I/O Card Installation Guide

D Class and R Class

HP 9000 Enterprise Servers

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Who Should Use this Guide

The procedures in this guide are intended to be performed by a person who is qualified in the installation and servicing of computer equipment, and is trained to recognize the hazards involved. Internal peripherals are installed in an area of the product where energy levels considered hazardous may be produced.

1 I/O Card Installation Guide

I/O Card Installation Overview

To install I/O cards, you must turn off system power, and disassemble the system to gain access to the cabinet interior. An overview of the procedure is given below:

A. Turn off power to the system.

B. Remove the front bezel.

C. Remove the side panel.

D. Remove the EMI cover.

E. Remove the I/O card retainer bracket.

F. Remove the I/O slot cover plate from bulkhead.

G. Set I/O card configuration.

H. Install HSC cards.

I. Install EISA cards.

J. Replace the I/O card retainer bracket.

K. Replace the EMI cover.

L. Replace the side panel.

M. Replace the front bezel.

N. Refer to I/O card-specific documents.

After completing all desired procedures, you should proceed to the **I/O Card Installation Verification** section later in this chapter for procedures to verify that I/O cards have been correctly installed.

Required Tools

- Small flat-bladed screwdriver
- Torx driver, #15
- Torx driver, #10
- Phillips screwdriver.

Safety Considerations

WARNING **The installation procedures in this guide require opening the system cabinet, which may expose you to high-energy (high-amperage) circuits, possible ejection of molten metal, and exposed sharp edges in equipment chassis. Be sure to remove all rings, watches, and other jewelry from fingers, wrists, and arms before opening the system cabinet.**

Electrostatic Discharge Precautions

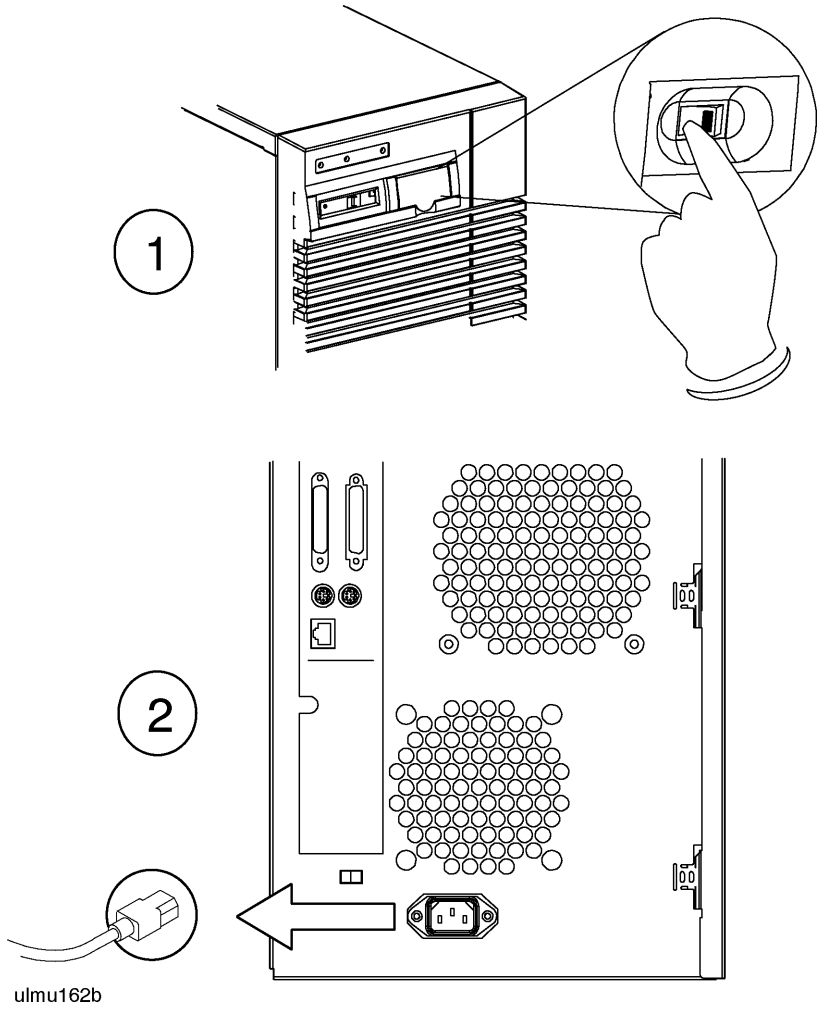
Electrostatic discharge can damage the integrated circuits on printed-circuit boards. To prevent such damage from occurring, be sure to observe the following precautions when handling and installing boards:

1. Use a grounding mat and an anti-static wrist strap, such as those included in the ESD Field Service Kit (HP P/N A3024-80004).
2. Wear the anti-static wrist strap to ensure that any accumulated electrostatic charge is discharged from you body to ground.
3. Keep uninstalled printed-circuit boards in their protective anti-static bags until you are ready to install them.
4. Handle printed-circuit boards by their edges after you have removed them from their protective anti-static bags.

I/O Card Installation Procedure

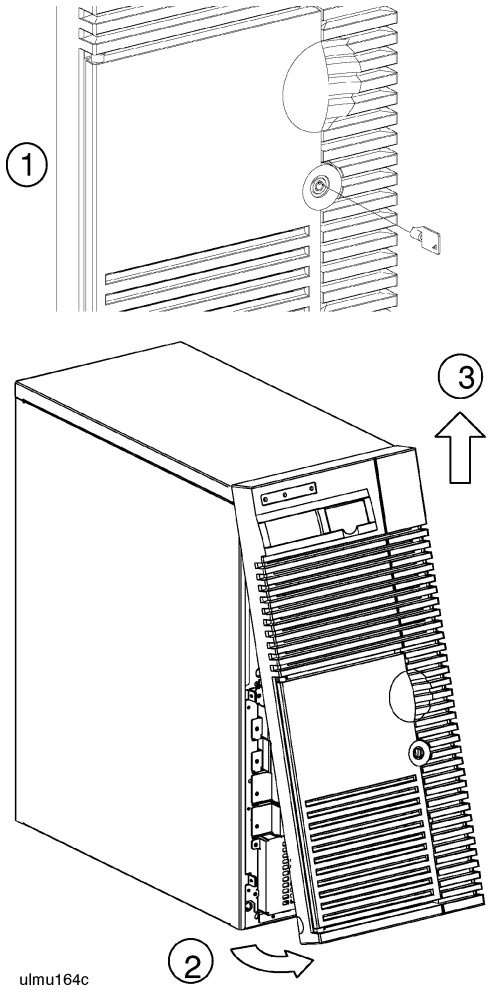
A. Turn Off Power to the System

1. Set the computer front panel Power switch to the OFF position.
2. After the system has properly completed shutdown and internal DC power has turned off, disconnect the power cord from the server cabinet.



