



Doc. No. 78-1650-04

# Replacing the Boot ROMs in the Cisco 2500 Series and AccessPro PC Card Routers

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## Product Number: BOOT-2500=

This document explains how to replace the boot ROMs in the Cisco 2500 series and AccessPro PC card routers. The boot ROMs are the same for both the Cisco 2500 series and AccessPro PC card routers.

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**Note** Throughout this document, when referring to the Cisco 2500 series routers, the term “router” means routers, access servers, and router/hubs.

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This document contains the following sections:

- Preventing Electrostatic Discharge Damage, on page 1
- Removing the Cover or AccessPro PC Card, on page 2
- Replacing the Boot ROMs—All Models, on page 7
- Replacing the Cover or AccessPro PC Card, on page 20
- Cisco Connection Online, on page 22

## Preventing Electrostatic Discharge Damage

Before replacing the boot ROMs, read the electrostatic discharge (ESD) instructions in this section to prevent damage to the equipment. ESD is a discharge of stored static electricity that can damage equipment and impair electrical circuitry. It occurs when electronic components are improperly handled and can result in complete or intermittent failures.

Following are guidelines for preventing ESD damage:

- Before you open a chassis, ensure that power to the unit is OFF, but that the power cord is connected to the wall receptacle. Having the power cord connected ensures a ground path for any ESD voltages.
- Always use an ESD-preventive wrist or ankle strap and ensure that it makes good skin contact.

- Connect the equipment end of the strap to an unpainted surface on the chassis frame or another proper grounding point or surface. Attach it to the inside bottom of the chassis or to the rear panel (inside or outside) without making contact with any connectors.
- Avoid contact between equipment and clothing. The wrist or ankle strap only protects the equipment from ESD voltages on the body; ESD voltages on clothing can still cause damage.
- Handle printed circuit cards by the edges only; avoid touching the components, traces, or any connector pins.
- Place a removed card component side up on an antistatic surface or in a static shielding bag. If the component is being returned to the factory, immediately place it in a static shielding bag.
- Do not remove the wrist or ankle strap until the installation is complete.



**Caution** To avoid damaging the equipment, periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 megohms (Mohms).

## Removing the Cover or AccessPro PC Card

To replace the boot ROMs, depending on the model you have, you must remove the cover or remove the AccessPro PC card to access the boot ROMs. Proceed with the appropriate section.

If You Have a	Proceed With the Section	On Page
Cisco 2501–2516 or 2520–2523	Removing the Chassis Cover—Cisco 2501–2516 and 2520–2523	2
Cisco 2517–2519	Removing the Front Cover—Cisco 2517–2519 Router/Hub	5
AccessPro PC card	Removing the AccessPro PC Card	6

## Removing the Chassis Cover—Cisco 2501–2516 and 2520–2523

This section explains how to remove the chassis cover to access the boot ROMs in the Cisco 2501–2516 and 2520–2523 models.

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**Note** The Cisco 2517–2519 are different from the other Cisco 2500 series models. To replace the front cover on Cisco 2517–2519 router/hubs, skip this section and replace the front cover as explained in the section “Replacing the Front Cover—Cisco 2517–2519 Router/Hubs,” later in this document.

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### Required Tools and Equipment

The following tools are required to remove and replace the chassis cover:

- 1/4 inch (0.625 cm) flat-blade screwdriver
- Size M 3.5 (metric) hex-head nut driver (optional)

## Removing the Chassis Cover

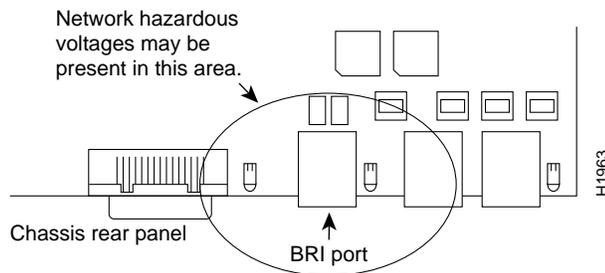
To remove the chassis cover, follow these steps:

- Step 1** Turn the power OFF.
- Step 2** Disconnect all cables from the rear panel of the router.



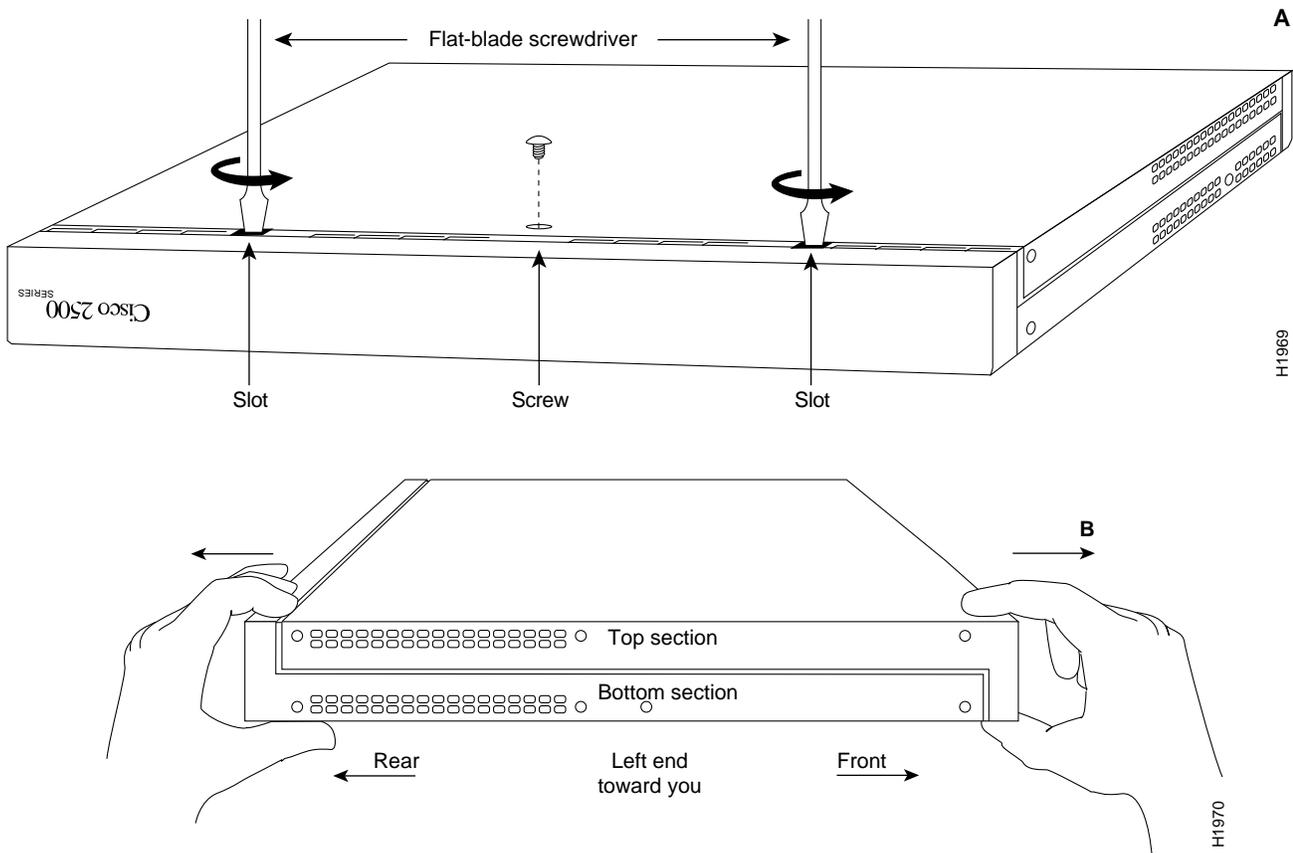
**Warning** *This warning applies to all models that include a BRI port.* Network hazardous voltages are accessible in the basic rate interface (BRI) cable. If you detach the BRI cable, detach the end away from the router first to avoid possible electric shock. Network hazardous voltages are also accessible on the system card in the area of the BRI port (RJ-45 connector), even when the power is OFF. (See Figure 1.)

