



Replacing Memory Components

This appendix contains procedures on how to replace memory chips in the Cisco AS5350 field-replaceable units. The appendix contains the following sections:

- Removing the Chassis Cover, page A-1
- Replacing the Boot ROM, page A-4
- Replacing SDRAM DIMMs, page A-7
- Replacing Flash Memory SIMMs, page A-9
- Replacing the Chassis Cover, page A-12

Removing the Chassis Cover

This section describes how to open the chassis by removing the chassis cover.

Required Tools

You need the following tools:

- Medium Phillips screwdriver
- Small or medium flat-blade screwdriver

Safety Recommendations

Note the following safety recommendations:



Warning

Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.



Warning

Do not work on the system or connect or disconnect cables during periods of lightning activity. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.

NVRAM in the universal gateway uses an internal lithium battery to maintain data. Although this is not a field-serviceable component, we are required to provide the following safety warnings:



Warning

Before working on a system that has an on/off switch, turn OFF the power and unplug the power cord. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.



Warning

There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.



Warning

Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.

Chassis Cover Removal

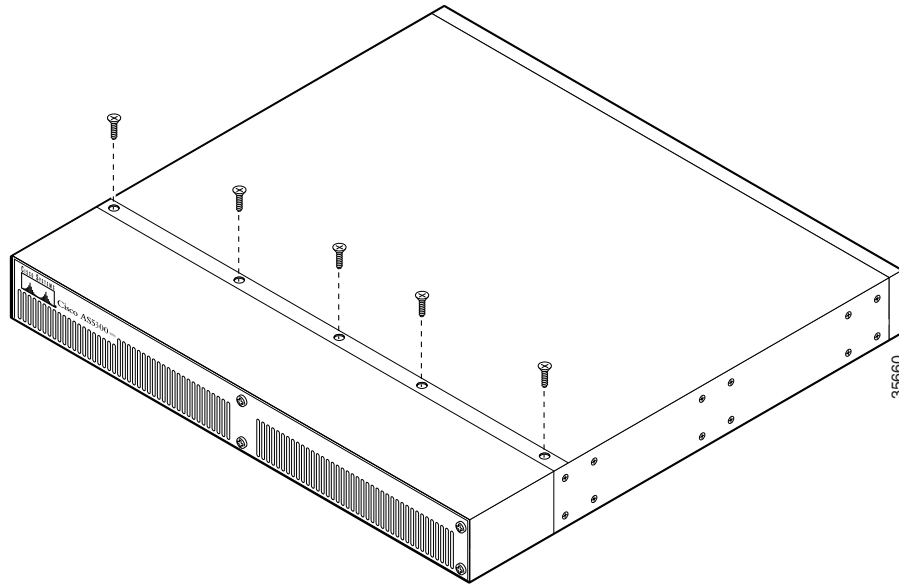
You must open the universal gateway chassis to gain access to its interior components: boot read-only memory (ROM) software, synchronous dynamic random-access memory, dual in-line memory (SDRAM DIMMs) modules, and Flash memory SIMMs. (When you replace the boot ROM, you must also remove all feature cards in the chassis.)

To remove the chassis cover, follow this procedure:

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- Step 1** Turn the power switch on the universal gateway off and disconnect site power.
 - Step 2** Remove all interface cables from the rear panel of the universal gateway.
 - Step 3** Place the gateway so that the front panel is facing you.

