** Turn OFF the system power, but to channel ESD voltages to ground, do not disconnect the power cord.
- Step 2** Loosen the two thumb fasteners and remove the front access panel to expose the card cage. The thumb fasteners are tightened with 12 inch/lb of torque for shipping. If you are removing the front panel for the first time, use a medium flat-blade screwdriver to turn the thumb fasteners counterclockwise to loosen. When you replace the panel, turn the thumb fasteners clockwise until finger-tight.



Caution Observe proper ESD prevention procedures when handling cards and components to prevent damage from electrostatic discharge.

- Step 3** Put on the ESD-preventive wrist strap provided with the upgrade kit, or use your own grounding strap. Attach the equipment end to an unpainted area on the chassis.
- Step 4** Disconnect the internal ribbon cables that are attached to the front of the MEC card. If other cables (to other cards) prevent you from removing the MEC card, note the card and port locations of each before disconnecting them (to avoid misrouting cables when you reinstall the card).

- Step 5** Use your thumbs to pull the ejector tabs out and away from the card edge to loosen it, then pull the card out of its slot. Place the card on an antistatic mat.
- Step 6** Refer to Figure 1 for the socket locations of the 11 microcode components to be replaced. Refer to the following for component part numbers:
- If you are installing Microcode Version 2.4 on a CSC-MEC, refer to Table 2 for old and new component part numbers.
 - If you are installing Microcode Version 10.3 on a CSC-C2MEC, refer to Table 3 for old and new component part numbers.
- Step 7** Remove each of the old components with a chip extractor. If one is not available, use a flat-blade screwdriver to remove the components.
- Step 8** Insert the new components into the appropriate sockets, as shown in Figure 1 and listed in the following tables. Align the notch on the component with the notch on its socket, as shown.
- Step 9** Be careful not to bend or crush any of the pins when inserting the new components. If any pins are bent, use needle-nose pliers to straighten the pins, then carefully reinsert the component.
- If a pin breaks or if power is turned on with a component installed backwards, the component must be replaced. Contact a service representative for a replacement.
- Step 10** After all 11 components are replaced and the pins checked, reinsert the card, reconnect the internal cables, and restart the system for an installation check.

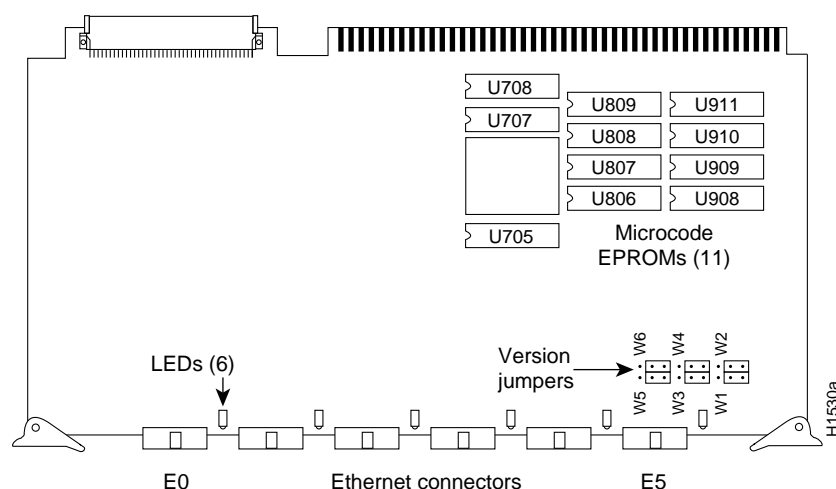


Figure 1 CSC-MEC Card Type 5.1—Component-Side View

Note The new component number contains a six-digit part number, a two-digit version identifier, and a socket location number. For example, with Microcode Version 10.3 (in Table 3), the component number 17-1329-04 U708 contains Part Number *17-1329*, version identifier *04* (which corresponds to MEC Microcode Version 10.3), and socket location number *U708*.