**Figure 1 Network Hazardous Voltage Area Near the BRI Port**



- Step 3** Turn the router upside down so that the top of the chassis is resting on a stable surface and the front of the chassis is toward you. (See Figure 2, Part A.)

Figure 2 Chassis Cover Removal—Part A (Top) and B (Bottom)



- Step 4** Remove the single screw on the bottom of the chassis at the side closest to you. (See Figure 2, Part A.) Note that the chassis consists of two sections: top and bottom. (See Figure 2, Part B.)
- Step 5** If required, insert a medium flat-blade screwdriver into the slots shown in Figure 2, Part A, and gently rotate the blade so that the top and bottom sections separate slightly.
- Step 6** Holding the chassis with both hands, position it as shown in Figure 2, Part B.
- Step 7** Pull the top section away from the bottom section. (See Figure 2, Part B.) The fit is very snug, so it may be necessary to pry the chassis sections apart at one end and then the other until they separate.
- Step 8** When the top cover is off, set it aside.



**Warning** To prevent shock hazard and injury, do not touch the power supply or fan assemblies.

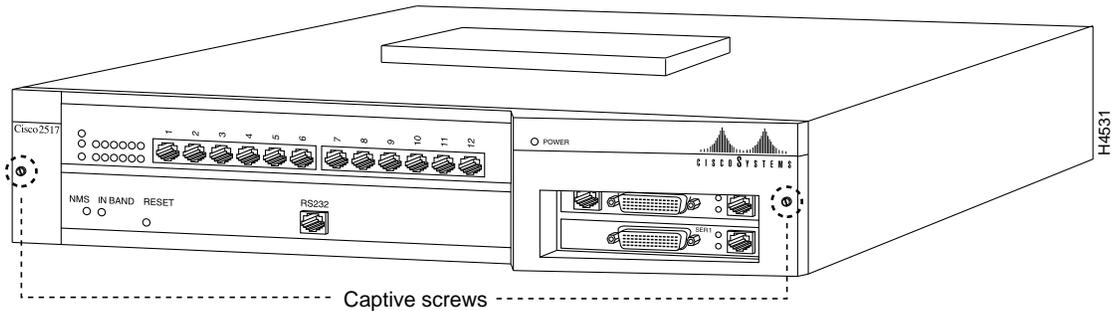
- Step 9** Proceed to the section “Replacing the Boot ROMs—All Models” on page 7.

## Removing the Front Cover—Cisco 2517–2519 Router/Hub

The Cisco 2517–2519 are different from the other Cisco 2500 series models. To access the boot ROMs in Cisco 2517–2519 router/hubs, follow these steps to remove the front cover:

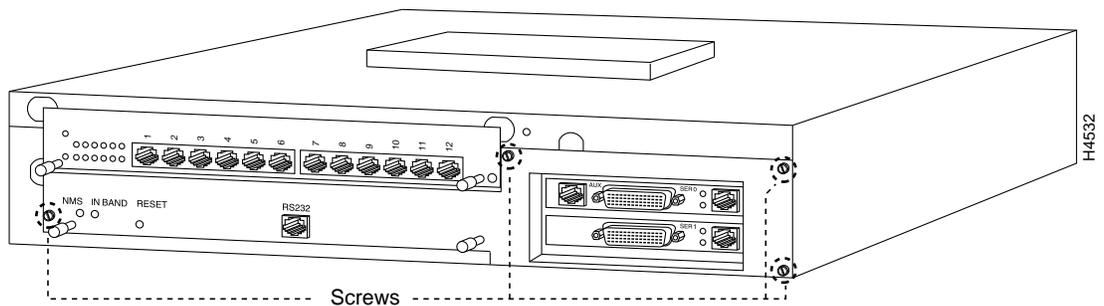
- Step 1** Turn the power OFF.
- Step 2** Disconnect any cables attached to the hub port card, management card, or router card.
- Step 3** Loosen the two captive screws that secure the plastic cover to the front of the chassis. (See Figure 3.)

**Figure 3 Removing the Front Cover (Cisco 2517 Shown)**



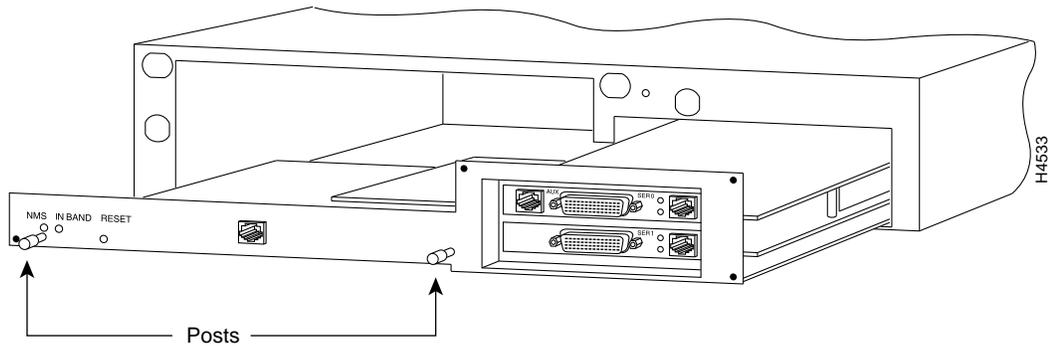
- Step 4** Remove the four screws that secure the management card tray to the chassis. (See Figure 4.)

**Figure 4 Locating the Screws (Cisco 2517 Shown)**



- Step 5** Grasp the posts on the management card tray and gently pull it out of the chassis. (See Figure 5.)

**Figure 5** Removing the Management Card Tray (Cisco 2517 Shown)



- Step 6** Proceed to the section “Replacing the Boot ROMs—All Models” on page 7.

## Removing the AccessPro PC Card

To remove the AccessPro PC card, follow these steps:

- Step 1** Turn the PC power OFF.
- Step 2** Disconnect all cables from the AccessPro PC card.
- Step 3** Attach an ESD-preventive wrist strap and make certain the PC chassis is properly grounded.
- Step 4** Remove the cover from your PC, following the instructions provided by the PC manufacturer.
- Step 5** Locate the AccessPro PC card in its Industry Standard Architecture (ISA)-bus slot. Remove the screw that secures the card bracket to the PC chassis. If a daughter card is installed, remove the screw that secures the daughter card bracket to the PC chassis.
- Step 6** Place the AccessPro PC card on a nonconductive surface.
- Step 7** Proceed with the next section, “Replacing the Boot ROMs—All Models.”

## Replacing the Boot ROMs—All Models

The procedure for replacing the boot ROMs is the same for all Cisco 2500 series and AccessPro PC card routers. To replace the boot ROM software with a new software image, you must remove the existing boot ROMs and replace them with new boot ROMs.

### Tools and Equipment Required for Replacing the Boot ROMs

The following tools and equipment are required to replace the boot ROMs:

- Plastic leaded chip carrier (PLCC) extraction tool
- Two boot ROMs

### Replacing the Boot ROMs

To replace the boot ROMs, follow these steps:

**Step 1** Locate your router model number in Table 1 and see the corresponding figure for the location of the boot ROMs (labeled FW1 and FW2) on the system card. (If you have a Cisco 2517, 2518, or 2519 router/hub, the boot ROMs are located on the router card.) Then proceed to Step 2 on page 17.



**Caution** The correct placement of the boot ROMs is crucial. If the ROMs are installed in the wrong sockets they could be damaged when the system is powered ON. To prevent damage to the ROMs from ESD (when handling the system and its components), follow the ESD procedures described earlier in the section “Preventing Electrostatic Discharge Damage.” Also, be careful not to damage or scratch the printed circuit card under the ROMs.

