

Doc. No. 78-1001-02

Upgrading CSC-HSCI Cards to Microcode Version 1.2 or 10.1

Product Numbers: MC-HSCI-V1.2=, MC-HSCI-V10.1=

This document describes how to upgrade High-Speed Serial Communications Interface (CSC-HSCI) cards to Microcode Versions 1.2 and 10.1. Microcode Version 1.2 is compatible only with the first generation ciscoBus controller card (CSC-CCTL). Microcode Version 10.1 is compatible with, and required for use with, the second-generation ciscoBus controller (CSC-CCTL2). If you are replacing a first-generation ciscoBus controller (CSC-CCTL) with a CSC-CCTL2, 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 10.1 Only.”

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. In the following sections of this document, the term HSCI is used to indicate both the CSC-HSCI (first-generation ciscoBus) and CSC-C2HSCI (second-generation ciscoBus) cards unless otherwise indicated.

Prerequisites

To ensure that you have the proper tools and parts to complete this procedure without interruption, read the following requirements and procedures.

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 (CSC-CCTL), there is no minimum system software release requirement.
- If your system contains a second-generation ciscoBus controller (CSC-CCTL2), or if you are installing a new CSC-CCTL2, ensure the following:
 - You are installing Microcode Version 10.1 on the HSCI
 - Your system is running Software Release 9.1(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 HSCI). The requirements for CSC-CCTL2 compatibility are described in the section “Verifying CCTL2 Compatibility—Microcode Version 10.1 Only.”

The latest version of the *Microcode Release Note* publication (Part Number 78-1069-nn) provides the latest information on both the recommended and minimum required microcode versions for using all cards with System Software Releases 8.2, 8.3, 9.1, and 9.21. If the latest version implements features that you are not using in your system and you already have the minimum required version installed, there is no requirement to update the microcode. However, new microcode versions occasionally fix bugs and provide performance enhancements in addition to implementing new features. You will obtain maximum performance and reliability by upgrading to the recommended version.

Note Refer to the latest *Microcode Release Note* 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 revision.

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.



Caution 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.

Verifying CCTL2 Compatibility—Microcode Version 10.1 Only

The CSC-CCTL2 is required to run ciscoBus network interface cards with the C2 designator, as listed in Table 1. The C2 indicates that a ciscoBus card is running Microcode Version 10.0 or later and is, therefore, compatible with the second-generation ciscoBus controller, the CSC-CCTL2. When you upgrade the microcode on an HSCI card to Version 10.1, the name of the card also changes from CSC-HSCI to CSC-C2HSCI 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.

Table 1 CSC-CCTL2 Interface Card Compatibility Requirements

CCTL Controller	CCTL2 Controller	Description
CSC-CCTL	CSC-CCTL2	ciscoBus controller
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, 4/16Mbps
CSC-MEC	CSC-C2MEC	Multiport Ethernet Controller interface

Display a description of the current ciscoBus controller and ciscoBus interface cards with the EXEC command **show controller cbus**. The name and controller type of each ciscoBus card, the ciscoBus slot in which it is installed, and the microcode version of each is displayed (additional, statistical information is also displayed for each interface card, but is omitted from the example). When installing Microcode Version 10.0 (or later) on any ciscoBus interface card, the ciscoBus controller (listed first) must be a controller 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 at the same time). The following sample display shows a CCTL2 controller with all ciscoBus interface cards upgraded to Microcode Version 10.0:

```
router# show cont cbus

cBus 1, controller type 6.0, microcode version 10.0
  512 Kbytes of main memory, 128 Kbytes cache memory
  (text omitted)
FDDI-T 0, controller type 7.1, microcode version 10.0
  Interface 0 - Fddi0, station address 0000.0c02.6aa3 (bia
  (text omitted)
CTR 1, controller type 9.0, microcode version 10.0
  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 10.0
  Interface 24 - Ethernet2, station address 0000.0c02.61b7
  (text omitted)
```

Verifying the System Software Release

Display the current software release and the type of processor card installed with the EXEC command **show version**. The current system software release is displayed in the first line of the output followed by a list of the installed interface cards. There is no minimum system software release requirement for Microcode Version 1.2 (CCTL-compatible); however, if you are installing Version 10.1 (CCTL2-compatible), you must be running System Software Release 9.1 or later. In the following example, the system is running System Software Release 9.1:

```
router# show version

GS Software (GS3-BFX), Version 9.1(6765) [trunkd 116]
Copyright (c) 1986-1992 by cisco Systems, Inc.
```