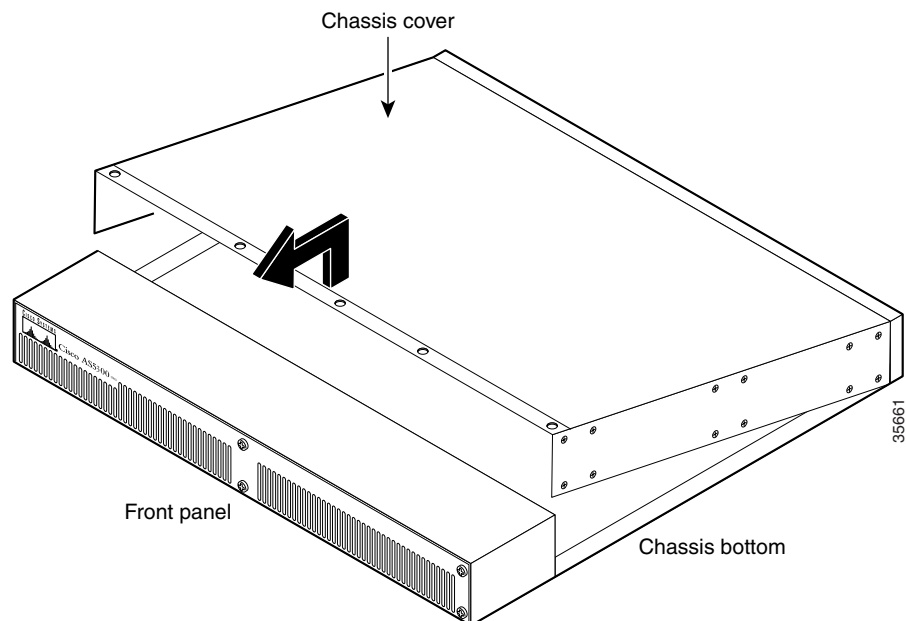
Step 4 Remove the five screws on the chassis cover, as shown in Figure A-1.

Figure A-1 Removing the Chassis Cover Screws



Step 5 Gently pry the cover off with a flat-blade screwdriver. Lift the chassis cover upward, as shown in Figure A-2, and pull it away from the tabs on the rear of the chassis.

Figure A-2 Removing the Chassis Cover



Replacing the Boot ROM

To upgrade the boot ROM software to a new software image, you must replace the existing boot ROM.

Required Tools and Equipment

You will need the following tools and equipment:

- ROM extraction tool
- One boot ROM
- ESD-preventive wrist strap

Boot ROM Replacement



Caution

A PLCC-type boot ROM does not have pins that plug into the socket; instead, the contacts are on the sides of the boot ROM and along the inner sides of the socket. Therefore, you cannot use a small flat-blade screwdriver to remove a PLCC-type boot ROM. Forcing a small screwdriver or other tool between the boot ROM and the sides of the socket to pry out the boot ROM will damage the component, the socket, or both.

To replace the boot ROM, follow these steps:

Step 1

Turn the power switch on the universal gateway off and disconnect site power.



Warning

Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.

Step 2

Remove all interface cables from the rear panel of the universal gateway.

Step 3

Attach an ESD-preventive wrist strap.