**Table 1 Locating the Boot ROMs**

Model	Related Figure	Page
Cisco 2501	Figure 6	8
Cisco 2502	Figure 6	8
Cisco 2503	Figure 6	8
Cisco 2504	Figure 6	8
Cisco 2505	Figure 7	9
Cisco 2507	Figure 7	9
Cisco 2509	Figure 8	10
Cisco 2510	Figure 9	11
Cisco 2511	Figure 8	10
Cisco 2512	Figure 9	11
Cisco 2513	Figure 10	12
Cisco 2514	Figure 11	13
Cisco 2515	Figure 12	14
Cisco 2516	Figure 13	15
Cisco 2517 <sup>1</sup>	Figure 15	16
Cisco2518 <sup>1</sup>	Figure 14	15

Model	Related Figure	Page
Cisco 2519 <sup>1</sup>	Figure 15	16
Cisco 2520	Figure 16	16
Cisco 2521	Figure 17	17
Cisco 2522	Figure 16	16
Cisco 2523	Figure 17	17
AP-EC/AP-EBC	Figure 14	15
AP-RC/AP-RBC	Figure 15	16

1. The boot ROMs are located on the router card installed in the chassis.

**Figure 6 Boot ROM Locations—Cisco 2501, Cisco 2502, Cisco 2503, and Cisco 2504 Routers**

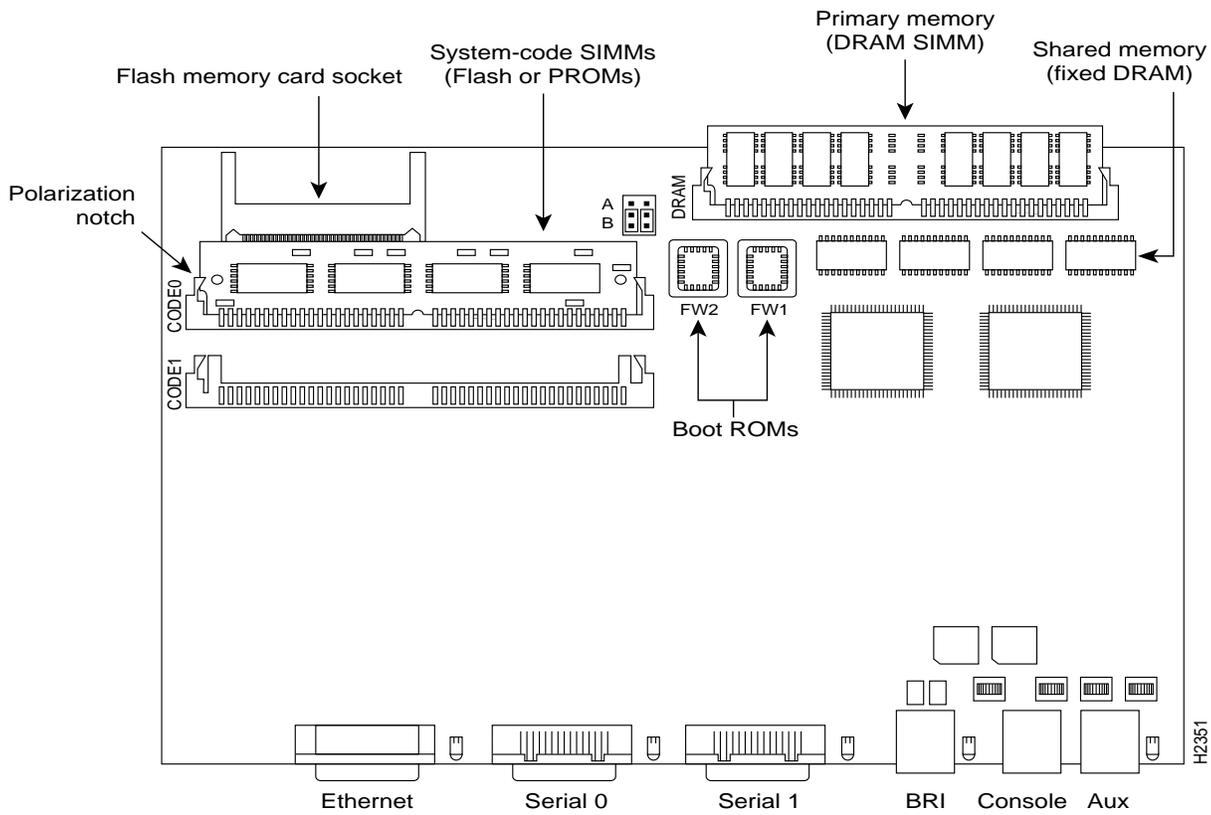
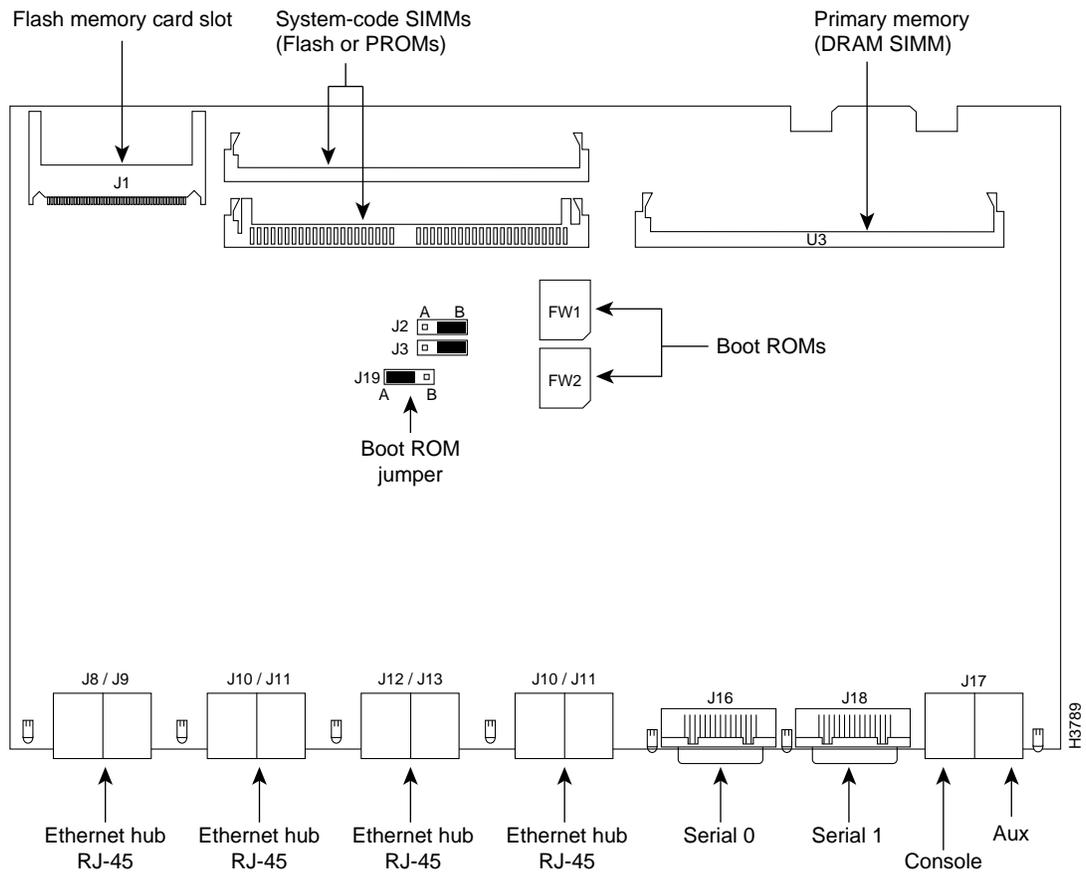
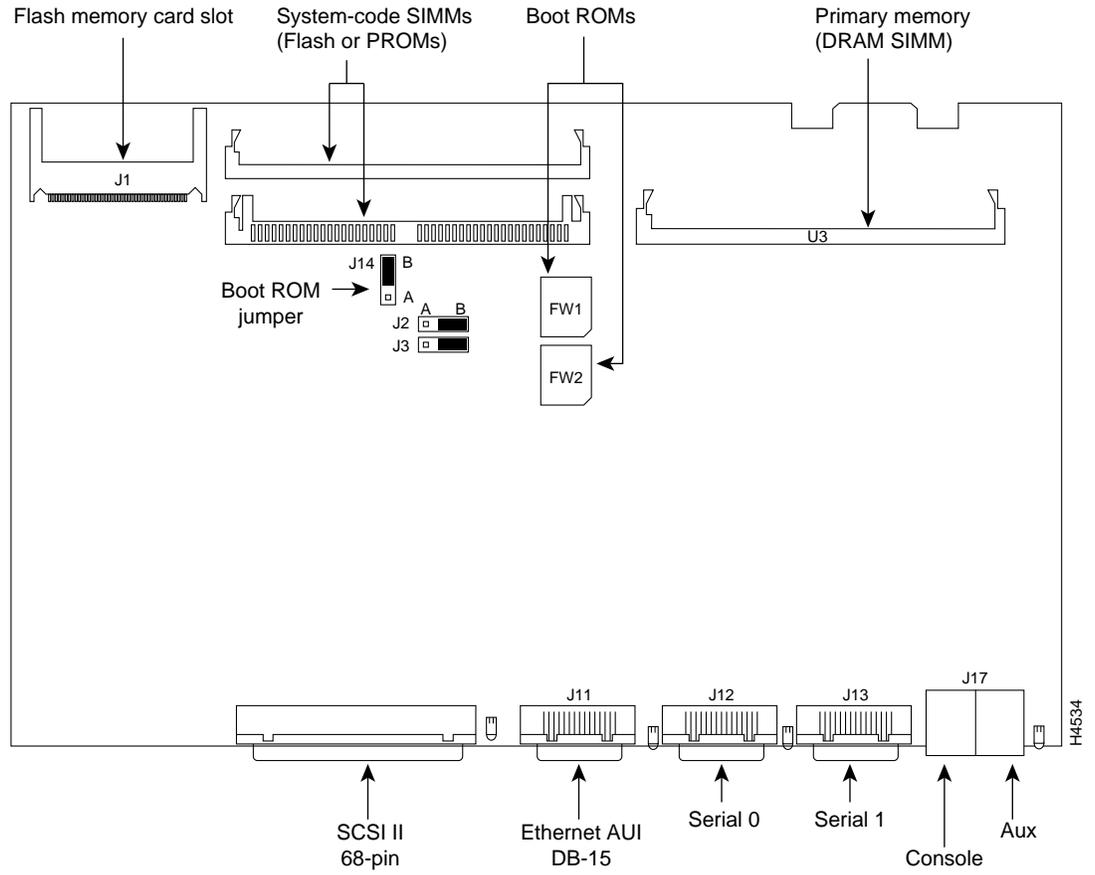


