APPENDIX A

Maintaining the Universal Access Server

This appendix contains information about maintenance procedures that you might need to perform on the access server as your internetworking needs change.

This appendix contains the following sections:

- Replacing Feature Cards
- Setting E1 Port Jumpers
- Installing 6-Port MICA Modules and Carrier Cards
- Replacing 12-Port Modules
- Opening the Chassis
- Replacing Boot ROMs
- Upgrading the DRAM SIMM
- Replacing System-Code SIMMs
- Closing the Chassis



Caution Before opening the chassis, ensure that you have discharged all static electricity from your body and be sure that the power is OFF. Before performing any procedures described in this appendix, review the section "Safety Recommendations" in the chapter "Preparing to Install the Universal Access Server."



Warning Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.



Warning The access server is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel. Incorrect connection of this or connected equipment to the General Purpose Outlet could result in a hazardous situation.

Replacing Feature Cards

This section describes how to replace features cards, which include:

- Dual T1/PRI cards
- Dual E1/PRI card
- Carrier cards

Required Tools and Equipment

You need the following tools and equipment:

- Medium-size flat-blade screwdriver (1/4 inch [0.625 cm])
- ESD-preventive mat

Safety Recommendations

Note the following safety recommendations:



Caution Unlike some other Cisco access servers, the feature cards are not hot-swappable (that is, you cannot remove or install them when the power to the access server is ON). Be sure to turn OFF the power to the access server before installing or removing feature cards. *Failure to do so can damage the access server*.



Warning Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is OFF and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.



Warning Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

Removing Feature Cards

Refer to Figure A-1 and take these steps:

- **Step 1** Attach an ESD-preventive wrist strap.
- **Step 2** Power OFF the access server.
- **Step 3** Remove all interface cables from the rear panel of the access server.
- **Step 4** Loosen the two captive screws that secure the feature card or blank slot cover to the chassis until each screw is free of the chassis.
- **Step 5** Hold each captive screw between two fingers, and pull the feature card toward you until it slides free of the chassis.
- **Step 6** Set the feature card aside on an ESD-preventive mat.

Figure A-1 Feature Card Replacement (Carrier Card Shown)



Installing Feature Cards

If you have a dual E1/PRI card, you might want to change the jumper settings before installing the feature card. Refer to the section, "Setting E1 Port Jumpers" for more information.

Refer to Figure A-1 and take these steps:

Step 1 Remove the feature card from the ESD-preventive shipping material.

Note The dual E1/PRI card may only be installed in AUSTEL-permitted customer equipment or a DTE that is exempted from AUSTEL's permit requirements. The customer equipment must only be housed in a cabinet that has screw-down lids to stop user access to overvoltages on the customer equipment. The customer equipment has circuitry that may contain hazardous telecommunications network voltages.

- **Step 2** Slide the feature card into the card slot until it is seated completely.
- **Step 3** Tighten the two captive screws on the feature card to secure it to the chassis.
- **Step 4** If the access server is configured with fewer than three cards, make sure that a blank slot cover is installed over each open slot to ensure proper airflow inside the chassis.

Setting E1 Port Jumpers

There are six 3-pin jumpers that configure the E1 termination for each port. The jumper settings are labeled on the printed circuit board for either 120-ohm balanced or 75-ohm unbalanced termination.

Take these steps:

Step 1 Place the dual T1/PRI card on an ESD-preventive mat as shown in Figure A-2.



Figure A-2 E1/PRI Card Jumpers

Step 2 Refer to Table A-1 and set the six jumpers to configure E1 Port 0 for 75-ohm unbalanced or 120-ohm balanced termination. The jumper numbers and jumper settings are labeled on the printed circuit board shown in Figure A-3.

Jumper Numbe r	75-Ohm Termination	120-Ohm Termination	Jumper Description
J9	75	120	Receiver impedance
J11	75	120	Ground ring for 75 ohm
J12	GND	120	Ground ring for 75 ohm, or ground shield for 120 ohm
J13	75	120	Transmit impedance
J14	75	120	Shield to connect to pin 7 for 120 ohm, or ground ring for 75 ohm
J17	75	120	Software readable bit

Table A-1 E1 Port 0 Jumper Settings



Figure A-3 E1 Port Jumpers

Step 3 Refer to Table A-2 and set the six jumpers to configure E1 Port 1 for 75-ohm unbalanced or 120-ohm balanced termination. (See Figure A-3).