Tools and Parts Required

To perform this upgrade, you need the following:

- One set of Version 1.2 or 10.1 microcode for each HSCI to be upgraded
- ESD-prevention wrist strap or other grounding device
- Chip extractor (IC removal tool). If one is not available, use a flat-blade screwdriver to remove the components, but we do not recommend it.
- A large flat-blade screwdriver if the chassis front access panel has not yet been opened (the thumb fasteners are torqued for shipping).
- Needle-nosed pliers
- An antistatic mat or antistatic foam



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

Installation

Follow this procedure to upgrade the HSCI card. Before opening the chassis, refer to the section “System Compatibility” and ensure that your system meets the minimum requirements for the microcode version you are installing.



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

- Step 1** Turn OFF the system power and unplug 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 in/lb of torque for shipping. If you are removing the front panel for the first time, use a large, flat-blade screwdriver to turn the thumb fasteners counterclockwise to loosen. When you replace the panel, turn the thumb fasteners clockwise until finger-tight.
- Step 3** Attach the ESD-preventive wrist strap provided with the upgrade kit, or use your own ground 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 HSCI card. If other cables (to other cards) prevent you from removing the HSCI 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 15 components to be replaced. Refer to the following for component part numbers:
- If you are installing Microcode Version 1.2, refer to Table 2 for new and old component part numbers.
 - If you are installing Microcode Version 10.1, refer to Table 3 for new and old component part numbers.
- Step 7** Insert the new components into the appropriate sockets, as shown in Figure 1 and listed in the tables. Align the notch on the component with the notch on its socket as shown.
- Step 8** Be careful not to bend or crush any of the pins when inserting the new components. If any pins are bent, use needle-nosed pliers to straighten the pins, then carefully reinsert the component.

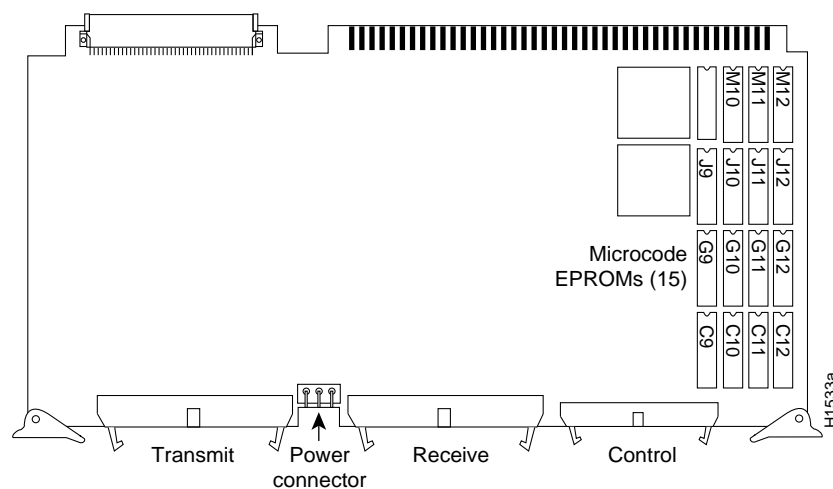


Figure 1 CSC-HSCI Controller Type 5.1—Component-Side View

- Step 9** 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 10** When all 15 components have been replaced, reinsert the card, reconnect the internal cables, and restart the system for an installation check.

Note The newer component number contains a six-digit part number, a two-digit version identifier, and a socket location number. For example, the component number *17-00786-02 C9* contains Part Number 17-00786, version identifier 02 which corresponds to HSCI Microcode Version 1.2, and socket location number C9.

Table 2 CSC-HSCI Microcode Component Numbers by Version

Socket Location	1.0	1.1	1.2
C9	17-0786-01 C9	17-0786-02 C9	17-0786-03 C9
C10	17-0787-01 C10	17-0787-02 C10	17-0787-03 C10
C11	17-0788-01 C11	17-0788-02 C11	17-0788-03 C11
J12	17-0789-01 J12	17-0789-02 J12	17-0789-03 J12
J9	17-0790-01 J9	17-0790-02 J9	17-0790-03 J9
J10	17-0791-01 J10	17-0791-02 J10	17-0791-03 J10
J11	17-0792-01 J11	17-0792-02 J11	17-0792-03 J11
C12	17-0793-01 C12	17-0793-02 C12	17-0793-03 C12
M10	17-0794-01 M10	17-0794-02 M10	17-0794-03 M10
M11	17-0795-01 M11	17-0795-02 M11	17-0795-03 M11
M12	17-0796-01 M12	17-0796-02 M12	17-0796-03 M12
G10	17-0797-01 G10	17-0797-02 G10	17-0797-03 G10
G9	17-0798-01 G9	17-0798-02 G9	17-0798-03 G9
G12	17-0799-01 G12	17-0799-02 G12	17-0799-03 G12
G11	17-0800-01 G11	17-0800-02 G11	17-0800-03 G11