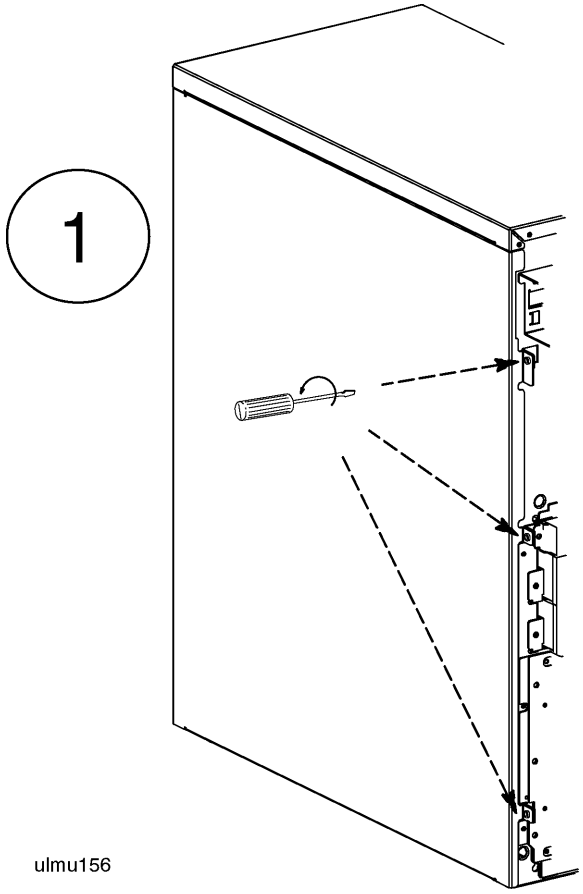
B. Remove the Front Bezel

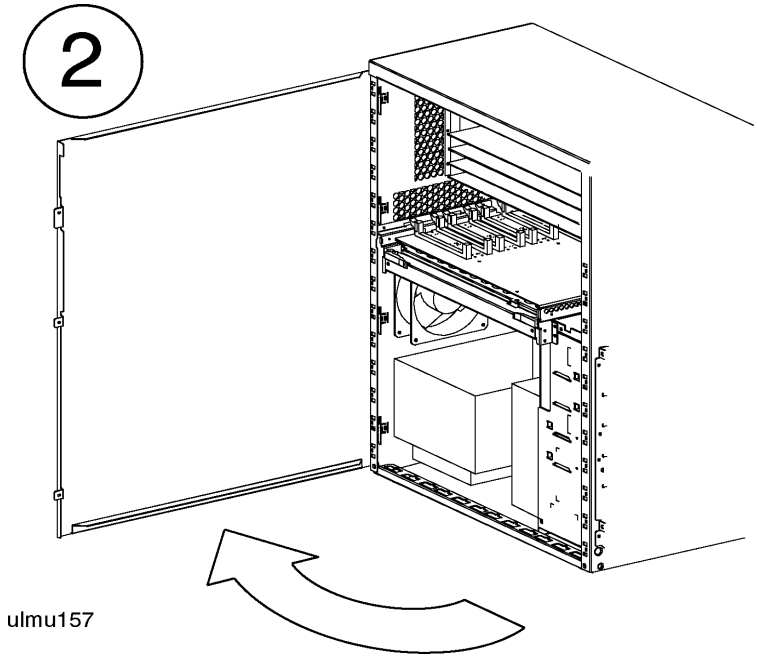
1. Unlock the front peripheral door using the key that was shipped with your server.
2. Grab the bottom sides of the front bezel, and pull the bottom of the bezel slightly out from the cabinet.
3. Carefully push the bezel up so that the top of the bezel comes loose from the top of the cabinet, then pull the bezel away from the cabinet.



C. Remove the Side Panel

1. Loosen three captive side panel screws with a #15 Torx driver.
2. Grasp the front edge of the side panel and swing it away from the system cabinet.
3. Remove the panel by lifting it up so that its four hinge tabs come out of the slots at the rear of the cabinet
4. Carefully set the panel aside.





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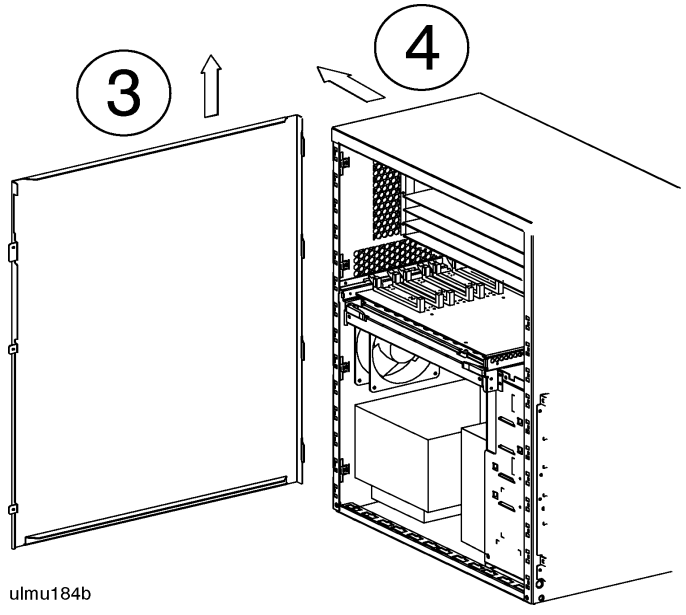

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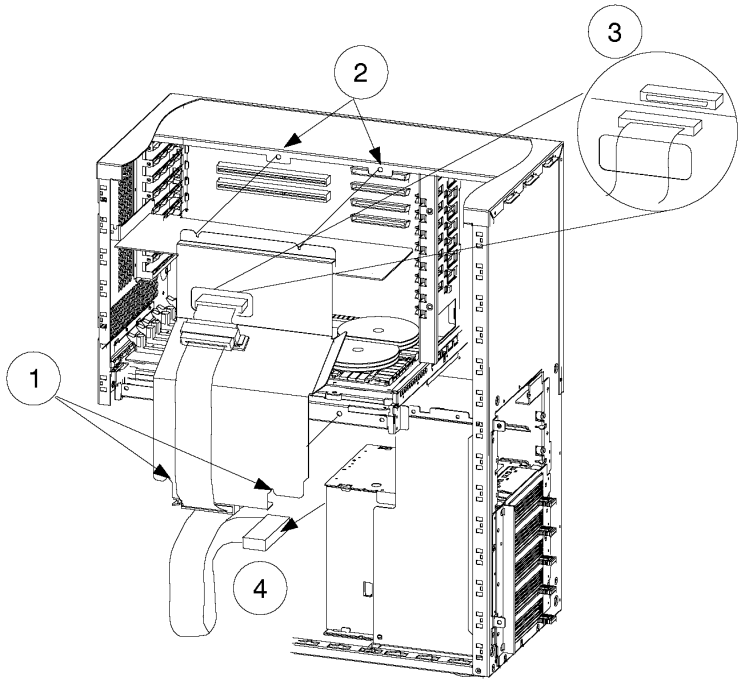
D. Remove the EMI Cover

D Class servers that have the Hot-Swap Module installed will have an EMI cover installed over the processor/memory card. To remove the EMI cover:

1. Loosen the two notches at the bottom of the EMI cover from the tabs on the processor/memory card by pushing up and slightly flexing the EMI cover until the notches come loose.
2. Pull the EMI cover down slightly until the two notches at the top of the cover come loose from the tabs at the top of the server cabinet.
3. Loosen and remove the SCSI ribbon cable from the Fast/Wide SCSI card.
4. Remove the other end of the SCSI ribbon cable from the connector on the hot-swap backplane, and set the EMI cover and ribbon cable aside.



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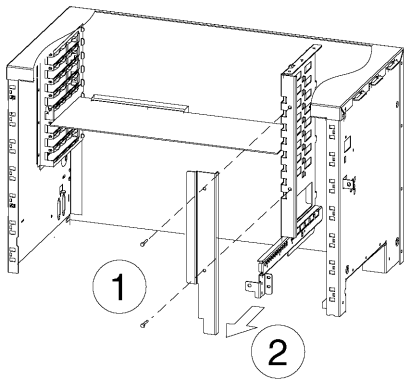
E. Remove the I/O Card Retainer Bracket

1. Loosen and remove two (2) screws that secure the I/O card retainer bracket to the I/O card guide.

2. Pull the retainer bracket out of the server.



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F. Remove the I/O Slot Cover Plate

1. Loosen and remove the single screw that secures the I/O slot cover plate to the bulkhead.
2. Remove the I/O slot cover plate.