Jumper			
Numbe r	75-Ohm Termination	120-Ohm Termination	Jumper Description
J3	75	120	Ground ring for 75 ohm
J4	GND	120	GND ring for 75 ohm
J5	75	120	Transmit impedance
J7	75	120	Shield connect to pin 7 for 120 ohm
J 8	75	120	Receiver impedance
J18	75	120	Software readable bit

Table A-2 E1 Port 1 Jumper Settings

Installing 6-Port MICA Modules and Carrier Cards

This section describes how to replace 6-port MICA modules and MICA carrier cards in Cisco AS5200. For details on configuring the modules, see the *Cisco AS5200 Universal Access Server Software Configuration Guide* publication.

Software Requirements

The MICA carrier card requires the following images:

- Cisco IOS Release 11.3(2)T or later
- Boot Flash image Release 11.2(11)P
- Modem code version 2.2.3.0 (56K)



Caution Before installing the card, make sure you have upgraded the Cisco IOS image and the boot Flash image, as described in section "Installing a New MICA Carrier Card" in the *Cisco AS5200 Universal Access Server Software Configuration Guide* publication .

MICA Carrier Card Indicators

The LEDs on the front panel of the MICA carrier card (Figure A-4) indicate the current operating condition of the 6-port MICA modules installed on the card. You can observe the LEDs, note any fault condition that the product is encountering, and then contact your system administrator or a customer service representative, if necessary. Refer to Table A-3Table A-2 for a description of the LEDs.

Figure A-4 MICA Carrier Card LEDs



Table A-3 MICA Carrier Card LEDs

LED	State	Description
Activity (ACT) ¹	Flickering	There is modem call activity on the MICA module cards.
	Off	There is no modem call activity on the MICA module cards.
Board OK (OK)	One flash	The carrier card is powering up.
	On	The carrier card has passed initial power-up diagnostics tests and is operating normally.
	Off	A fault condition occurred.

1. The individual 6-port modem modules do not include LEDs.

Installing a New MICA Carrier Card

Successful installation of the new MICA modem carrier card requires three steps:

- **Step 1 Upgrade the Cisco IOS Image.** Refer to the section "Installing a New MICA Carrier Card" in the publication *Cisco AS5200 Universal Access Server Software Configuration Guide.*
- **Step 2** Upgrade the Boot Flash Image. Refer to the section "Installing a New MICA Carrier Card" in the publication *Cisco AS5200 Universal Access Server Software Configuration Guide*.
- **Step 3** Install the MICA Module Carrier Card, described in the following section.
- **Step 4** Upgrade the modem code (optional). Refer to the appendix "Modem Management" in the publication *Cisco AS5200 Universal Access Server Software Configuration Guide.*

Install the MICA Module Carrier Card



Caution Before installing the card, make sure you have upgraded the Cisco IOS image and the boot Flash image, as described in section "Installing a New MICA Carrier Card" in the publication *Cisco AS5200 Universal Access Server Software Configuration Guide*.



Warning Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.



Warning Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages.



Warning Do not work on the system or connect or disconnect cables during periods of lightning activity.

For DC-powered units only, note the following warning:



Warning Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

To install a new MICA module carrier card (see Figure A-5), perform the following steps:

- **Step 1** Remove the carrier card from the ESD-preventive mat.
- **Step 2** Slide the carrier card into the slot until it touches the backplane connector.
- **Step 3** Align the captive screws with their holes, and then seat the carrier card completely.
- **Step 4** Tighten the two captive screws to secure the carrier card to the chassis.



Step 5 If the Cisco AS5200 is configured with fewer than three cards, make sure that a blank slot cover is installed over each open slot to ensure proper airflow inside the chassis.

Removing a MICA Carrier Card



Caution The MICA carrier cards are not hot-swappable (that is, you cannot remove or install them when the power to the access server is ON). Be sure to turn OFF the power to the access server before installing or removing carrier cards. *Failure to do so can damage the access server*.