Step 4

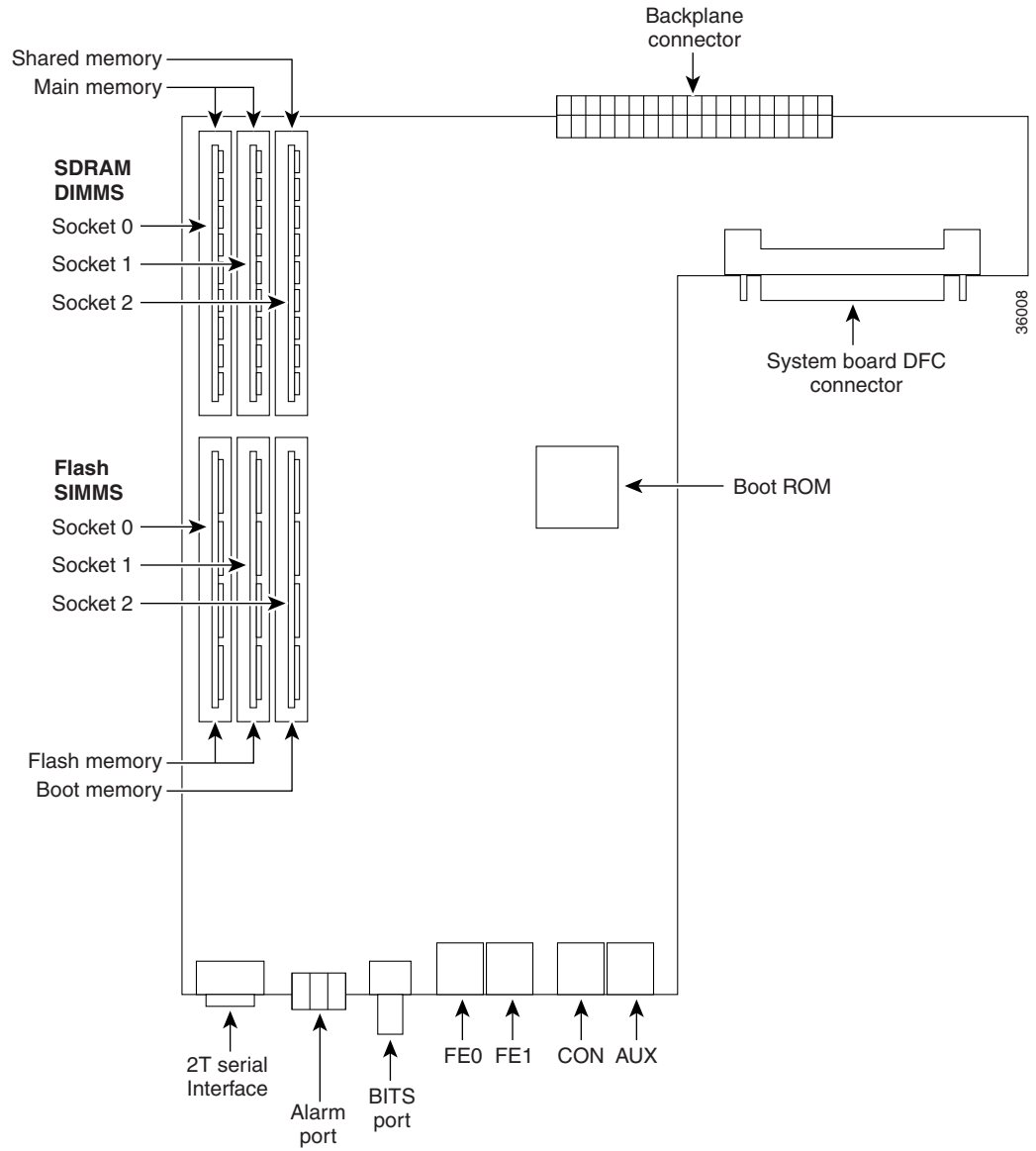
Remove the chassis cover. (See the instructions in the section “Removing the Chassis Cover” section on page A1.)

Step 5

Remove the carrier card to access the system board. (See the *Cisco AS5350 Universal Gateway Card Installation Guide* for instructions on removing the carrier card. This document is available on Cisco.com and the documentation CD-ROM that comes with your universal gateway. See the “Obtaining Documentation” section on page xiii.)