Table 2 CSC-MEC Microcode Version 2.4 Component Numbers

Socket	Component Numbers —Old			New
	Version 2.1	Version 2.2	Version 2.3	Version. 2.4
U708	17-0702	17-0702-01	17-0702-02	17-0702-03
U707	17-0704	17-0704-01	17-0704-02	17-0704-03
U705	17-0703	17-0703-01	17-0703-02	17-0703-03
U809	17-0706	17-0706-01	17-0706-02	17-0706-03
U808	17-0707	17-0707-01	17-0707-02	17-0707-03
U807	17-0705	17-0705-01	17-0705-02	17-0705-03
U806	17-0701	17-0701-01	17-0701-02	17-0701-03
U911	17-0700	17-0700-01	17-0700-02	17-0700-03
U910	17-0697	17-0697-01	17-0697-02	17-0697-03
U909	17-0698	17-0698-01	17-0698-02	17-0698-03
U908	17-0699	17-0699-01	17-0699-02	17-0699-03

Table 3 CSC-C2MEC Microcode Version 10.3 Component Numbers

Socket	Component Numbers—Old							New
	Version 2.1	Version 2.2	Version 2.3	Version 2.4	Version 10.0	Version 10.1	Version 10.2 ¹	Version 10.3
U708	17-0702	17-0702-01	17-0702-02	17-0702-03	17-1329-01	17-1329-02	17-1329-03	17-1329-04
U707	17-0704	17-0704-01	17-0704-02	17-0704-03	17-1331-01	17-1331-02	17-1331-03	17-1331-04
U705	17-0703	17-0703-01	17-0703-02	17-0703-03	17-1330-01	17-1330-02	17-1330-03	17-1330-04
U809	17-0706	17-0706-01	17-0706-02	17-0706-03	17-1333-01	17-1333-02	17-1333-03	17-1333-04
U808	17-0707	17-0707-01	17-0707-02	17-0707-03	17-1334-01	17-1334-02	17-1334-03	17-1334-04
U807	17-0705	17-0705-01	17-0705-02	17-0705-03	17-1332-01	17-1332-02	17-1332-03	17-1332-04
U806	17-0701	17-0701-01	17-0701-02	17-0701-03	17-1328-01	17-1328-02	17-1328-03	17-1328-04
U911	17-0700	17-0700-01	17-0700-02	17-0700-03	17-1327-01	17-1327-02	17-1327-03	17-1327-04
U910	17-0697	17-0697-01	17-0697-02	17-0697-03	17-1324-01	17-1324-02	17-1324-03	17-1324-04
U909	17-0698	17-0698-01	17-0698-02	17-0698-03	17-1325-01	17-1325-02	17-1325-03	17-1325-04
U908	17-0699	17-0699-01	17-0699-02	17-0699-03	17-1326-01	17-1326-02	17-1326-03	17-1326-04

1. Microcode Version 10.2 requires MEC card Revision K0 and above. Microcode Version 10.2 might not work with MEC card Revision J0 or lower.

Testing the Installation

After you reinstall the upgraded MEC card and reconnect the internal ribbon cables, test the installation (before you replace the front panel) by observing the following LED indicators:

- If you installed Microcode Version 2.4, check the LEDs on the MEC card and the CSC-CCTL ciscoBus card.
- If you installed Microcode Version 10.3 or later, check the LEDs on the C2MEC card and the CSC-CCTL2 ciscoBus2 card.

The ciscoBus card (CSC-CCTL or CSC-CCTL2) is always installed in the center ciscoBus slot (Multibus slot number 7), as shown in Figure 2. After verifying that the LEDs go on correctly, use the **show controller cbus** command to display the new microcode version.

Checking LEDs

The bank of indicators used on the CSC-CCTL is different from that on the CSC-CCTL2. Descriptions of both types of ciscoBus controllers follow. Review them so that you can anticipate how the LED indicators should go on. Before turning on the chassis power to check the installation, note the ciscoBus slot number(s) that contain the MEC card(s) you just reinstalled. (Figure 2 shows the ciscoBus slot numbers and locations.)