Warning Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.



Warning Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages.



Warning Do not work on the system or connect or disconnect cables during periods of lightning activity.

For DC-powered units only, note the following warning:



Warning Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

To remove the MICA carrier card, perform the following steps:

- **Step 1** Attach an ESD-preventive wrist strap.
- **Step 2** Power OFF the Cisco AS5200.
- **Step 3** On the back of the Cisco AS5200, locate the MICA carrier card (see Figure A-5).

- **Step 4** Loosen the two captive screws that secure the carrier card to the chassis until each screw is free of the chassis (see Figure A-5).
- **Step 5** Hold the captive screws and gently pull the feature card free of the chassis. If the card is hard to remove, insert a flat-blade screwdriver vertically into the left and right sides of the board and gently pry the board loose (see Figure A-6). Then, hold the captive screws and gently pull out the carrier card.
- **Step 6** Set the removed carrier card aside on an ESD-preventive mat.

Caution The EMI protective devices on the carrier cards are designed to make the cards fit tightly. When removing the cards, they can release suddenly. Exercise caution when removing cards.





Removing a 6-Port MICA Module

To remove the 6-port MICA modules, perform the following steps:

- **Step 1** Make sure that you have attached an ESD-preventive wrist strap and that the system is powered OFF.
- **Step 2** On the carrier card, locate the 6-port MICA module you will replace (see Figure A-7).



- **Step 3** Orient the carrier card so that the MICA module socket faces away from you.
- **Step 4** Gently pry the edges of the 6-port MICA module away from the standoffs, as shown in Figure A-8.



Step 5 Push the two socket latches away from the MICA module, as shown in Figure A-9.



Figure A-9 Releasing the 6-Port MICA Module from the Socket Latch

Step 6 Remove the MICA module from its socket, as shown in Figure A-10.



Figure A-10 Removing the 6-Port MICA Module

Step 7 Place the MICA module into its original packaging.

Installing a 6-Port MICA Module

To install a 6-port MICA module:

- **Step 1** Insert the 6-port MICA module into the socket at a 45° angle.
- **Step 2** Seat the 6-port MICA module in the socket and press its edges onto the standoffs, as shown in Figure A-11.



Figure A-11 Installing the 6-Port MICA Module

Replacing 12-Port Modules

You can install 12-port modules in carrier or dual E1/PRI feature cards. Each carrier card includes two slots (shown in Figure A-12), in which you can install up to two modules. The dual E1/PRI card includes only one slot (shown in Figure A-13). You can install any combination of modules in carrier or dual E1/PRI feature cards without removing them from the chassis.



Caution Unlike some other Cisco access servers, the modules are not hot-swappable (that is, you cannot remove or install them when the power to the access server is ON). Be sure to turn OFF the power to the access server before installing or removing modules. *Failure to do so can damage the access server*.



Required Tools and Equipment

You need the following tools and equipment:

- Medium-size flat-blade screwdriver (1/4 in. [0.625 cm])
- ESD-preventive wrist strap

Removing a 12-Port Module

Refer to Figure A-14 and take these steps:

- **Step 1** Attach an ESD-preventive wrist strap.
- **Step 2** Power OFF the access server.
- **Step 3** Remove all interface cables from the rear panel of the access server.
- **Step 4** Loosen the two captive screws that secure the module or blank slot cover to the feature card until each screw is free of the feature card.

- **Step 5** Hold each captive screw between two fingers, and pull the module toward you until it slides free of the feature card.
- **Step 6** Set the module aside on as ESD-preventive mat.

Figure A-14 12-Port Module Replacement



Installing a 12-Port Module

Refer to Figure A-14 and take these steps:

- **Step 1** Remove the module from the ESD-preventive shipping material.
- **Step 2** Slide the module into the carrier card or dual E1/PRI card until it is seated completely.
- **Step 3** Tighten the two captive screws on the module to secure it to the carrier card or dual E1/PRI card.
- **Step 4** If the carrier card is configured with fewer than one card, make sure that a blank slot cover is installed over the open slot to ensure proper airflow inside the chassis.