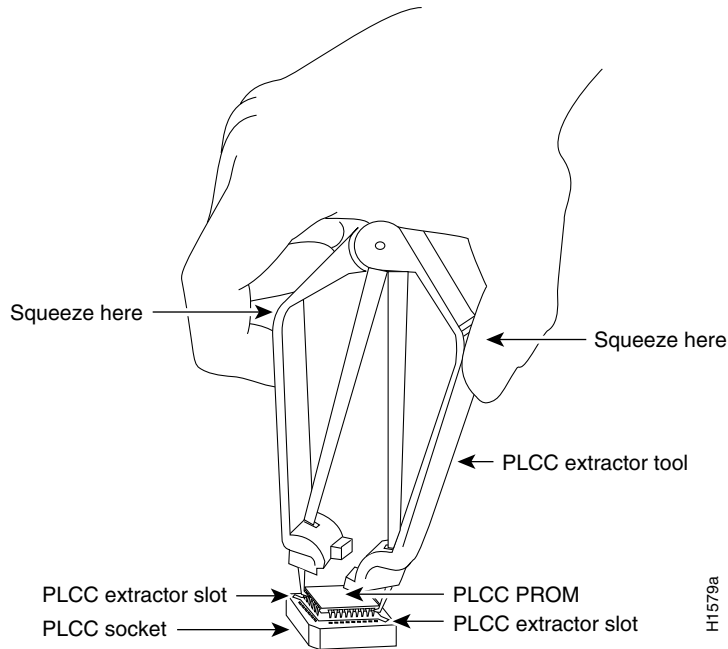
Step 6 Locate the boot ROM on the system board. (See Figure A-3.)

Figure A-3 System Board Layout



- Step 7** Gently extract the old ROM with a PLCC-type ROM extraction tool and set the old boot ROM on a nonconducting surface. Do not use excessive force because the socket might break. (See Figure A-4.)

Figure A-4 Extracting Boot ROM



- Step 8** Insert the new boot ROM into the socket.



Caution

The notch in the ROM must align with the notch in the socket on the system board. If the ROM is installed backwards, damage will occur when the gateway is powered on.

- Step 9** Replace the carrier card. (See the *AS5350 Universal Gateway Card Installation Guide* for instructions on installing the carrier card. This document is available on the World Wide Web and the documentation CD-ROM that comes with your gateway. See the “Obtaining Documentation” section on page xiii.)
- Step 10** Replace the gateway chassis cover. (See the instructions in the “Replacing the Chassis Cover” section on page A12.)
- Step 11** Power on the universal gateway. If error messages relating to memory are displayed, remove the new boot ROM and reinstall it, taking care to seat the ROM firmly in its socket.

Replacing SDRAM DIMMs

This section describes how to replace SDRAM DIMMs on the system board. You might need to upgrade the SDRAM DIMMs for the following reasons:

- You have upgraded to a new Cisco IOS feature set or release that requires more memory.
- You are using very large routing tables or many protocols (for example, when the universal gateway is set up as a connection device between large external networks and your internal network).

The system board contains three sockets for SDRAM DIMMs (see Figure A-3):

- Two sockets hold main memory SDRAM DIMMs. Main memory is used by the CPU to store the operating configuration, routing tables, and queues. The DIMMs can be 128 or 256 MB, and the capacity of the DIMMs in both sockets must match.
 - For main memory, the total capacity is 512 MB (two, 256 MB DIMMs).
- One socket holds a shared memory SDRAM DIMM. Shared memory is used to store incoming and outgoing packets. This DIMM can be 64 or 128 MB.
 - For shared memory, the total capacity is 128 MB (one, 128 MB DIMM).

Required Tools and Equipment

You need the following tools and equipment:

- ESD-preventive wrist strap
- The appropriate SDRAM DIMM(s) for your universal gateway

SDRAM DIMM Replacement

To replace the SDRAM, follow this procedure:

Step 1 Turn the power switch on the universal gateway off and disconnect site power.

Step 2 Remove all interface cables from the rear panel of the universal gateway.



Warning

Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.

Step 3 Attach an ESD-preventive wrist strap.

Step 4 Remove the chassis cover. (See the instructions in the “Removing the Chassis Cover” section on page A1.)