G. Set I/O Card Configuration

Set the configuration for your I/O card, such as jumper and switch settings, according to the instructions provided with your I/O card.

CAUTION

Some I/O configurations can compete for bus usage with the 802.3 LAN port integrated on the system /core I/O board of the D Class servers. This results in possible performance degradation due to an increase in Cyclic Redundancy Check events and LAN retries.

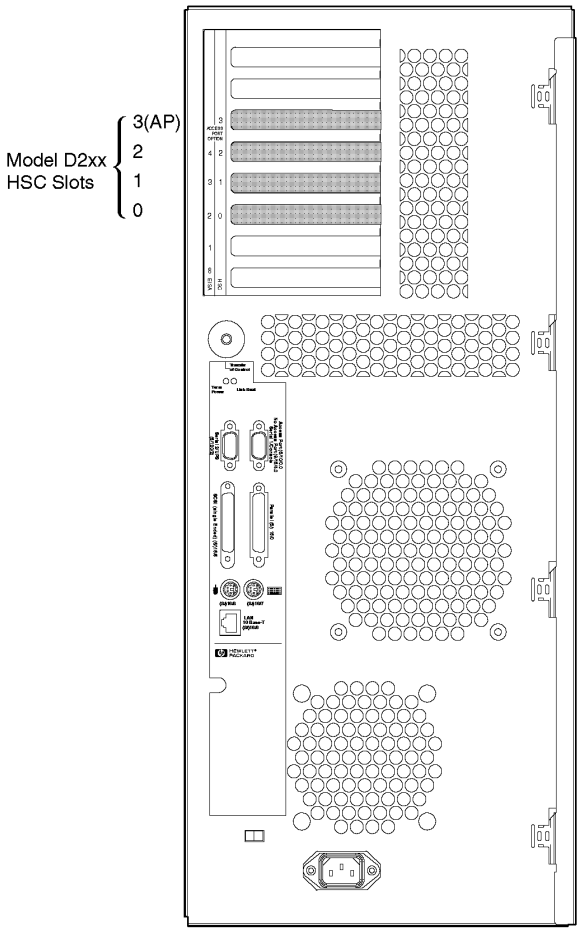
It is recommended that customers use an 802.3 LAN I/O card as the primary LAN interface on Dx70 and Dx80 models with sustained high I/O activity.

H. Install HSC Cards

To install HSC cards, refer to the following HSC path information. Be sure to select the slot appropriate for the model (D2xx or D3xx) of your computer.

Model D2xx HSC Cards

The figure below shows the cabinet rear view of the HSC slots for the Model D2xx servers. The slot labeled **3 (AP)** in the figure is the slot for the optional Remote Management card (also called the Access Port or AP card).



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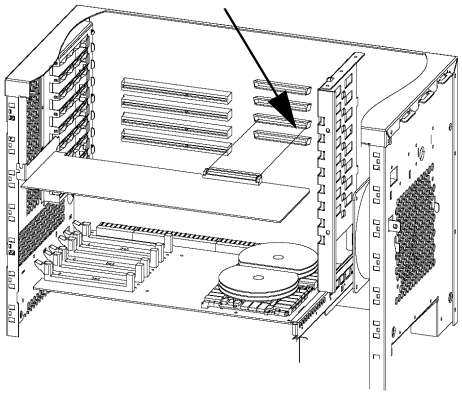
In the example shown in the diagram below, an HSC card is being inserted in HSC slot 1, path 4 (for Model D200 or D210), or HSC slot 1, path 8/4 (for all other D2xx models).

D2xx HSC Path Information

Model Number	HSC Paths
D200 or D210	<4 x slot #>
All other D2xx models	8/<4 x slot #>

Specific HSC Slot Paths for Model D2xx Servers

D200/D210 HSC Paths	All other D2x0 HSC Paths
HSC slot 3, path 12	HSC slot 3, path 8/12 (Slot for Remote Management card)
HSC slot 2, path 8	HSC slot 2, path 8/8
HSC slot 1, path 4	HSC slot 1, path 8/4
HSC slot 0, path 0	HSC slot 0, path 8/0



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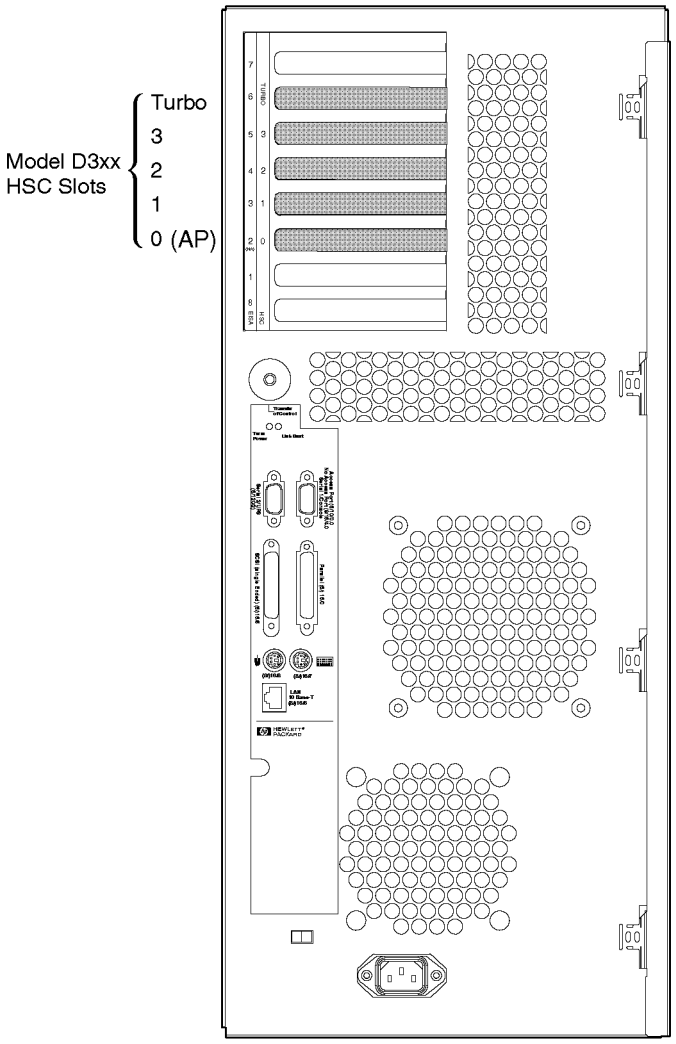
Model D3xx HSC Cards

The figure below shows the cabinet rear view of the HSC slots for the Model D3xx servers. The slot labeled 0 (AP) in the figure is the slot for the Remote Management card (also called the Access Port or AP card).



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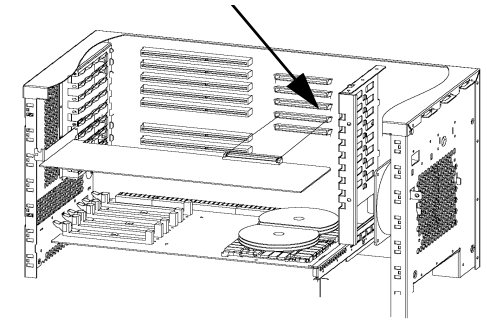
In the example shown in the diagram below, an HSC card is being inserted in HSC 0, slot 1, path 4 (for model D310), or HSC 0, slot 1, path 8/4 (for all other D3xx models).