Table 3 CSC-C2HSCI Microcode Component Numbers by Version

Socket Location	1.0	1.1	10.0	10.1
C9	17-0786-01 C9	17-0786-02 C9	17-1335-01 C9	17-1335-02 C9
C10	17-0787-01 C10	17-0787-02 C10	17-1336-01 C10	17-1336-02 C10
C12	17-0788-01 C11	17-0788-02 C11	17-1337-01 C11	17-1337-02 C11
J12	17-0789-01 J12	17-0789-02 J12	17-1338-01 J12	17-1338-02 J12
J9	17-0790-01 J9	17-0790-02 J9	17-1339-01 J9	17-1339-02 J9
J10	17-0791-01 J10	17-0791-02 J10	17-1340-01 J10	17-1340-02 J10
J11	17-0792-01 J11	17-0792-02 J11	17-1341-01 J11	17-1341-02 J11
C12	17-0793-01 C12	17-0793-02 C12	17-1342-01 C12	17-1342-02 C12
M10	17-0794-01 M10	17-0794-02 M10	17-1343-01 M10	17-1343-02 M10
M11	17-0795-01 M11	17-0795-02 M11	17-1344-01 M11	17-1344-02 M11
M12	17-0796-01 M12	17-0796-02 M12	17-1345-01 M12	17-1345-02 M12
G10	17-0797-01 G10	17-0797-02 G10	17-1346-01 G10	17-1346-02 G10
G9	17-0798-01 G9	17-0798-02 G9	17-1347-01 G9	17-1347-02 G9
G10	17-0799-01 G12	17-0799-02 G12	17-1348-01 G12	17-1348-02 G12
G11	17-0800-01 G11	17-0800-02 G11	17-1349-01 G11	17-1349-02 G11

Installation Checkout

After you reinstall the HSCI card and reconnect the internal ribbon cables, verify the installation before you replace the front panel by observing the following LEDs:

- If you installed Microcode Version 1.2, check the LEDs on the APP-HSA or APP-ULA appliques (on the rear of the chassis) and the CSC-CCTL ciscoBus controller card.
- If you installed Microcode Version 10.1 or later, check the LEDs on the APP-HSA or APP-ULA appliques (on the rear of the chassis) and the CSC-CCTL2 ciscoBus 2 controller card.

The HSCI card has no LEDs; status indicators for the HSSI interface are located on the applique connected to the card. You will have to be able to access the rear of the chassis to observe the LEDs on the applique.

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

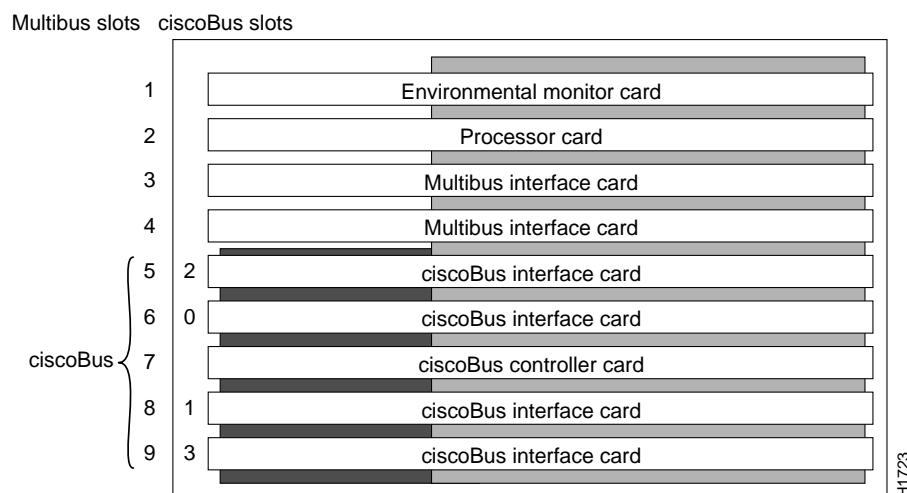


Figure 2 AGS+ Card Cage

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 to anticipate how the indicators should come on. Before turning on the chassis power to check the installation, note the ciscoBus slot number(s) that contain the CSC-MEC card(s) you just reinstalled.