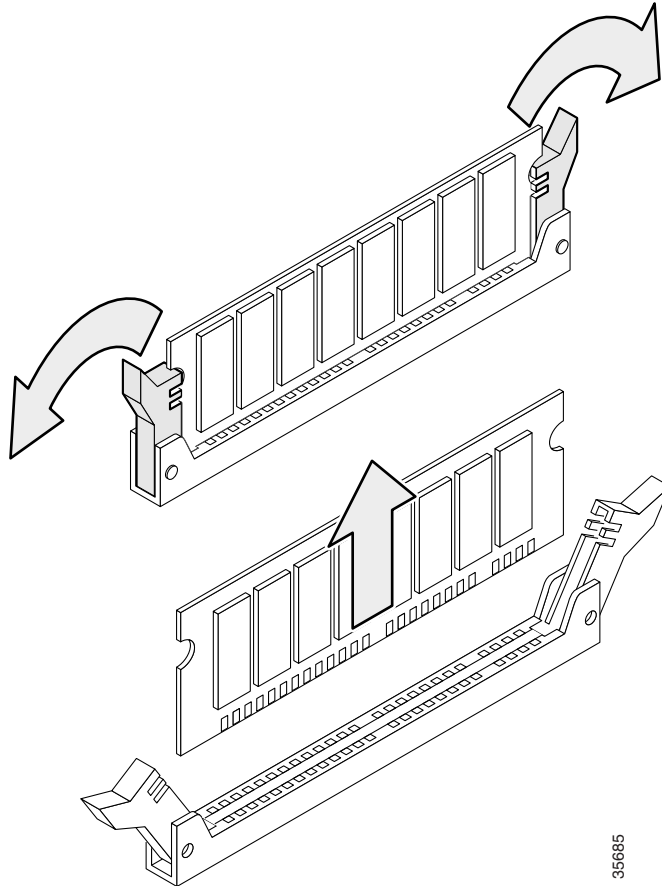
Step 5 Use Figure A-3 to locate the DIMM you are replacing.

- Step 6** Pull the socket latches away from the DIMM, and then pull the DIMM out of the socket. (See Figure A-5.) The latches hold the DIMM tightly, so be careful not to break the socket.

**Caution**

To prevent damage, do not press on the center of the DIMM. Handle the DIMM carefully.

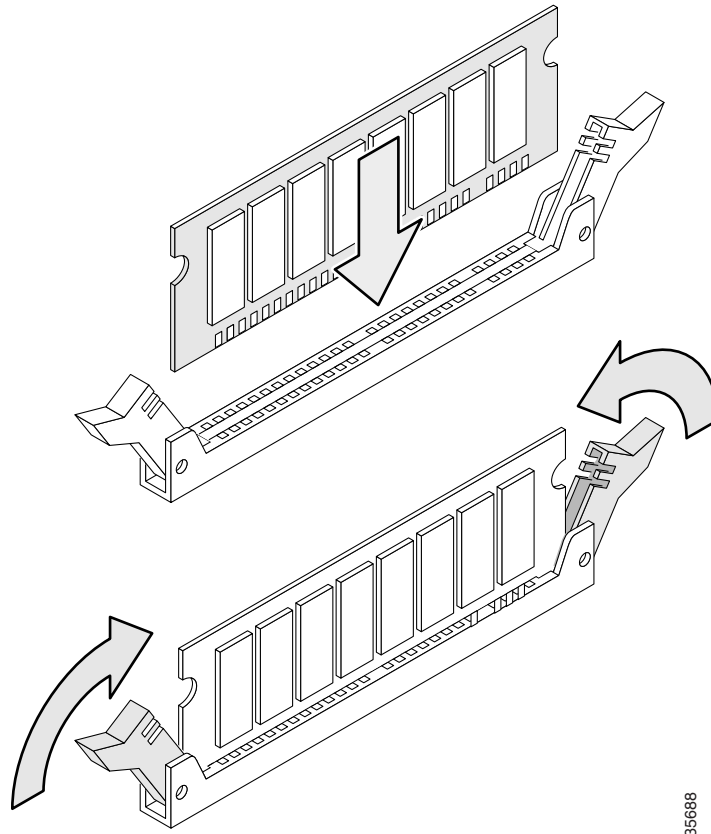
Figure A-5 Removing and Replacing the SDRAM DIMM



- Step 7** Position the new DIMM so that the polarization notch is located at the right end of the DIMM socket.