D3xx HSC Path Information

Model Number	HSC 0 Path	HSC 1 Path
Model D310	<4 x slot #>	n/a
All other D3xx Models	8/<4 x slot #>	10/12

Specific HSC Slot Paths for Model D3xx Servers

D310 HSC Paths	All Other D3x0 HSC Paths
(HSC 1 slot not available with model D310)	HSC 1, slot 3, path 10/12 (Turbo slot)
HSC 0, slot 3, path 12	HSC 0, slot 3, path 8/12
HSC 0, slot 2, path 8	HSC 0, slot 2, path 8/8
HSC 0, slot 1, path 4	HSC 0, slot 1, path 8/4
HSC 0, slot 0, path 0	HSC 0, slot 0, path 8/0 (Slot for Remote Management card)

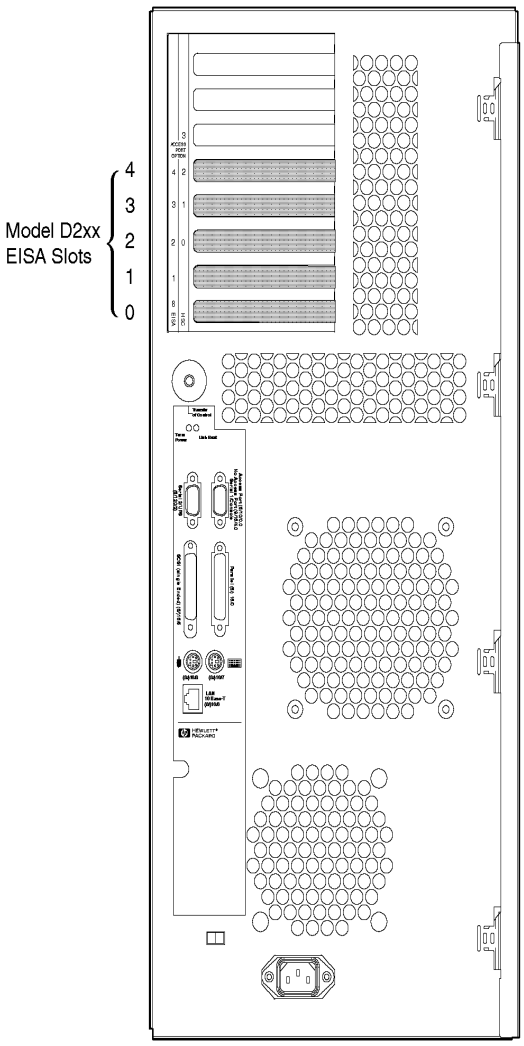


I. Install EISA Cards

To install EISA cards, refer to the following EISA path information. Be sure to select the slot appropriate for the model (D2xx or D3xx) of your computer.

Model D2xx EISA Cards

The figure below shows the cabinet rear view of the EISA slots for the Model D2xx servers.



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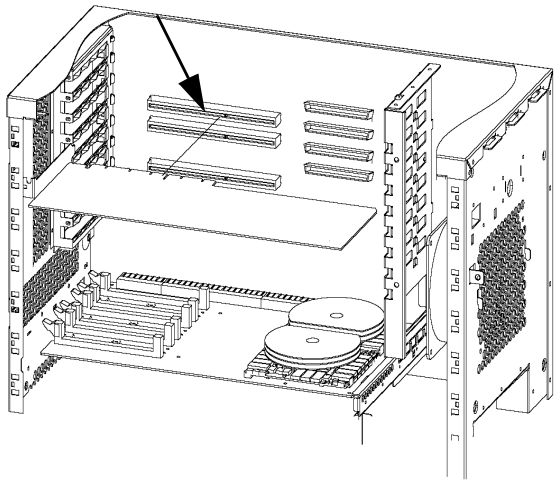
In the example shown in the diagram below, an EISA card is being inserted in EISA slot 4, path 20/5/4 (for model D200 or D210), or EISA slot 4, path 8/20/5/4 (for all other D2xx models).

D2xx EISA Path Information

Model Number	EISA Paths
D200 or D210	20/5/<slot #>
All other D2xx models	8/20/5/<slot #>

Specific EISA Slot Paths for Model D2xx Servers

D200 or D210 EISA Paths	All other D2x0 EISA Paths
EISA slot 4, path 20/5/4	EISA slot 4, path 8/20/5/4
EISA slot 3, path 20/5/3	EISA slot 3, path 8/20/5/3
EISA slot 2, path 20/5/2	EISA slot 2, path 8/20/5/2
EISA slot 1, path 20/5/1	EISA slot 1, path 8/20/5/1



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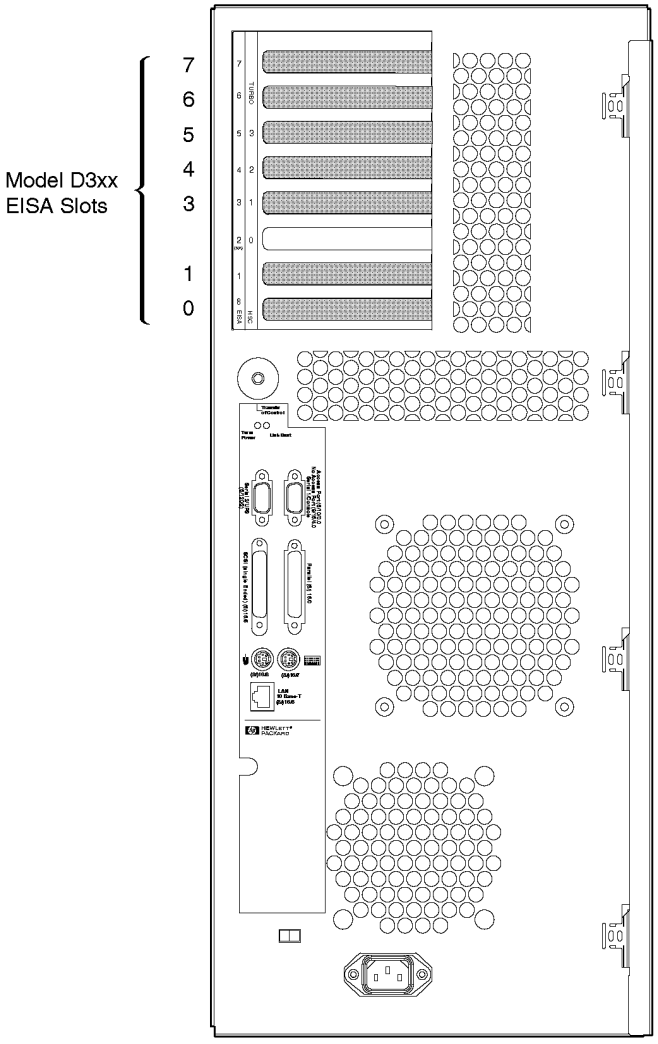
Model D3xx EISA Cards

The figure below shows the cabinet rear view of the EISA slots for the Model D3xx servers.



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In the example shown in the diagram below, an EISA card is being inserted in EISA slot 4, path 20/5/4 (for Model D310), or EISA slot 4, path 8/20/5/4 (for all other D3xx Models).