Figure 7 Boot ROM and Jumper Locations—Cisco 2505 and Cisco 2507 Router/Hubs



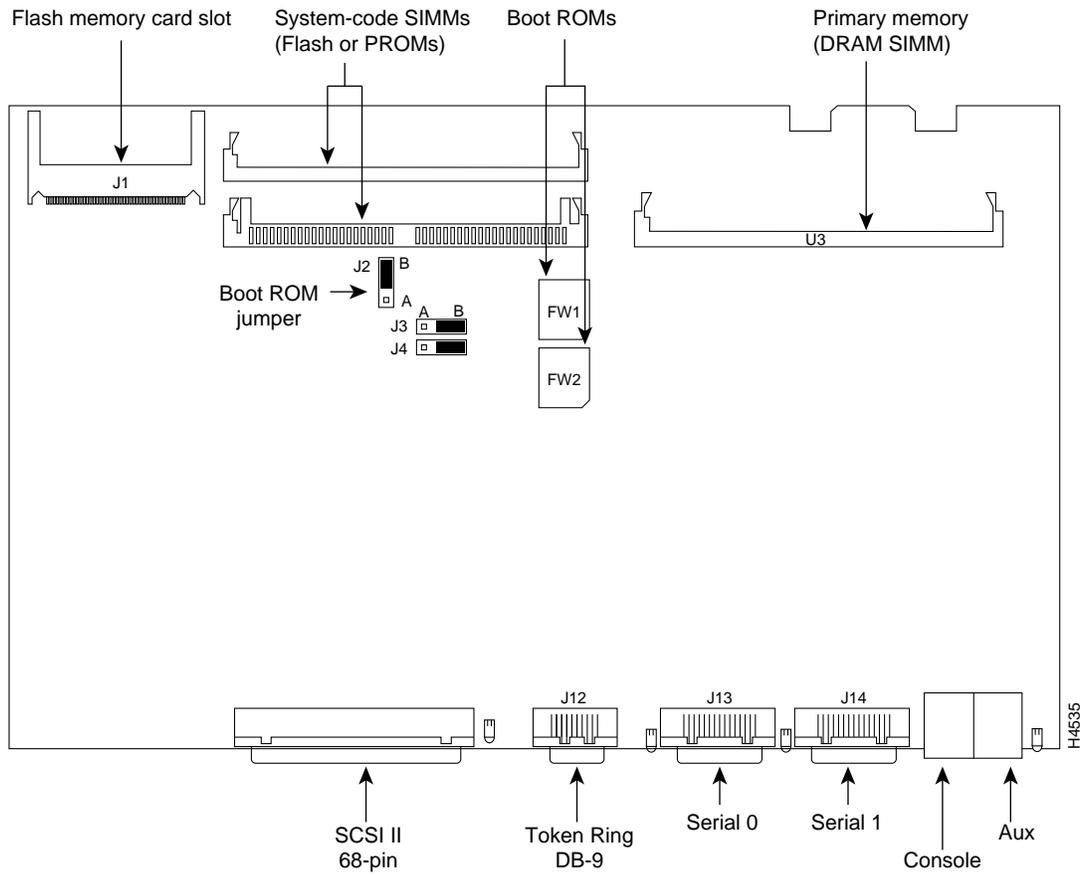
Note: SIMMs removed for clarity

Figure 8 Boot ROM and Jumper Locations—Cisco 2509 and Cisco 2511 Access Servers



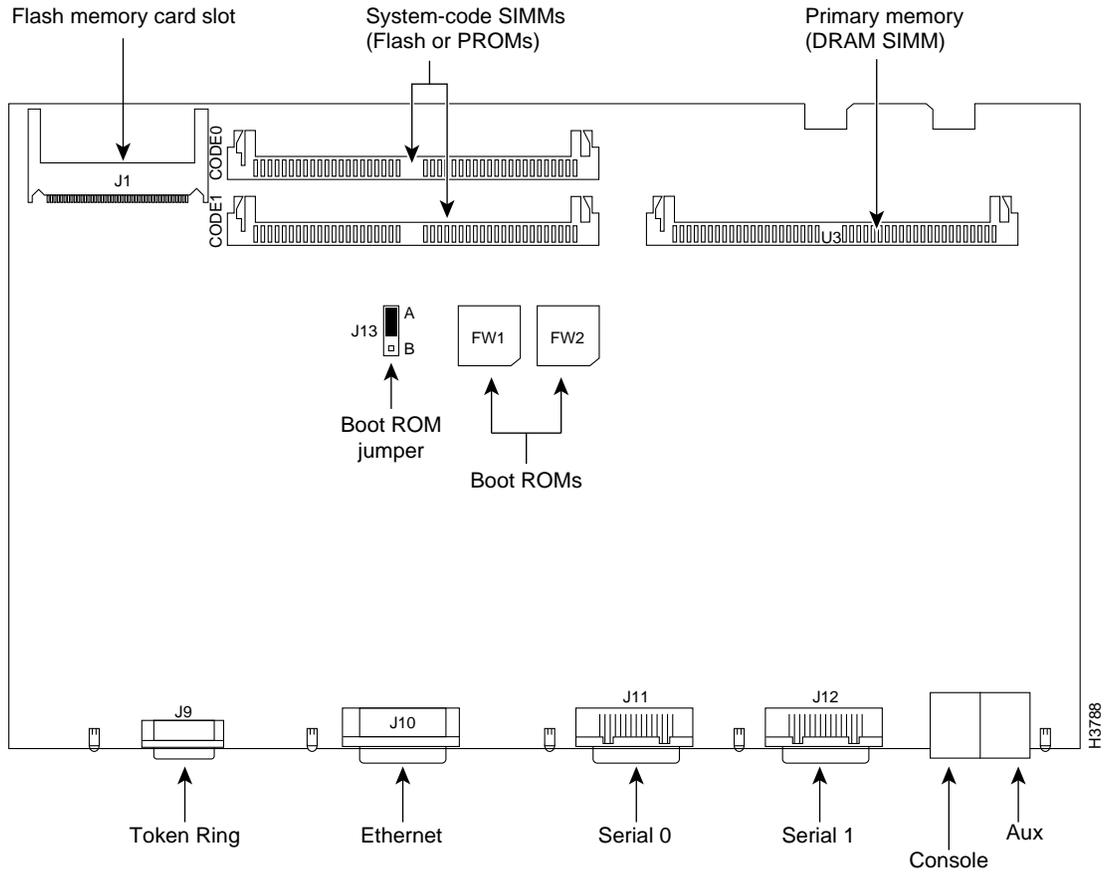
Note: SIMMs removed for clarity