CSC-CCTL LEDs

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 comes on when an interface is present in a ciscoBus slot.

At power-up, all the LEDs come on indicating that the CSC-CCTL card is active. When the system boot is completed, 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.

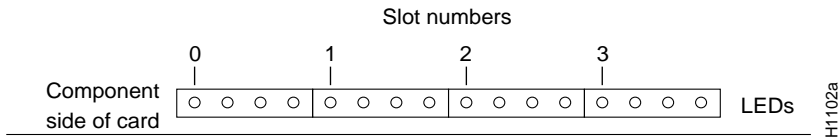


Figure 3 CSC-CCTL Card Indicators, Edge-On View

CSC-CCTL2 LEDs

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 come on, indicating that the CSC-CCTL2 card is active. When the system boot is completed, 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 go out.

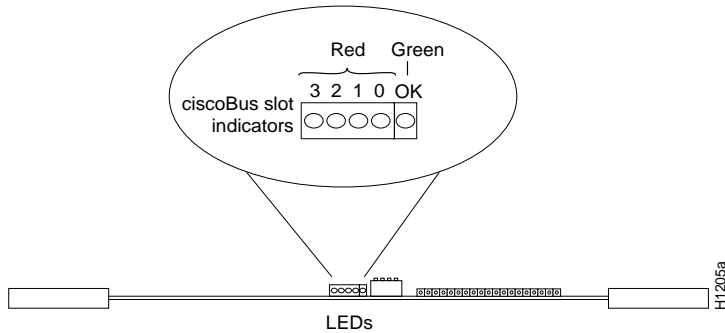


Figure 4 CSC-CCTL2 Card Indicators, Edge-On View

APP-HSA Appliance LEDs

The APP-HSA and APP-ULA appliques contain a bank of 12 LEDs which report the state of the HSSI interface. Figure 5 shows these LEDs and the normal operating state of each. The green OK indicator comes on after the software has performed its startup verification. The red ER indicator comes on if any of the internal cables (between the HSCI and the applique) are crossed.

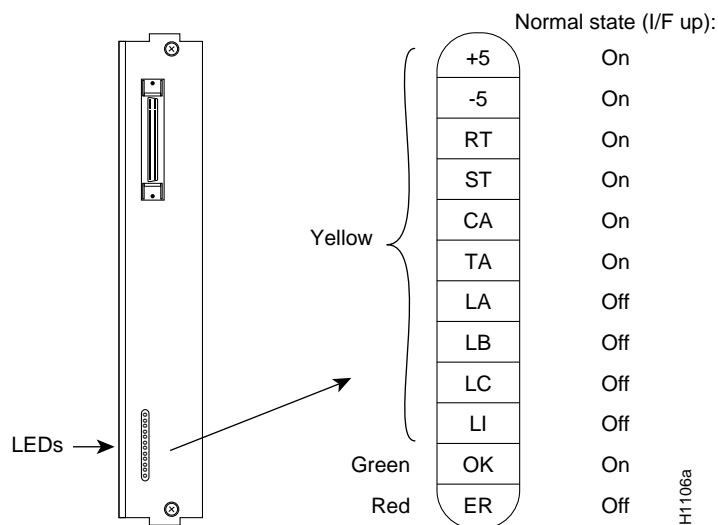


Figure 5 APP-HSA and APP-ULA Indicators

Restarting the System

To check your upgrade installation, first verify the ciscoBus controller card LEDs, then the applique LEDs with the following steps. Before turning on the system power, ensure that you are able to access the rear of the chassis to observe the LEDs on the applique.

- Step 1** Turn ON the system power. Verify that all the LEDs on the ciscoBus controller card (CSC-CCTL or CSC-CCTL2) come on according to the previous description of each.
- If no LEDs come on at power up, check the LEDs on the processor card. If no LEDs on the system processor card are on, check the system power.
 - If only the LEDs on the ciscoBus controller card fail to come 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 the system power off and check switch S1 on each Multibus interface card that was removed from the chassis. Ensure that none were 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 (it will beep when complete), verify that the far right, green OK indicator comes on and remains on. If it does not come 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 come on, turn the system power off and remove the CSC-CCTL2 from the card cage. Ensure that switch S1 is set to 0, then replace the card and reboot.