D3xx EISA Path Information

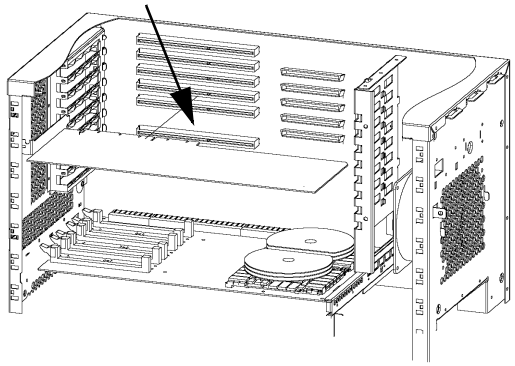
Model Number	EISA Paths
D310	20/5/<slot #>
All other D3xx models	8/20/5/<slot #>

Specific EISA Slot Paths for Model D3xx Servers

D310 EISA Paths	All other D3x0 EISA Paths
EISA slot 7, path 20/5/7	EISA slot 7, path 8/20/5/7
EISA slot 6, path 20/5/6	EISA slot 6, path 8/20/5/6
EISA slot 5, path 20/5/5	EISA slot 5, path 8/20/5/5
EISA slot 4, path 20/5/4	EISA slot 4, path 8/20/5/4
EISA slot 3, path 20/5/3	EISA slot 3, path 8/20/5/3
(not used)	(not used)
EISA slot 1, path 20/5/1	EISA slot 1, path 8/20/5/1
EISA slot 8, path 20/5/8	EISA slot 8, path 8/20/5/8

J. Replace the I/O Card Retainer Bracket

1. On all cards you have installed, insert and tighten the slot retaining screw (one per card) to secure each card to the rear panel of the cabinet.
2. Place the I/O card retainer bracket onto the I/O card guide.



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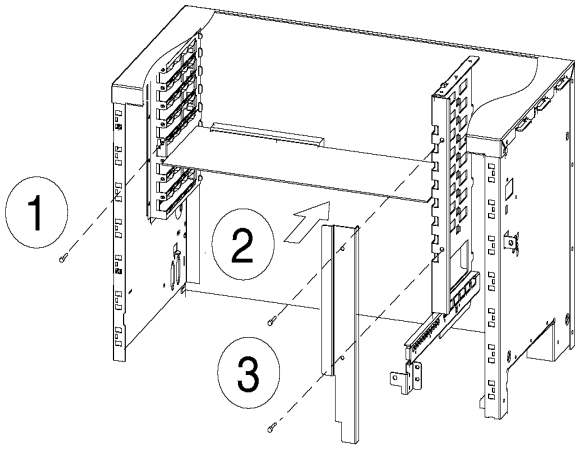
3. Insert and tighten two (2) screws to secure the retainer bracket.



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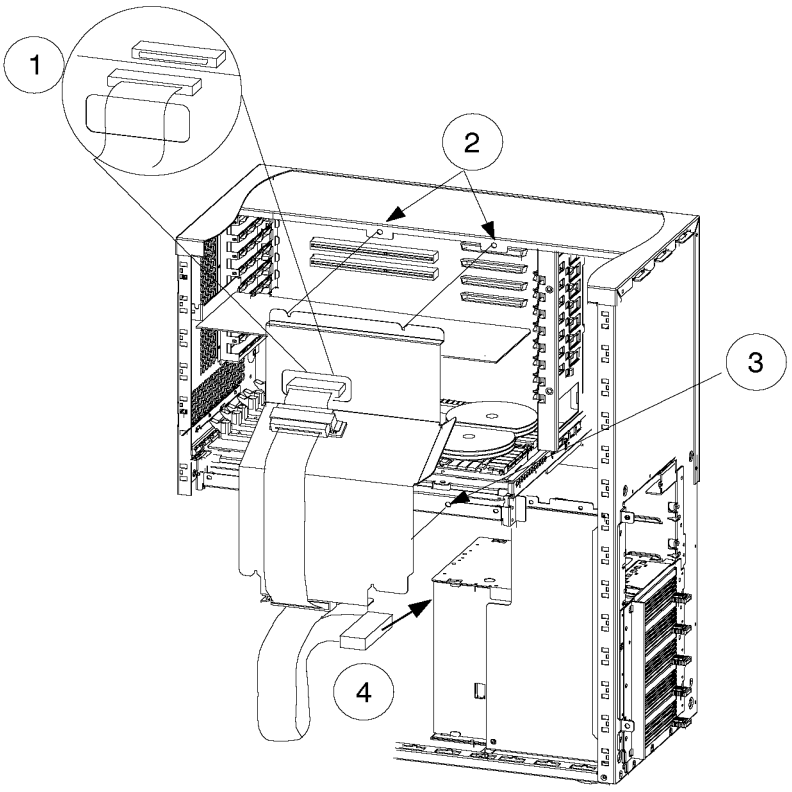
K. Replace the EMI Cover

If your server came with an EMI cover installed, and you removed it in step E, you must reinstall it. To reinstall the EMI cover:

1. Place the EMI cover and SCSI ribbon cable close enough to the upper cabinet to connect the upper end of the ribbon cable to the connector on the Fast/Wide SCSI card.
2. Insert the two upper notches of the EMI cover onto the tabs at the top of the server cabinet.
3. Flex the EMI cover slightly to insert the two notches at the bottom of the EMI cover onto the tabs of the processor/memory card.
4. Connect the lower end of the SCSI ribbon cable on the EMI cover to the backplane connector on the Hot-Swap Module.