- Step 8** Insert the new SDRAM DIMM by sliding the end with the metal fingers into the DIMM socket, as shown in Figure A-6.

Figure A-6 Inserting the New SDRAM DIMM into the Socket



- Step 9** Snap the latches into place. Do not use excessive force because the socket might break.
- Step 10** Replace the gateway chassis cover. (See the “Replacing the Chassis Cover” section on page A12.)
- Step 11** Power on the universal gateway. If error messages relating to memory are displayed, remove the SDRAM DIMM and reinstall it, taking care to seat the DIMM firmly in its socket.

Replacing Flash Memory SIMMs

The system board contains three sockets for 5V Flash memory SIMMs (see Figure A-3):

- The first two Flash memory sockets hold SIMMs containing the Cisco IOS software image. Cisco recommends that you install the first SIMM into the first Flash memory socket. (Socket 0 in Figure A-3.) For future expansion, install the second SIMM in the second Flash memory socket. The SIMMs are 32 MB, and the capacity of both SIMMs must match.
 - For system memory, the total capacity is 64 MB (two, 32 MB SIMMs).

- The third Flash memory socket holds a SIMM for the boot helper image (rxboot) software. The SIMM can be 8 or 16 MB.
 - For boot memory, the total capacity is 16 MB (one, 16 MB SIMM).

The Flash memory SIMMs must be purchased from Cisco. For ordering information, refer to the “Obtaining Technical Assistance” section on page xiv.

Required Tools and Equipment

You need the following tools and equipment:

- ESD-preventive wrist strap
- The appropriate Flash memory SIMM(s) for your universal gateway

Flash Memory SIMM Replacement

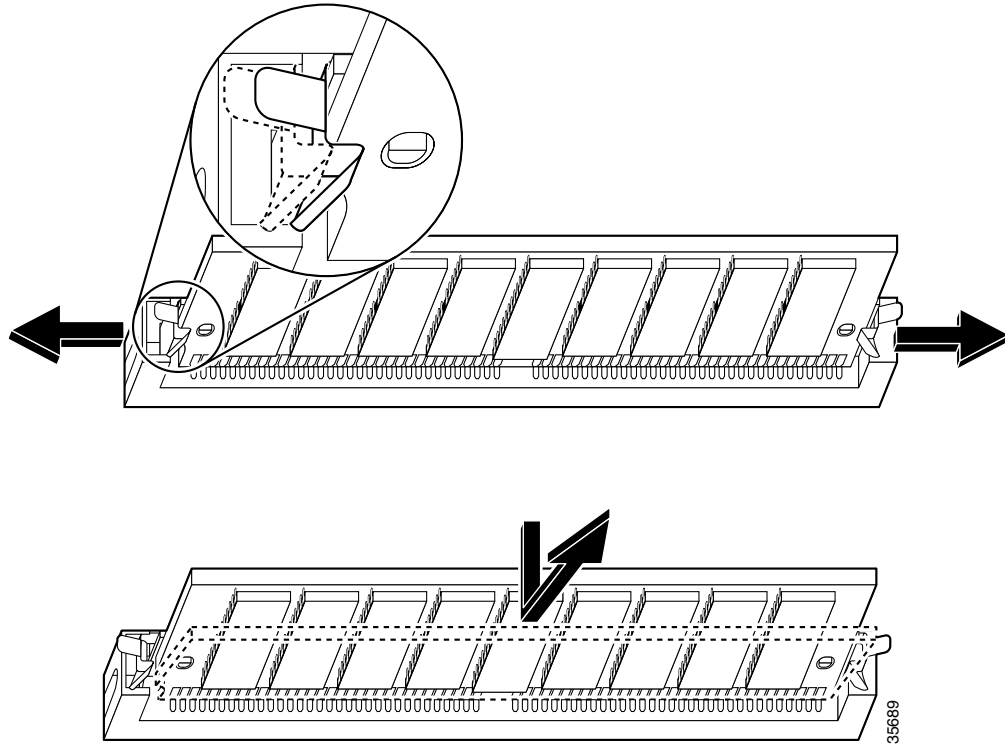
To replace the 5V Flash memory SIMMs, follow this procedure:

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- Step 1** Turn the power switch on the universal gateway off and disconnect site power.
 - Step 2** Remove all interface cables from the rear panel of the universal gateway.
 - Step 3** Attach an ESD-preventive wrist strap.
 - Step 4** Remove the chassis cover. (See the previous procedure in the “Removing the Chassis Cover” section on page A1.)
 - Step 5** Place the chassis so that the system board is oriented as shown in Figure A-3, with the Flash memory SIMMs toward you.
 - Step 6** Remove the existing Flash memory SIMM by pulling outward on the socket latches and then lifting the SIMM out of the socket (see Figure A-7).



Caution To prevent damage, do not press on the center of the SIMMs. Handle each SIMM carefully.

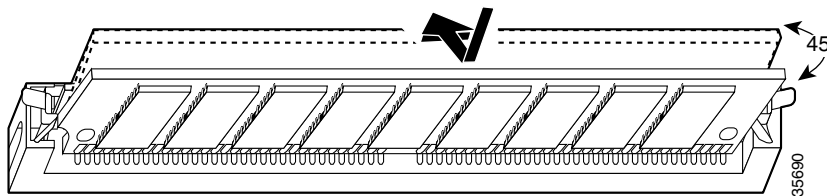
- Step 7** Repeat these steps for all the Flash memory SIMMs that you need to replace.

Figure A-7 Removing the Flash Memory SIMM**Caution**

Some Flash memory SIMMs have the components mounted on the rear side. To prevent damage when you insert the SIMM, always use the polarization notch as a reference, *not* the position of the components on the SIMM.

Step 8

Insert the new SIMM by sliding the end with the metal fingers into the appropriate SIMM socket at approximately a 45-degree angle to the system board as shown in Figure A-8.

Figure A-8 Inserting the Flash Memory SIMM**Step 9**

Gently rotate the SIMM until the latch on either side snaps into place. Do not use excessive force because the connector might break. When inserting the new SIMM, make sure that the polarization notch is located at the right end of the SIMM socket.

- Step 10** Replace the gateway chassis cover. (See the instructions in the following section “Replacing the Chassis Cover.”)
- Step 11** Connect the gateway to a console terminal.
- Step 12** Power on the universal gateway. If any memory-related error messages appear, remove the Flash memory SIMM and reinstall it, taking care to seat the SIMM firmly in the socket.

Replacing the Chassis Cover

This section describes the procedure for replacing the chassis cover.