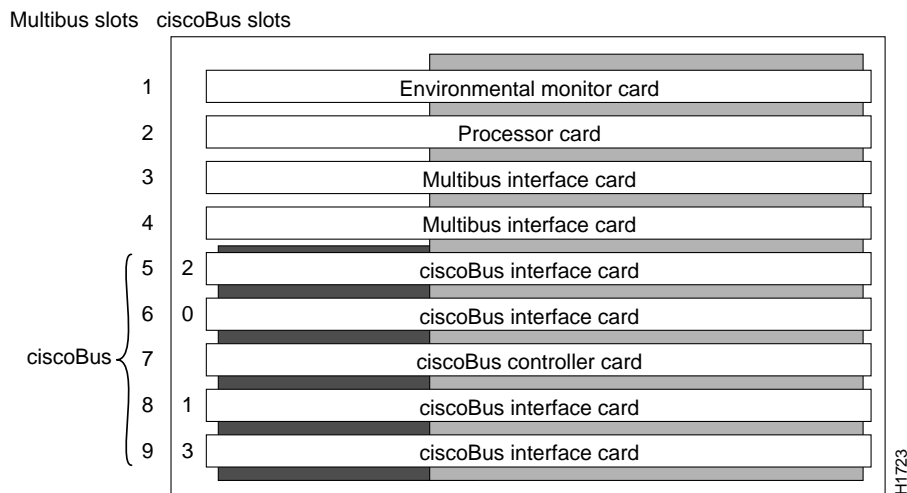


Figure 2 AGS+ Card Cage—Front View

The CSC-CCTL contains a bank of 16 LEDs as shown in Figure 3: four sets of four LEDs, one set for each interface slot in the ciscoBus. Figure 3 shows the LEDs as viewed with the card installed in the card cage—edge on, component-side up. In the illustration, the numbers above each LED indicate the corresponding ciscoBus slot number. (Slot numbers and locations are shown in Figure 2.) Only the first (far left) LED in each set of four is used as an indicator that goes on when an interface is present in a ciscoBus slot. At power-up, all the LEDs are on, indicating that the CSC-CCTL card is active. When the system boot completes, only those LEDs that indicate the presence of a card in the corresponding ciscoBus slot should be on; the LEDs for empty ciscoBus slots should be off.

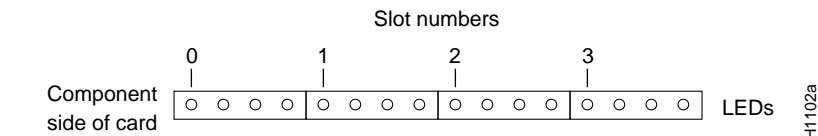


Figure 3 CSC-CCTL Card LED Indicators—Front-Edge View

The CSC-CCTL2 contains a bank of 5 LEDs, one red indicator for each ciscoBus slot and one green OK indicator. Figure 4 shows the indicators as viewed with the card installed in the card cage—edge on, component-side up. In the illustration, the numbers above each LED indicate the corresponding ciscoBus slot number. (Slot numbers and locations are shown in Figure 2.) At power-up, all the LEDs should be on, indicating that the CSC-CCTL2 card is active. When the system boot completes, only those LEDs that indicate the presence of a card in the corresponding ciscoBus slot should remain on; the LEDs for empty ciscoBus slots should be off.

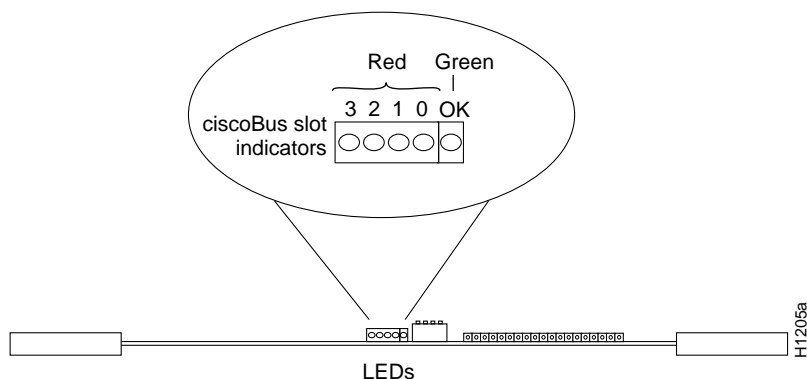


Figure 4 CSC-CCTL2 Card LED Indicators—Front-Edge View

Also observe the LEDs on the MEC card you just reinstalled. An LED is located next to each port, as shown in Figure 5. After the system boots, the LED for each connected port should be on.

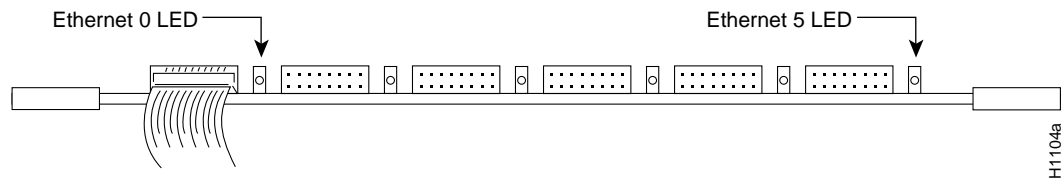


Figure 5 CSC-MEC Card LED Indicators—Front-Edge View

Verify correct installation of the new microcode components with the following steps.