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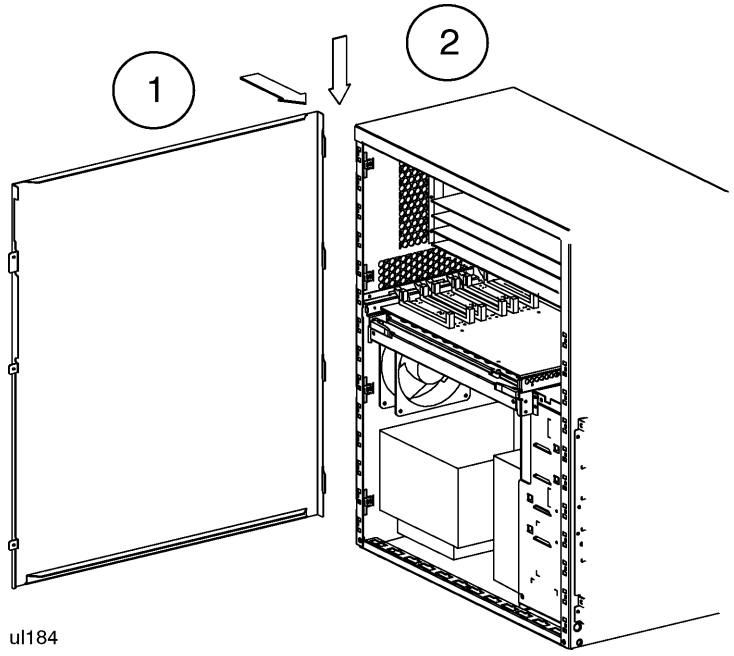
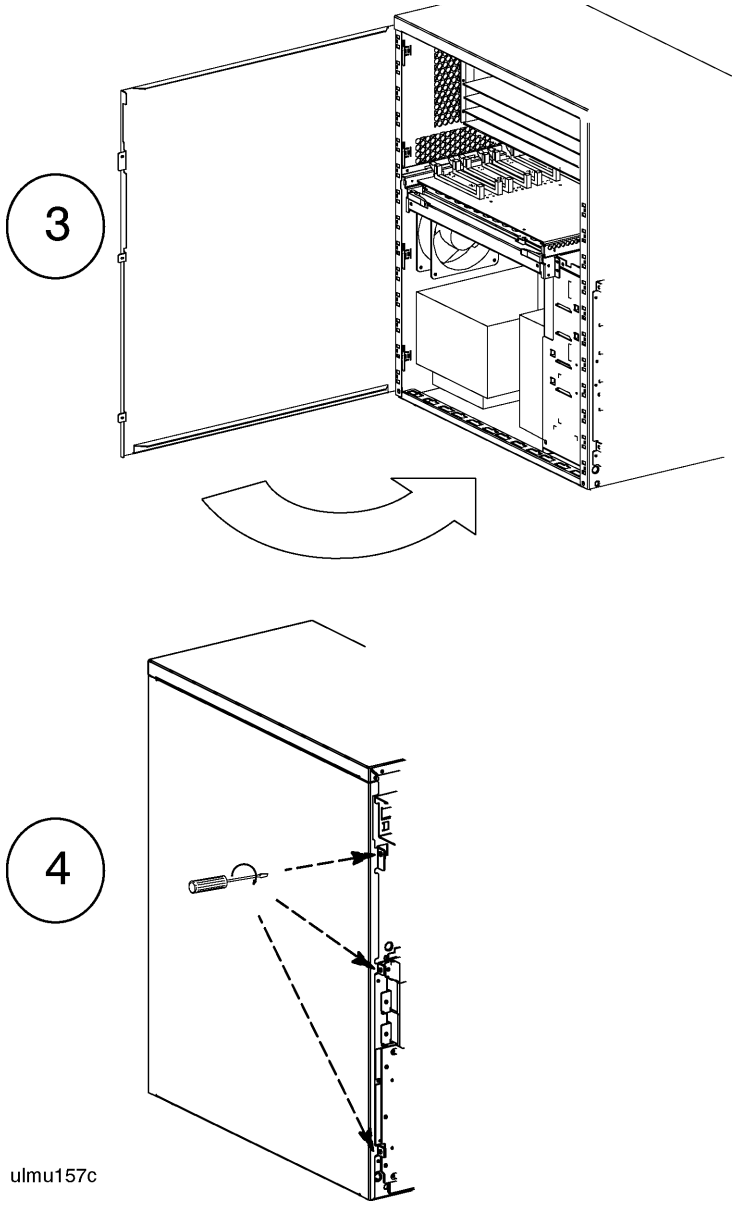
L. Replace the Side Panel

1. Position the hinge tabs of the side panel so that they go into the four slots at the rear of the system cabinet.
2. Lower the side panel until the hinge tabs are firmly resting in the slots.
3. Close the side panel.
4. Align and tighten the three (3) captive screws of the side panel into the holes at the front of the system cabinet.




3
4
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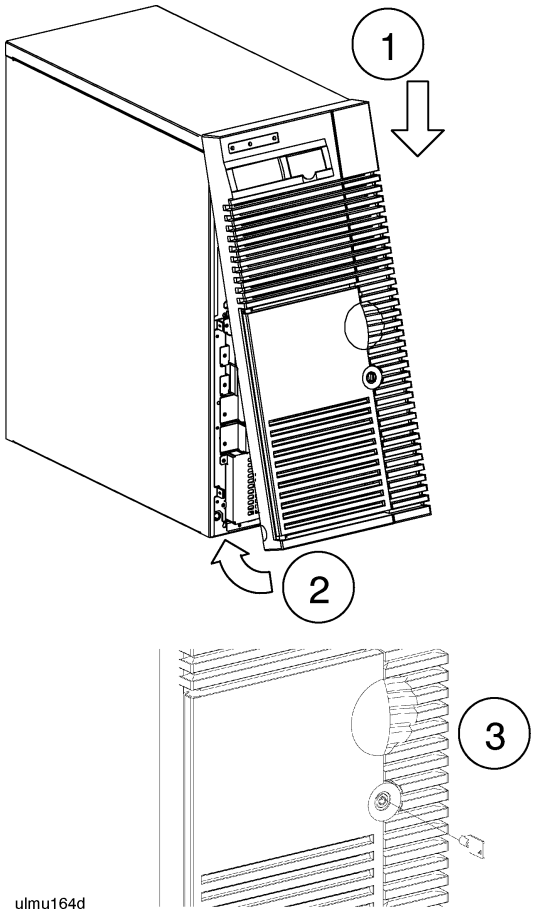
M. Replace the Front Bezel

1. Place the top of the bezel down onto the top front of the system cabinet, and press the top of the bezel down until it clicks into place.
2. Push the bottom of the bezel into the bottom of the system cabinet front until it clicks into place.
3. Lock the peripheral door.



M. Refer to I/O Card-specific documents

Refer to the documentation accompanying the I/O card for information regarding external connections.

This completes the I/O card installation procedure. Proceed to the **I/O Card Installation Verification** procedure starting on the next page.

I/O Card Installation Verification

Overview

The following list is a summary of the verification process. Refer to the **I/O Card Installation Verification Procedure** below for detailed instructions.

A. Connect power cord.

B. Turn on power to the system.

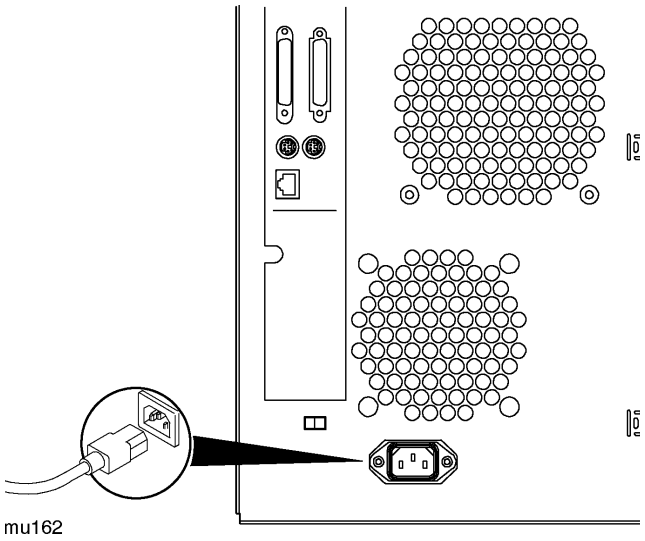
C. Observe console display for self-test error messages.

D. Halt boot process to get the Boot Console prompt.

E. Confirm I/O card installation by typing “in io” at the Boot Console Handler.

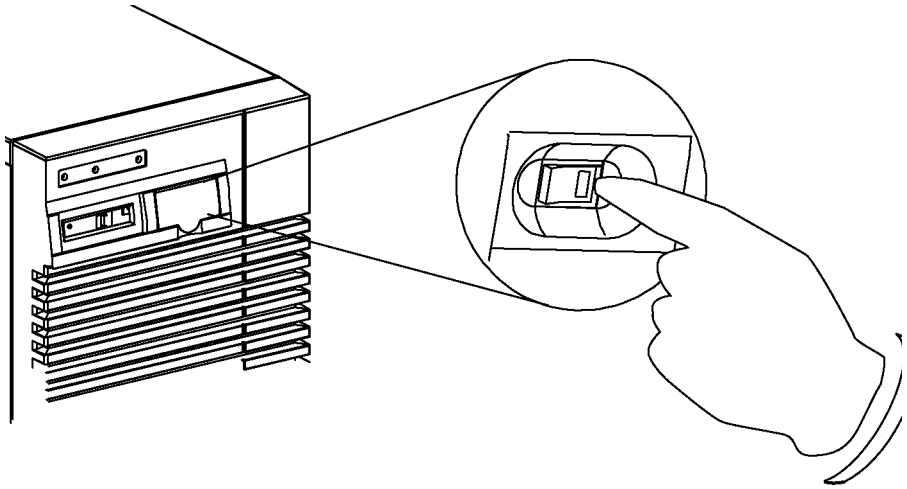
I/O Card Installation Verification Procedure

A. Connect the Power Cord



B. Turn On Power to the System

Set the front panel Power switch to the ON position.