Required Tools and Equipment

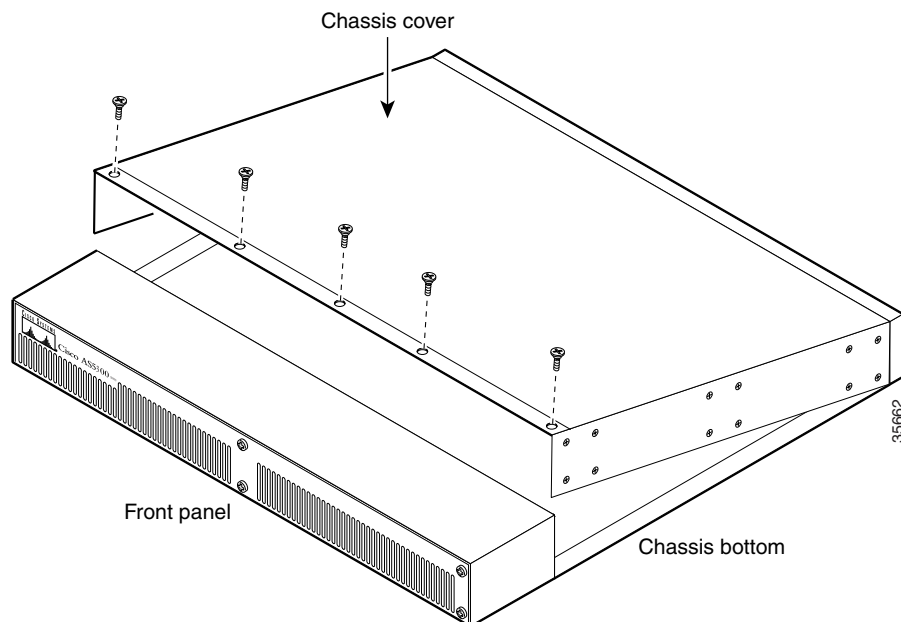
- Medium Phillips screwdriver
- Five screws

Chassis Cover Replacement

To replace the chassis cover, follow this procedure:

- Step 1** Place the chassis bottom so that the front panel is facing you. (See Figure A-9.)

Figure A-9 Replacing the Chassis Cover

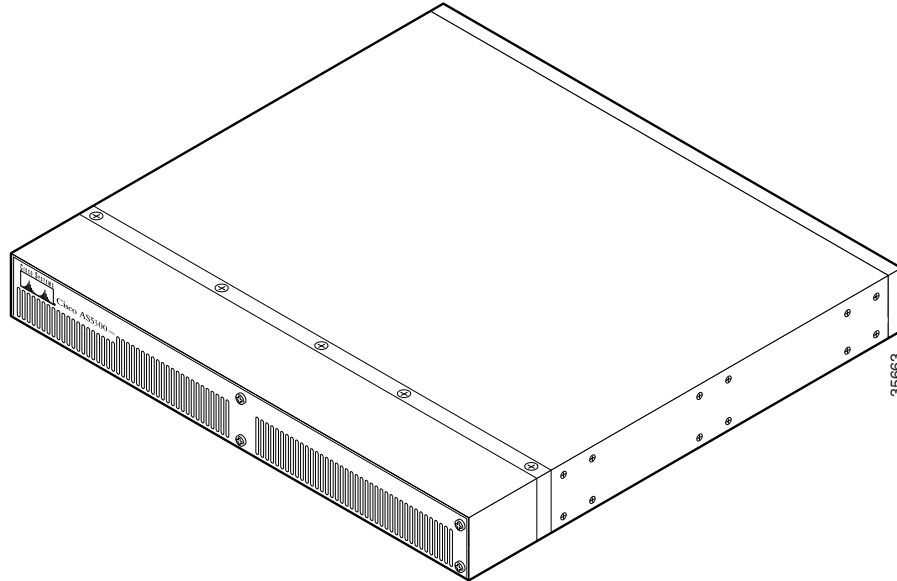


- Step 2** Hold the chassis cover over the chassis bottom, and align each of the cover tabs with the chassis tabs at the top rear of the chassis.

- Step 3** Lower the front of the top cover to close the chassis, and ensure the following:
- The chassis cover tabs fit under the edge of the chassis rear panel so that they are not exposed.
 - The chassis tabs fit under the chassis cover so that they are not exposed.
 - The chassis cover side tabs on both sides fit inside the chassis side panels so that they are not exposed.

When the chassis cover is properly assembled, no tabs are visible. (See Figure A-10.)

Figure A-10 Cisco AS5350 Chassis



- Step 4** Secure the chassis cover with five screws.
- Step 5** Reinstall the chassis on a rack, desktop, or table.
- Step 6** Reinstall all interface cables.
- Step 7** Reconnect the AC power cord to the power supply. Power on the universal gateway. The internal power supply fan should power on.
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