**Figure 9 Boot ROM and Jumper Locations—Cisco 2510 and Cisco 2512 Access Servers**



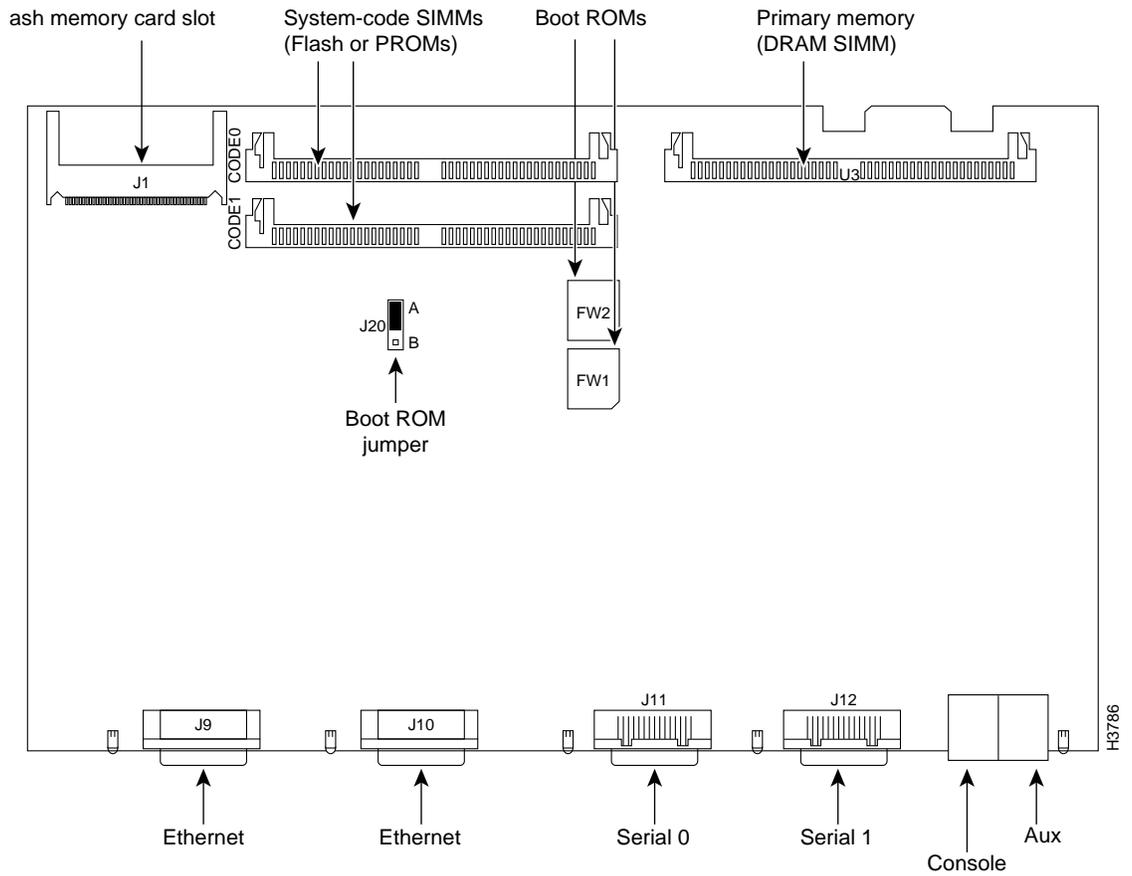
Note: SIMMs removed for clarity

Figure 10 Boot ROM and Jumper Locations—Cisco 2513 Router



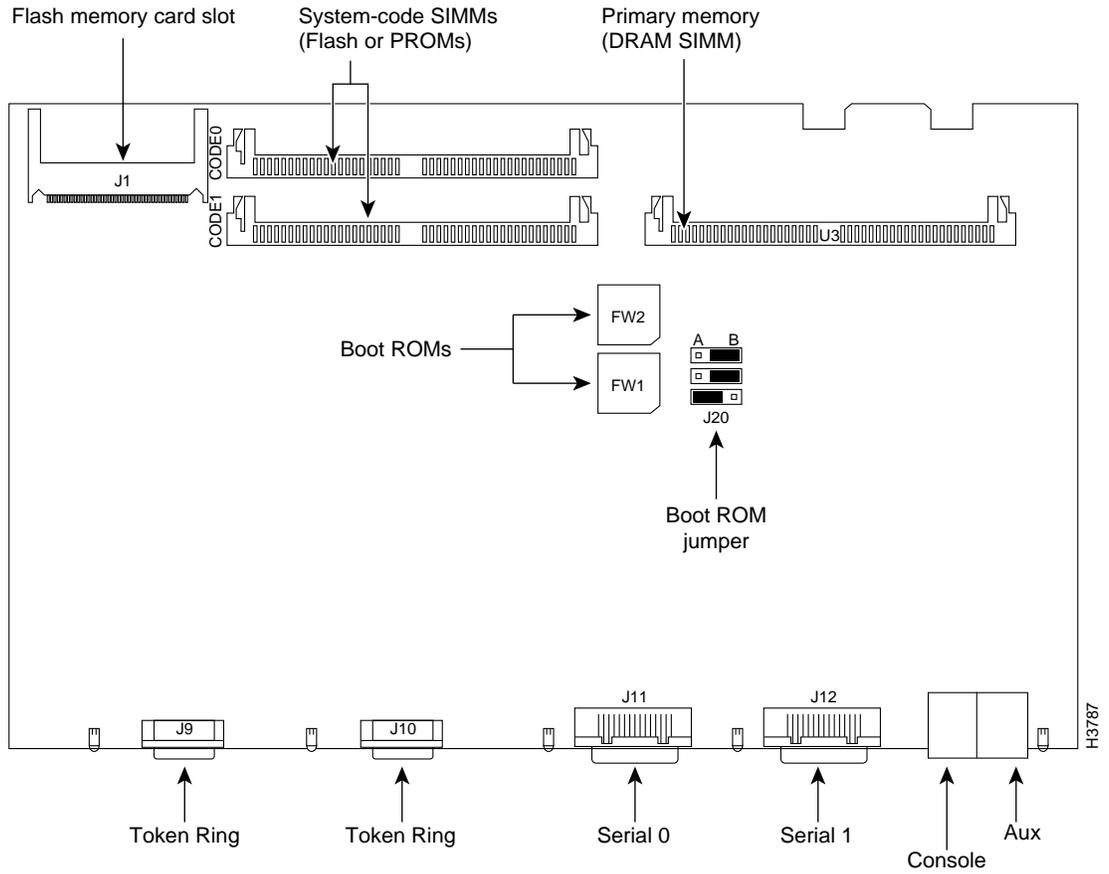
Note: SIMMs removed for clarity

Figure 11 Jumper Locations—Cisco 2514 Router



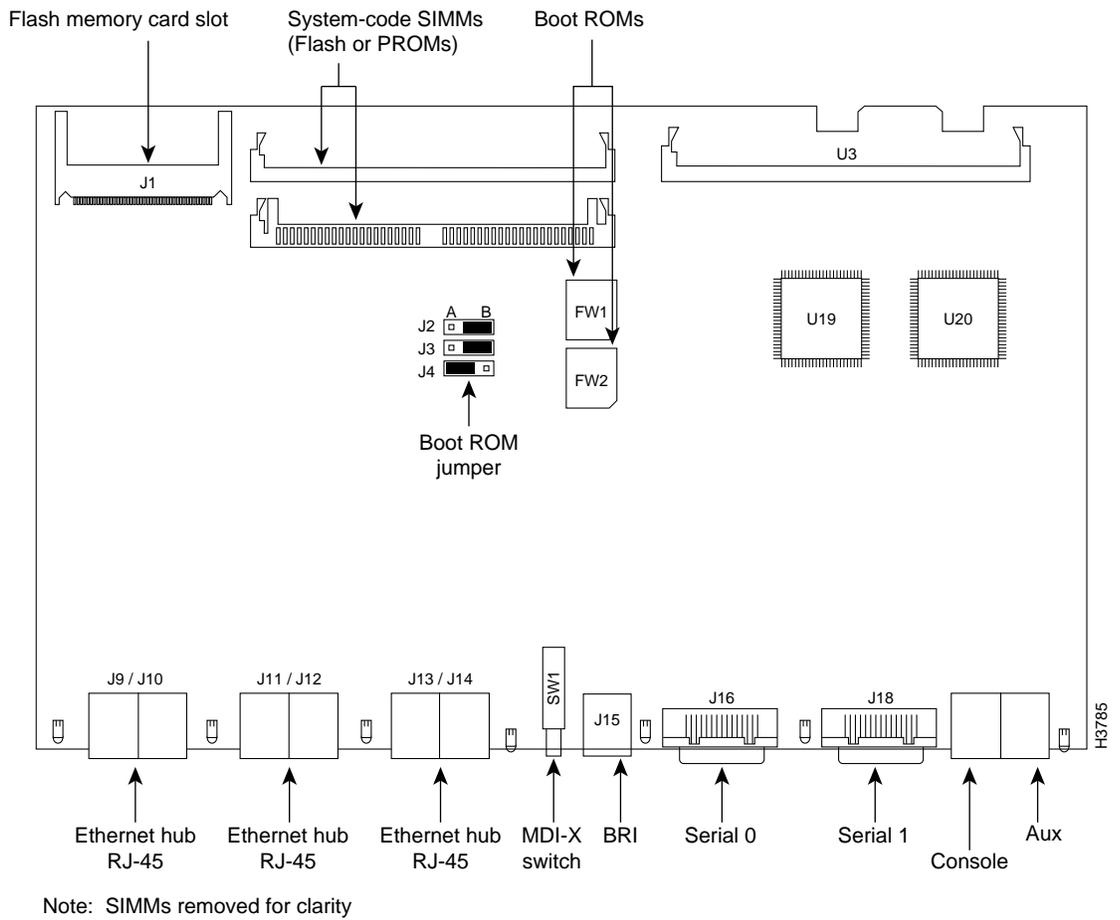