C. Observe Console Display

During the power-on cycle, the system will perform selftests. These selftests may generate messages that will appear on the console screen if a problem is detected.

D. Halt the Boot Process

If Autoboot is set to ON, you will have to interrupt the boot process to get to the Boot Console Handler, where you will have access to the commands for verifying the I/O card installation.

When prompted by the following message, halt the boot process by hitting any key on the keyboard

```
Processor is booting from first available device.

To discontinue, press any key within 10 seconds.

Boot terminated.

------- Main Menu -------------------------------------------------------------

        Command                          Description
        -------                          -----------
        BOot [PRI|ALT|<path>]            Boot from specified path
        PAth [PRI|ALT|CON|KEY] [<path>] Display or modify a path
        SEArch [DIsplay|IPL] [<path>]    Search for boot devices
        TOC                              Soft boot the system


        COnfiguration [<command>]        Access Configurationmenu/commands
        INformation [<command>]          Access Information menu/commands
        SERvice [<command>]              Access Service menu/commands

        DIsplay                          Redisplay the current menu
        HElp [<menu>|<command>]          Display help for menu or command
        RESET                            Restart the system

-------
Main Menu: Enter command >
```

E. Confirm I/O Card Installation

1. At the Main menu of the Boot Console Handler, type “in io” to display I/O card information.
2. Confirm that the I/O cards listed in the I/O information display includes the card or cards you have just installed.

```
-------
Main Menu: Enter command > in io

I/O MODULE INFORMATION
                                                                    IODC   IODC
Path (dec)   Type                Bus Slot Mod HVERSION  SVERSION  Vers   Dep
----         ----                --- ---- --- -------- ---------- ------ ----
8            I/O Adapter          0   2   0   0x5807  0x00000b50 0x00   0x00
8/16         Bus Adapter          1   4   0   0x02f0  0x00008100 0x00   0x00
8/16/4       Built-in RS232      16   1   0   0x02f0  0x00008c00 0x00   0x00
8/16/5       Built-in SE SCSI    16   1   1   0x02f0  0x00008280 0x00   0x00
8/16/6       Built-in LAN        16   1   2   0x02f0  0x00008a00 0x02   0x00
8/16/0       Built-in Parallel   16   0   0   0x02f0  0x00007400 0x00   0x00
8/16/7       Built-in Keyboard   16   1   3   0x02f0  0x00008400 0x00   0x00
8/16/8       Built-in Mouse      16   2   0   0x02f0  0x00008400 0x00   0x00
8/20         Bus Adapter          1   5   0   0x0310  0x00008e00 0x00   0x00
8/20/5       Bus Adapter         20   1   1   0x0310  0x00009000 0x00   0x00
8/20/2       RS232 Port          20   0   2   0x0310  0x00008c00 0x00   0x00
10           I/O Adapter          0   2   2   0x5807  0x00000b50 0x00   0x00


<Press any key to continue (q to quit)>
```

Press any key on the keyboard to view the list of EISA cards installed. A list similar to the example shown below is displayed:

```
<Press any key to continue (q to quit)>

Hot Swap module is not present.

EISA Cards

Path        Type                            EISA ID
----        ----                            -------
8/20/5/1    Single-Ended SCSI card          HWP0C80
8/20/5/4    Low-cost PSI card               HWP19A0
8/20/5/5    SS8-E 8 port mux card           HWP1510
8/20/5/7    Smart 16/4 Ringnode card        MDG0002
8/20/5/8    PSI card                        HWP1870


Information Menu: Enter command >
```

Troubleshooting If you are not able to verify the correct installation of I/O cards, refer to the *HP 9000 D Class Operator's Guide* for troubleshooting information.

2 R Class I/O Card Installation

I/O Card Installation Overview

To install I/O cards, you must turn off system power, and disassemble the system to gain access to the cabinet interior. An overview of the procedure is given below:

A. Shut down the operating system.

B. Turn off power to the system.

C. Remove the front bezel.

D. Remove the top panels.

E. Remove the EMI cover.

F. Remove the I/O card retainer bracket.

G. Remove the I/O slot cover plate from bulkhead.

H. Set I/O card configuration.

I. Install HSC cards.

J. Install EISA cards.

K. Replace the I/O card retainer bracket.

L. Replace the EMI cover.

M. Replace the top panels.

N. Replace the front bezel.

O. Refer to I/O card-specific documents.

After completing all desired procedures, you should proceed to the **I/O Card Installation Verification** section later in this chapter for procedures to verify that I/O cards have been correctly installed.

Required Tools

- Small flat-bladed screwdriver
- Torx driver, #15
- Torx driver, #10
- Phillips screwdriver.

Safety Considerations

WARNING **Turn off the system power and disconnect the power cable before opening the system cabinet. Otherwise, personal injury may occur.**

Electrostatic Discharge Precautions

Electrostatic discharge can damage the integrated circuits on printed-circuit boards. To prevent such damage from occurring, be sure to observe the following precautions when handling and installing boards:

1. Use a grounding mat and an anti-static wrist strap, such as those included in the ESD Field Service Kit (HP P/N A3024-80004).
2. Wear the anti-static wrist strap to ensure that any accumulated electrostatic charge is discharged from you body to ground.
3. Keep uninstalled printed-circuit boards in their protective anti-static bags until you are ready to install them.
4. Handle printed-circuit boards by their edges after you have removed them from their protective anti-static bags.

I/O Card Installation Procedure

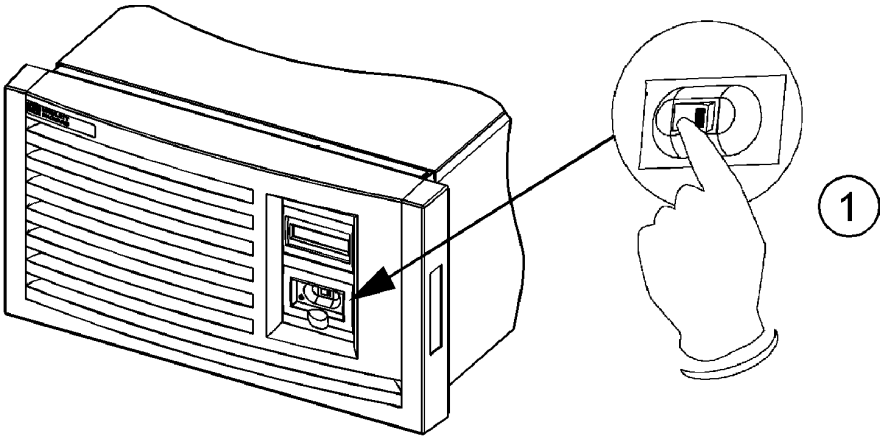
A. Shut Down the Operating System

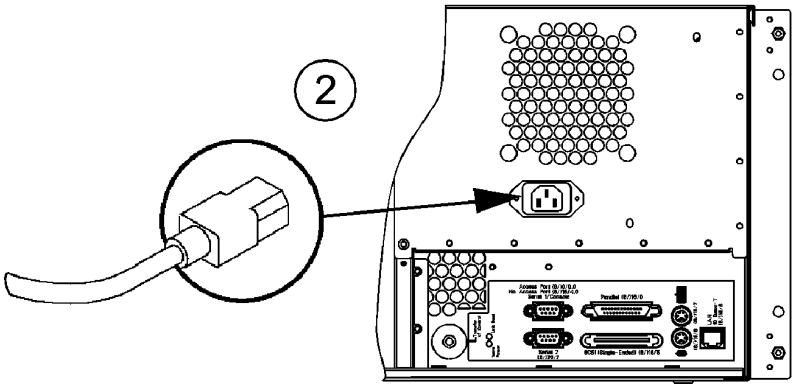
Before going to the next step of the upgrade procedure, shut down the operating system by entering:

```
shutdown -h
```

B. Turn Off Power to the System

1. Set the Power switch on the server front panel to the OFF position.
2. Disconnect the AC power cord from the system cabinet.