Opening the Chassis

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

Required Tool

You need the following tool:

• Medium-size flat-blade screwdriver (1/4 inch [0.625 cm])

Safety Recommendations

Note the following safety recommendations:



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.



Warning Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is OFF and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.



Warning Before opening the chassis, disconnect the telephone-network cables to avoid contact with telephone-network voltages.

Removing the Chassis Cover

You must open the access server chassis to gain access to its interior components: boot read-only memory (ROM) software, dynamic random access memory (DRAM) SIMMs, and system-code SIMMs. When you replace the boot ROMs, you must also remove all feature cards in the chassis.

Take these steps:

- **Step 1** Power OFF the access server.
- **Step 2** Remove all interface cables from the rear panel of the access server.
- **Step 3** Place the access server so that the front panel is facing to you.
- **Step 4** Remove the three screws on the top cover of the chassis (see Figure A-15).

Figure A-15 Removing the Chassis Cover



Step 5 Place one hand on each of the front corners of the top cover.

Step 6 Lift the front edge of the top cover slightly upward, as shown in Figure A-16.





- **Step 7** Pull the top cover toward you until the metal tabs on the top cover separate from the chassis bottom, as shown in Figure A-17.
- **Step 8** Lift the top cover until it separates from the chassis bottom and set it aside.

Figure A-17 Separating the Top Cover from the Chassis Bottom



Replacing Boot ROMs

To upgrade the boot ROM software to a new software image, the existing boot ROMs must be replaced.

Required Tools and Equipment

You will need the following tools and equipment:

- ROM extraction tool or a small flat-blade screwdriver
- Two boot ROMs
- ESD-preventive wrist strap

Take these steps:

Step 1 Power OFF the access server.



Warning Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

- **Step 2** Attach an ESD-preventive wrist strap.
- **Step 3** Open the cover. (See the instructions in the section "Opening the Chassis" earlier in this appendix.)
- **Step 4** Remove all feature cards to access the system card. (See the instructions in the section "Removing Feature Cards" earlier in this appendix.)
- Step 5 Locate the boot ROMs, labeled FW1 and FW2, on the system card. (See Figure A-18.)





- **Step 6** Gently extract the old ROM with a ROM extraction tool or a small flat-blade screwdriver, and set the old boot ROM on a nonconductive surface.
- Step 7 Insert the new boot ROMs in their respective sockets as shown in Figure A-18. Be careful not to bend or crush any of the bottom pins. If necessary, use needlenose pliers to straighten out any bent pins.



Caution The notch in the ROM must align with the notch in the socket on the system card. If the ROM is installed backwards, it will be damaged when the access server is powered ON.

Upgrading the DRAM SIMM

This section describes how to upgrade the DRAM SIMM on the system card. You might need to upgrade the DRAM SIMM 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.

There are two areas of removable DRAM SIMMs in the access server (see Figure A-18). This first area is the main memory DRAM SIMMs (labeled MM). Main memory is used by the CPU to store the operating configuration, routing tables, caches, and queues.

The second area is the packet memory DRAM SIMM (labeled PKT). Packet memory is used to store incoming and outgoing packets.

Required Tools and Equipment

You need the following tools and equipment:

- ESD-preventive wrist strap
- The appropriate DRAM SIMM for your access server

Main Memory DRAM SIMM Installation

Take these steps:

Step 1 Power OFF the access server.



Warning Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

- **Step 2** Attach an ESD-preventive wrist strap.
- **Step 3** Open the chassis cover. (See the instructions in the section "Opening the Chassis" earlier in this appendix.)
- **Step 4** Place the chassis with the main memory DRAM SIMM socket (labeled MM) toward you, as shown in Figure A-18.
- **Step 5** Remove all feature cards to access the system card. (See the instructions in the section "Removing Feature Cards" earlier in this appendix.)
- **Step 6** Remove the existing DRAM SIMM by pulling outward on the connector holders to unlatch them, as shown in Figure A-19. The connector holds the SIMM tightly, so be careful not to break the holders on the SIMM connector.