Note: SIMMs removed for clarity

Figure 12 Jumper Locations—Cisco 2515 Router



Note: SIMMs removed for clarity

**Figure 13 Jumper Locations—Cisco 2516 Router/Hub**



**Figure 14 Boot ROM Locations—AP-EC/AP-EBC AccessPro PC Cards**

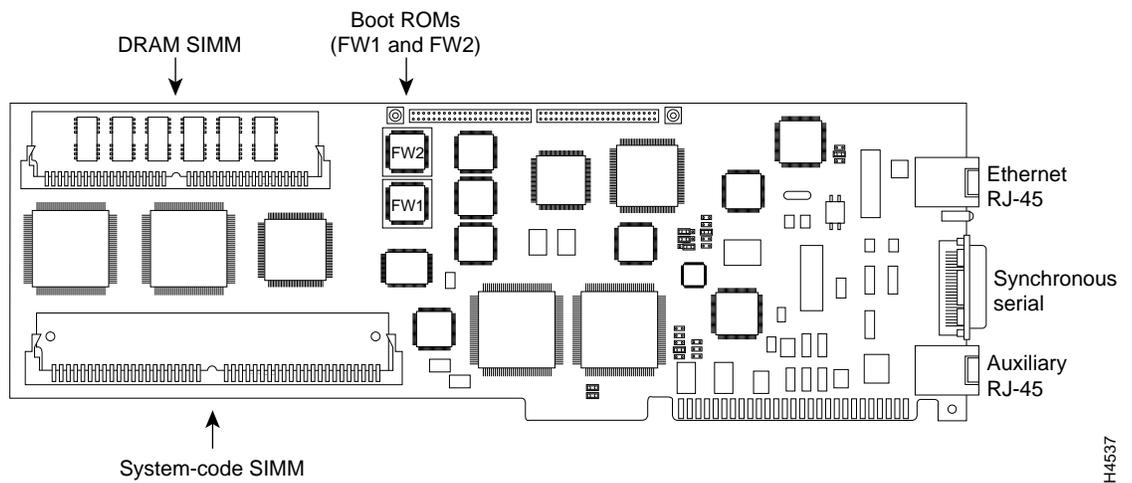
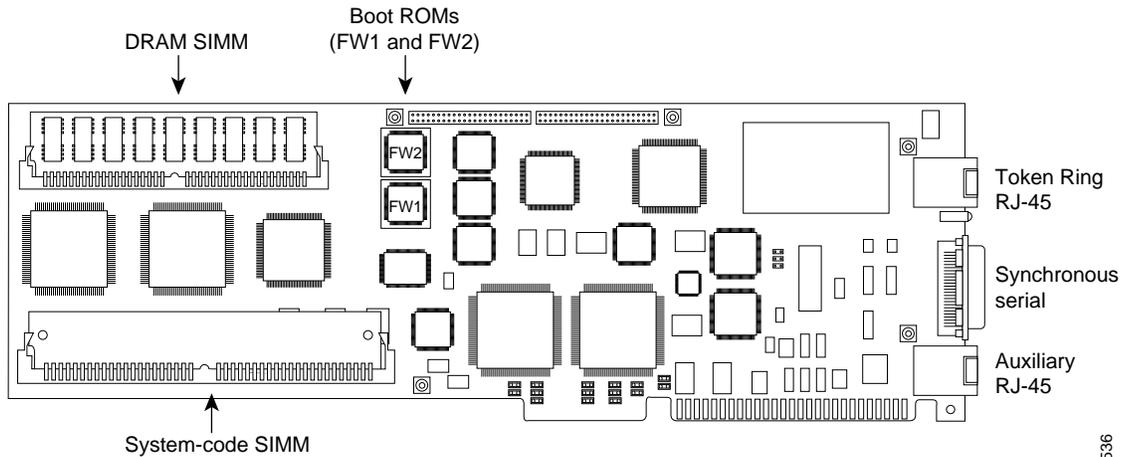
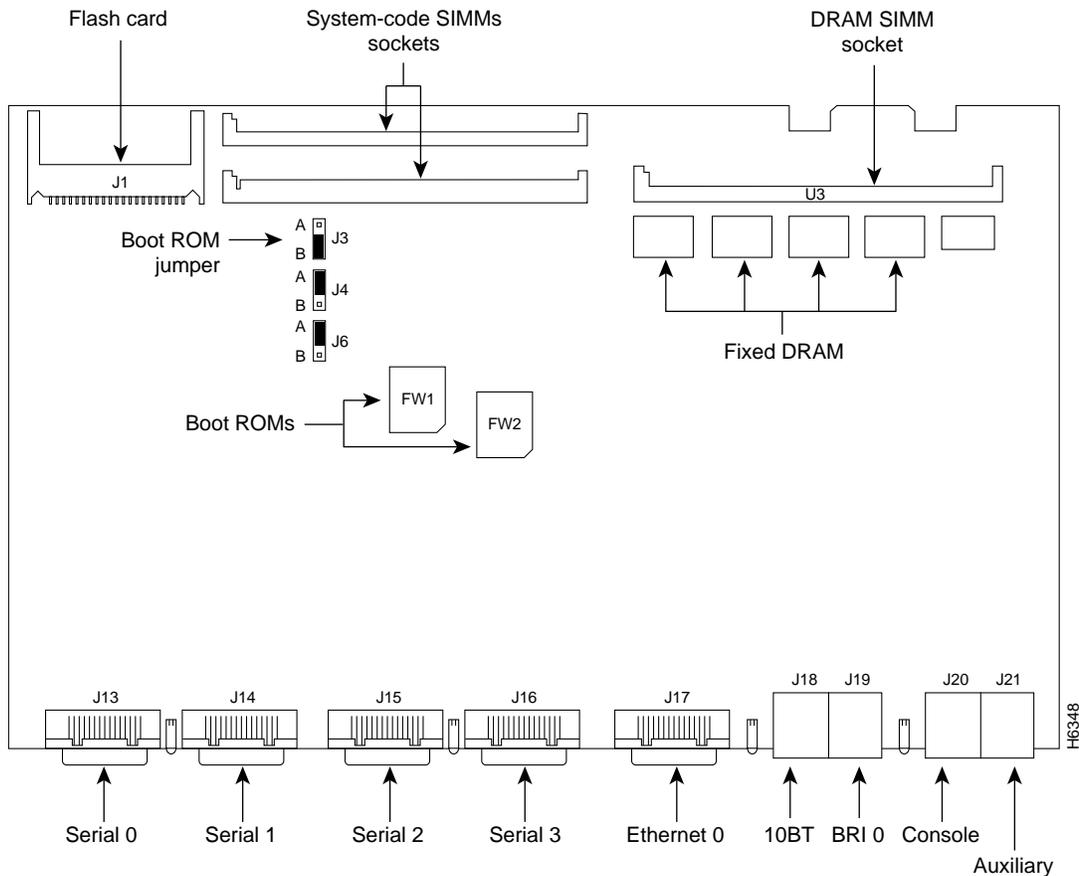