Step 3 Check the four red indicators on the ciscoBus controller card (refer to Checking LEDs, page 7 if necessary). Ensure that the indicator for each occupied ciscoBus slot is on. In particular, check the slots for all ciscoBus interface cards you just reinstalled. If the LEDs do not come on properly, check the following:

- If a ciscoBus controller LED fails to come on for a port in which a ciscoBus interface card is installed, turn off the system power, reseal the interface card, and reboot.
- If a ciscoBus controller LED still fails to come on for an HSCI 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 notched edge at the correct end of socket, as shown in Figure 1.
- If you find a bent pin, carefully remove the component, straighten the pin with needle-nosed pliers, and reinstall the component.

Step 4 Check the LEDs on the APP-HSA or APP-ULA applique and ensure that the red ER indicator (the bottom LED) is *not* on. If the ER LED *is* on, the internal ribbon cables between the applique and the HSCI card have been crossed, which must be corrected as follows:

- If the cables are labeled, remove each cable and reinstall it in the correct port on the HSCI card.
- If the cables are not labeled, refer to the cable routing diagram in Figure 6 and trace each cable from the applique to its correct port on the HSCI card. To access the applique connection, first ensure that the chassis power cord is unplugged, then remove the seven cover screws and lift the cover off the chassis.

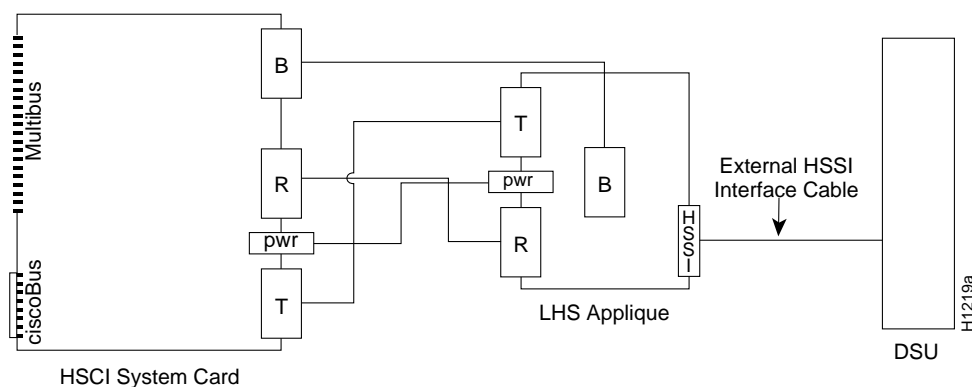


Figure 6 HSCI Internal Ribbon Cable Routing Diagram

Step 5 Ensure that the green OK indicator on the applique (the second LED from the bottom) is on. (See Figure 5.) If it is not on, check the following:

- Remove the internal ribbon cable from each port on the HSCI card and reinsert it. Ensure that each ribbon cable connector is pushed firmly into the card port.
- If the ribbon cables are securely installed in the card ports, check the ribbon cable connections at the applique in the back of the chassis to ensure that none were accidentally pulled out when the card was removed. To access the applique connection, first ensure that the chassis power cord is unplugged, then remove the seven cover screws and lift the cover off the chassis.



Caution Be sure to replace the chassis cover before restarting the system. Operating the system with the cover removed misdirects the flow of cooling air, and can cause the chassis to overheat and force the environmental monitor to shut down the system.

Note If the LEDs do not come on correctly after checking the components and connections, contact a service representative.

Displaying the Microcode Version

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

- If you installed Microcode Version 1.2, the ciscoBus controller and HSCI display should show the following:

```
cBus 1, controller type 3.0, microcode version 2.0
(text omitted)
HSCI 2, controller type 10.0, microcode version 1.2
  Interface 16 - Hssi0, electrical interface is Hssi DTE
(text omitted)
```

- If you installed Microcode Version 10.1, the ciscoBus controller and HSCI display should show the following:

```
cBus 1, controller type 6.0, microcode version 10.0
(text omitted)
HSCI 2, controller type 10.0, microcode version 10.1
  Interface 16 - Hssi0, electrical interface is Hssi DTE
(text omitted)
```

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

This completes the CSC-HSCI and CSC-C2HSCI microcode upgrade.

Note For technical assistance, contact a service representative or the Cisco 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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