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



Figure A-19 Removing and Replacing the CPU DRAM SIMM

- **Step 7** Hold the new SIMM so that the polarization notch is located at the right end of the SIMM. Still holding the SIMM in this position, flip it so its top edge points into the SIMM socket.
- **Step 8** Insert the new DRAM SIMM by sliding the end with the metal fingers into the SIMM connector socket at approximately a 45-degree angle to the system card. Gently rotate the SIMM toward you until the latch on either side snaps into place. Do not use excessive force because the connector might break.
- **Step 9** Replace the access server chassis cover. (See the instructions in the section "Closing the Chassis" later in this appendix.)
- **Step 10** Connect the access server to a console terminal.

Step 11 Power ON the access server. If error messages relating to memory are displayed, remove the DRAM SIMM and reinstall it, taking care to seat the SIMM firmly in its socket.



Warning After wiring the DC power supply, remove the tape from the circuit breaker switch handle and reinstate power by moving the handle of the circuit breaker to the ON position.

Replacing System-Code SIMMs

The system code (software) is stored in Flash memory SIMMs. The 80-pin Flash memory SIMMs must be purchased from Cisco Systems, Inc. For ordering information, refer to the section "Getting Help" in the appendix "Troubleshooting the Universal Access Server."

The system code for the access server resides on two 80-pin Flash memory SIMMs. Flash memory must be installed in both system-code SIMMs (labeled FSIM0 and FSIM1).

Required Tools and Equipment

You need the following tools and equipment:

- ESD-preventive wrist strap
- The appropriate system-code SIMM(s) for your access server

System-Code SIMM Replacement

Take these steps:

Step 1 Power OFF the access server.



Warning Before performing any of the following procedures, ensure that power is removed from the DC circuit. To ensure that all power is OFF, locate the circuit breaker on the panel board that services the DC circuit, switch the circuit breaker to the OFF position, and tape the switch handle of the circuit breaker in the OFF position.

- **Step 2** Attach an ESD-preventive wrist strap.
- **Step 3** Open the chassis cover. (See the previous procedure in the section "Opening the Chassis" earlier in this appendix.)
- **Step 4** Place the chassis so that the system card is shown in Figure A-18, with the system-code SIMMs toward you. The SIMM sockets are labeled FSIM0 and FSIM1. See Figure A-18.
- **Step 5** Remove the existing system-code SIMM by pulling outward on the connector holders to unlatch them. The connector holds the SIMM tightly, so be careful not to break the holders on the SIMM connector. See Figure A-20.



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

Step 6 Repeat these steps for all the system-code SIMMs that you need to replace.



Figure A-20 Removing and Replacing the System-Code 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 7 Insert the new SIMM by sliding the end with the metal fingers into the appropriate SIMM connector socket (labeled FSIM0 or FSIM1 in Figure A-18) at approximately a 45-degree angle to the system card. Gently rotate the SIMM toward you 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. (See Figure A-20.)

Step 8	Replace the access server chassis cover. (See the instructions in the following
	section, "Closing the Chassis.")

- **Step 9** Connect the access server to a console terminal.
- **Step 10** Power ON the access server. If any memory-related error messages appear, remove the system-code SIMM and reinstall it, taking care to seat the SIMM firmly in its socket.

Closing the Chassis

This section describes the procedure for closing the chassis.

Required Tool

You need the following tool:

• Medium-size flat-blade screwdriver (1/4 in. [0.625 cm])

Replacing the Cover

Take these steps:

- **Step 1** Place the chassis bottom so that the front panel is facing you.
- **Step 2** Hold the top cover over the chassis bottom, and align the chassis and top cover tabs at the top rear of the chassis, as shown in Figure A-21.
- **Step 3** Push the top cover toward the chassis rear panel, and ensure the following:
 - The top cover tabs fit under the chassis rear panel so that they are not exposed.
 - The chassis tabs on the top of the chassis rear panel fit under the top cover so that they are not exposed.





- **Step 4** Lower the front of the top cover to close the chassis, and ensure the following:
 - The top cover side tabs fit under the chassis side panels so that they are not exposed.
 - The chassis tabs fit under the top cover side panels so that they are not exposed.
- **Step 5** Secure the chassis cover with three screws.
- **Step 6** Reinstall the chassis on a rack, desktop, or table.
- **Step 7** Reinstall all interface cables.