Figure 15 Boot ROM Locations—AP-RC/AP-RBC AccessPro PC Cards



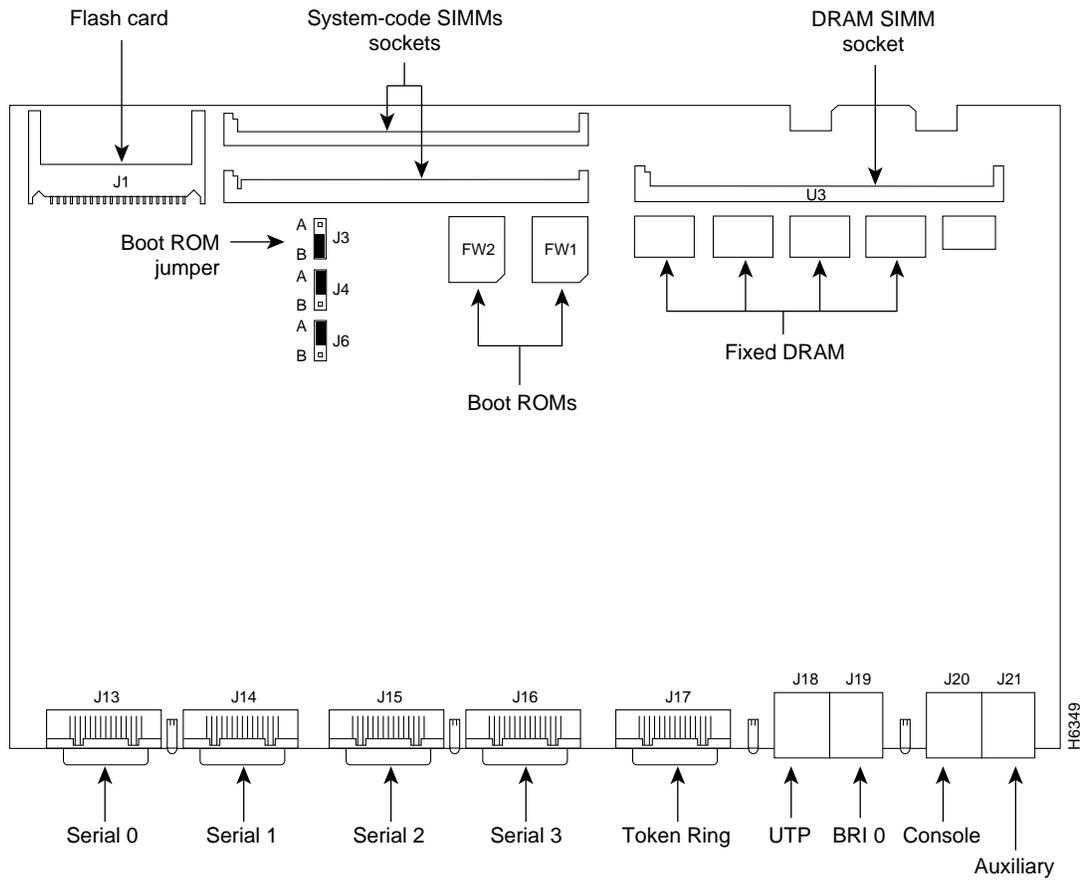
H4536

Figure 16 Boot ROM Locations—Cisco 2520 and Cisco 2522 Routers



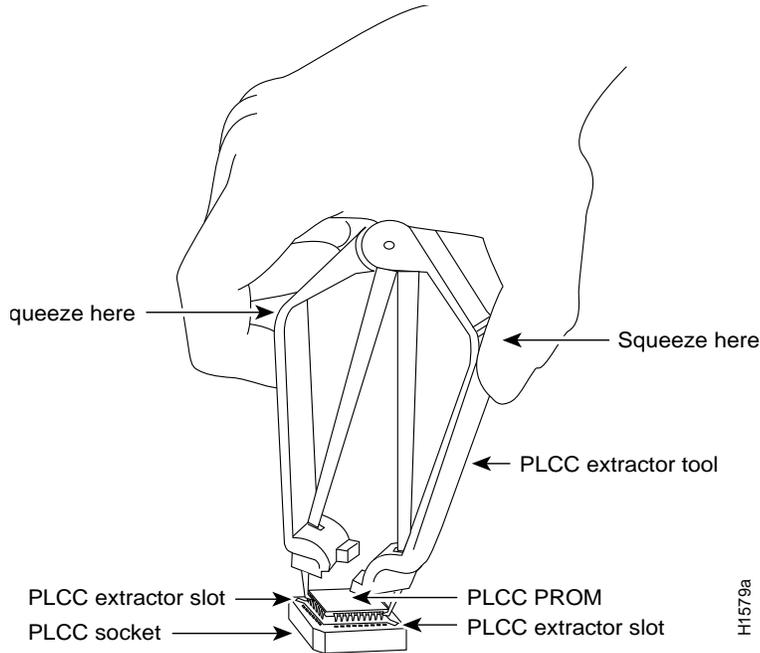
H6348

Figure 17 Boot ROM Locations—Cisco 2521 and Cisco 2523 Routers



**Step 2** Using a PLCC extraction tool, gently remove the boot ROMs (see Figure 18) and set them aside on a nonconductive surface.

**Figure 18** Extracting and Inserting Boot PROMs

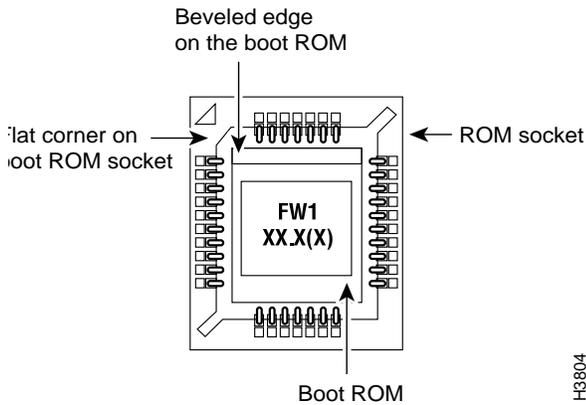


**Step 3** Insert the new boot ROMs in their respective sockets so that the beveled edge of the ROM chip is on the same side as the flat corner on the ROM socket (see Figure 19), being careful not to bend or crush any of the bottom pins. If you inadvertently bend a pin, use needle-nose pliers to straighten it.