Step 1 Turn ON the system power. Verify that all the LEDs on the ciscoBus card (CSC-CCTL or CSC-CCTL2) are on according to the previous description of each.

- If no LEDs are on at power up, check the LEDs on the processor card. If no LEDs on the processor card go on, check the system power.
- If only the LEDs on the ciscoBus controller card fail to go on, turn OFF the system power and reseal the ciscoBus controller card in its slot. The card ejector tabs snap into place when the card connector is correctly seated in the ciscoBus.
- If the system does not boot, turn OFF the system power and check switch SW1 on each Multibus interface card that was removed from the chassis for the MEC upgrade. Ensure that none of the SW1 switches was inadvertently set to unit 0; the only card that can be set for unit number 0 is the ciscoBus controller card.

Step 2 CSC-CCTL2 only—When the system has completed its boot cycle (indicated by a beep), verify that the far right, green OK LED indicator goes on and remains on. If it does not go on, check the following:

- Turn the system power off, firmly push the CSC-CCTL2 into its slot to ensure that it is securely seated in the ciscoBus backplane, and reboot.
- If the LED still does not go on, turn OFF the system power and remove the CSC-CCTL2 from the card cage. Ensure that switch SW1 on the CSC-CCTL2 card is set to 0, then replace the card and reboot.

Step 3 When the system completes its boot cycle, check the four red indicators on the ciscoBus controller card. (Refer to the section “Checking LEDs” on page 8 if necessary.) Ensure that the LED indicator for each occupied ciscoBus slot is on. In particular, check the slots for all MEC cards you just reinstalled. If the LEDs do not go on properly, check the following:

- If a ciscoBus controller LED fails to go on for a port in which a ciscoBus interface card is installed, turn OFF the system power, reseal the ciscoBus interface card, and reboot.
- If a ciscoBus controller LED still fails to go on for an MEC card you just reinstalled, remove the card and check the microcode components for bent pins and misaligned notches. Ensure that the components are installed with the notch at the correct end of socket. (See Figure 1.) If power was turned on with a component installed backwards, the component must be replaced. Contact a service representative for a replacement.
- If you find a bent pin, carefully remove the component, straighten the pin with needle-nose pliers, and reinstall the component.

Step 4 Check the LEDs on the MEC card. The LED indicator for each connected port should be on. (See Figure 5.) If they do not go on, check the following:

- If the LED indicator for a connected port fails to go on, remove the ribbon cable from the port and reseal it. The ports on the card have tabs that snap into place when the ribbon cable connector is seated in the port.
- If the ribbon cable is securely installed in the card port, check the external interface cable attached to the chassis rear panel. Ethernet AUI connectors have either a slide-lock connector or are attached with jack screws. Make certain the connection is secure.

If the LEDs do not go on correctly after checking all of the connections, contact a service representative for information on how to proceed.

Displaying the Microcode Version

To display the new microcode version, enter the **show controller cbus** command. The first line of the display for each installed MEC card should indicate the new microcode version, as follows:

- If you installed Microcode Version 2.4, the ciscoBus card and CSC-MEC display should show the following:

```
cBus 1, controller type 3.0, microcode version 2.0
[text omitted]
MEC 0, controller type 5.1, microcode version 2.4
```

- If you installed Microcode Version 10.3, the ciscoBus card and CSC-C2MEC display should show the following:

```
ciscoBus 1, controller type 6.0, microcode version 11.0
[text omitted]
MEC 0, controller type 5.1, microcode version 10.3
```

After the installation checks out successfully, replace the front access cover and finger-tighten the two thumb fasteners.

This completes the Microcode Version 2.4 or 10.3 upgrade procedure.

Note For technical assistance, contact a service representative or the Cisco Systems Technical Assistance Center (TAC) at 800 553-2447, 415 903-7209, or tac@cisco.com. For upgrade or product information, contact the Customer Response Center at 800 553-6387, 415 903-7208, or cs-rep@cisco.com.

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