**Caution** Boot ROMs should be installed with the printed label side up. Installing boot ROMs with the label side down will result in damage to the ROM.

**Figure 19** Orienting Boot ROMs to the Socket



**Step 4** If your system is set to boot from Flash ROMs, you'll need to change the boot ROM jumper setting so that the router will boot from the mask ROMs. (The position of the boot ROM jumper determines if the router will boot from Flash ROMs or mask ROMs.) Table 2 lists the boot ROM jumper numbers, if any, and the figures that show their locations.

**Table 2 Locating the Boot ROM Jumpers**

<b>Model</b>	<b>Boot ROM Jumper Location</b>	<b>Boot ROM Jumper Setting</b>	<b>Related Figure</b>	<b>Page</b>
Cisco 2501	–	–	Figure 6	8
Cisco 2502	–	–	Figure 6	8
Cisco 2503	–	–	Figure 6	8
Cisco 2504	–	–	Figure 6	8
Cisco 2505	J19	A	Figure 7	9
Cisco 2507	J19	A	Figure 7	9
Cisco 2509	J14	B	Figure 8	10
Cisco 2510	J2	B	Figure 9	11
Cisco 2511	J14	B	Figure 8	10
Cisco 2512	J2	B	Figure 9	11
Cisco 2513	J13	A	Figure 10	12
Cisco 2514	J20	A	Figure 11	13
Cisco 2515	J20	A	Figure 12	14
Cisco 2516	J4	A	Figure 13	15
Cisco 2517 <sup>1</sup>	–	–	Figure 15	16
Cisco2518 <sup>1</sup>	–	–	Figure 14	15
Cisco 2519 <sup>1</sup>	–	–	Figure 15	16
Cisco 2520	J3	B	Figure 16	16
Cisco 2521	J3	B	Figure 17	17
Cisco 2522	J3	B	Figure 16	16
Cisco 2523	J3	B	Figure 17	17
AP-EC/AP-EBC	–	–	Figure 14	15
AP-RC/AP-RBC	–	–	Figure 15	16

1. The boot ROMs are located on the router card installed in the chassis.

## Replacing the Cover or AccessPro PC Card

After replacing the boot ROM and resetting the boot ROM jumper (if necessary), replace the cover or AccessPro PC card following the instructions in the appropriate section.

If You Have a	Proceed With the Section	On Page
Cisco 2501–2516 or 2520–2522	Replacing the Chassis Cover—Cisco 2501–2516 or 2520–2523	20
Cisco 2517–2519	Replacing the Front Cover—Cisco 2517–2519 Router/Hubs	21
AccessPro PC card	Replacing the AccessPro PC Card	21

### Replacing the Chassis Cover—Cisco 2501–2516 or 2520–2523

This section explains how to replace the chassis cover on the Cisco 2501–2516 or 2520–2522 models.

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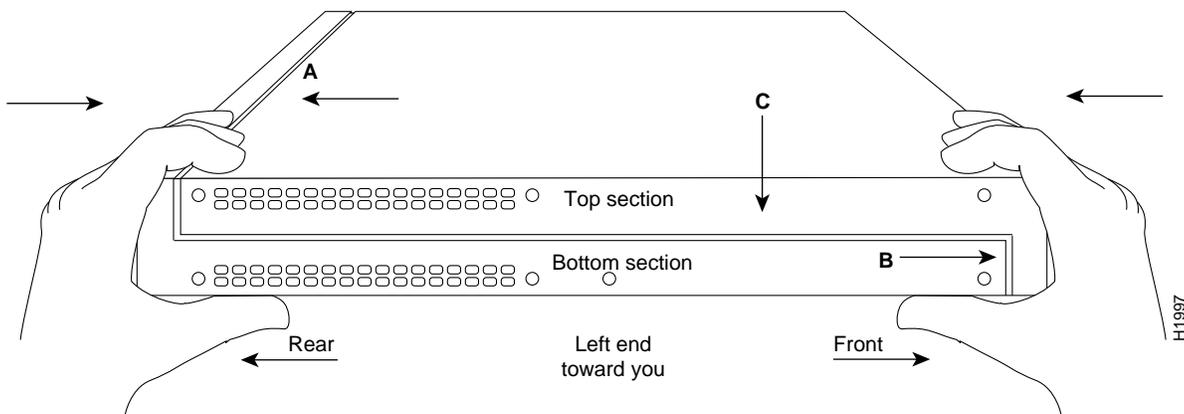
**Note** The Cisco 2517–2519 chassis are different from the other Cisco 2500 series models. To replace the front cover on the Cisco 2517–2519 router/hubs, go to the section “Replacing the Front Cover—Cisco 2517–2519 Router/Hubs,” later in this document.

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Take the following steps to replace the chassis cover:

**Step 1** Position the two chassis sections as shown in Figure 20.

**Figure 20** Replacing the Chassis Cover



**Step 2** Press the two chassis sections together, as shown in Figure 20, and ensure the following:

- The top section fits firmly *into* the rear of the bottom section. (See Figure 20, Part A.)
- The bottom section fits firmly *into* the front of the top section. (See Figure 20, Part B.)
- Both the top and bottom sections fit firmly together. (See Figure 20, Part C.)



**Caution** To fit the two sections together it may be necessary to work them together at one end and then the other until the two sections fit together snugly. Make sure you do not bend the edges of the chassis because damage may occur.

- Step 3** When the two sections fit together snugly, turn the chassis so that the bottom is facing up, with the front panel toward you.
- Step 4** Replace the cover screw and tighten it to no more than 8 or 9 inch-pounds of torque.
- Step 5** Reinstall the chassis on the wall, in the rack, on a desk, or on a table.
- Step 6** Reconnect all cables and turn the power ON.

### Replacing the Front Cover—Cisco 2517–2519 Router/Hubs

The Cisco 2517–2519 chassis are different from the other Cisco 2500 series models. To replace the front cover on the Cisco 2517–2519 router/hubs, follow these steps:

- Step 1** Gently push the management card tray along the card guides into the management card tray. (See Figure 5.)
- Step 2** Replace the four screws that secure the management card tray to the chassis. (See Figure 4.)
- Step 3** Replace the two captive screws that secure the plastic cover to the front of the chassis. (See Figure 3.)
- Step 4** Reconnect all cables and turn the power ON.

### Replacing the AccessPro PC Card

To replace the AccessPro PC card, follow these steps:

- Step 1** Insert the AccessPro PC card into its ISA slot on the PC motherboard. Carefully align the edge connector on the ISA slot, and use a rocking motion to seat the card in the proper position. Secure the card in the ISA slot with the bracket screw.
- Step 2** Replace the cover of the PC, following the directions provided by the PC manufacturer.
- Step 3** Reconnect all cables and turn the power ON.

## Cisco Connection Online

Cisco Connection Online (CCO), formerly Cisco Information Online (CIO), is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional content and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously—a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, Internet e-mail, and fax download options, and is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: <http://www.cisco.com>.
- Telnet: [cco.cisco.com](telnet://cco.cisco.com).
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and baud rates up to 14.4 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact [cco-help@cisco.com](mailto:cco-help@cisco.com). For additional information, contact [cco-team@cisco.com](mailto:cco-team@cisco.com).

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**Note** If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or [tac@cisco.com](mailto:tac@cisco.com). To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or [cs-rep@cisco.com](mailto:cs-rep@cisco.com).

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Use this document with the following publications (as appropriate): *Cisco 2500 Series Hardware Installation*, *Cisco 2500 Series Hardware Installation and Maintenance*, *Cisco 2500 Series Access Server User Guide*, *Cisco 2517 and Cisco 2519 Router/Hub User Guide*, *Cisco 2518 Router/Hub User Guide*, *AccessPro PC Card User Guide*, and *Cisco 2500 Series Multiport Serial Router User Guide*.

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