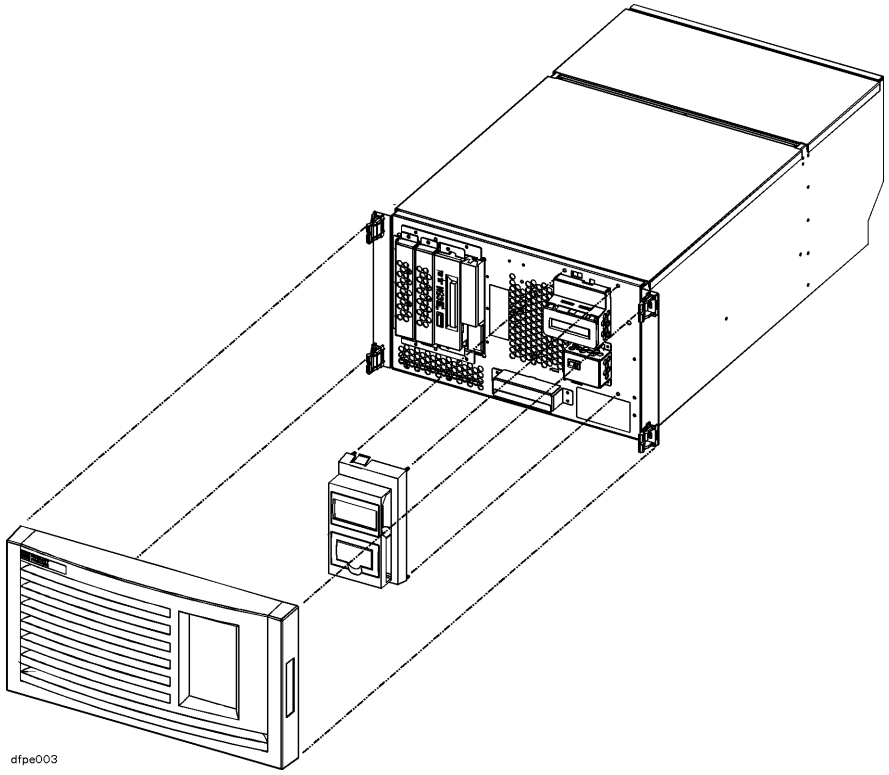




dfmu004

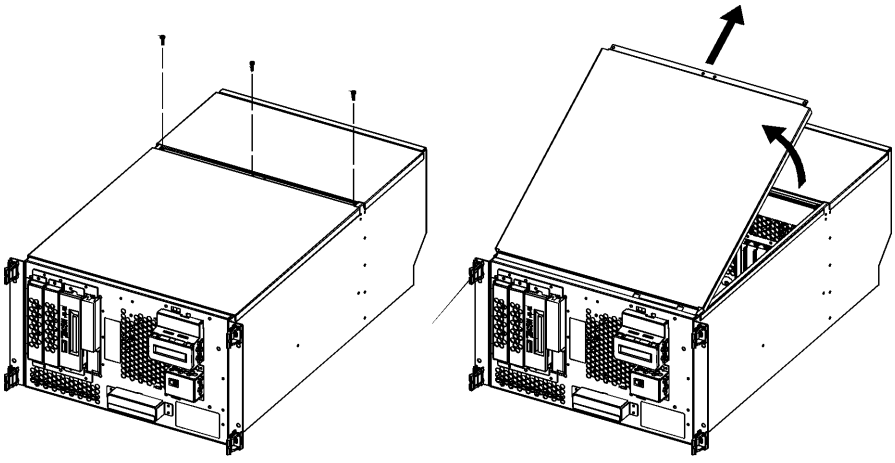
C. Remove the Front Bezel

1. Grab the bottom sides of the front bezel, and pull the bottom of the bezel slightly out from the cabinet.
2. Carefully push the bezel up so that the top of the bezel comes loose from the top of the cabinet, then pull the bezel away from the cabinet.



D. Remove the Top Cover

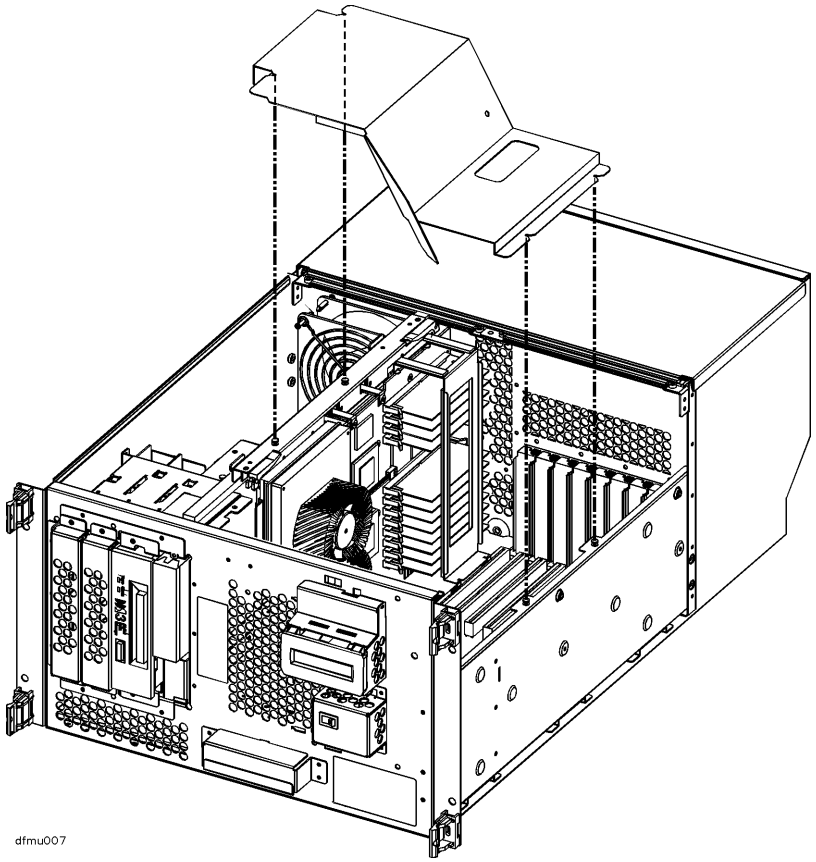
1. Remove the three screws holding the top sheet metal cover in place.
2. Grasp the sides of the top front panel and lift it up and toward the rear.
3. Pull the top rear panel toward the front of the server, then lift it up and out.



dfmu006

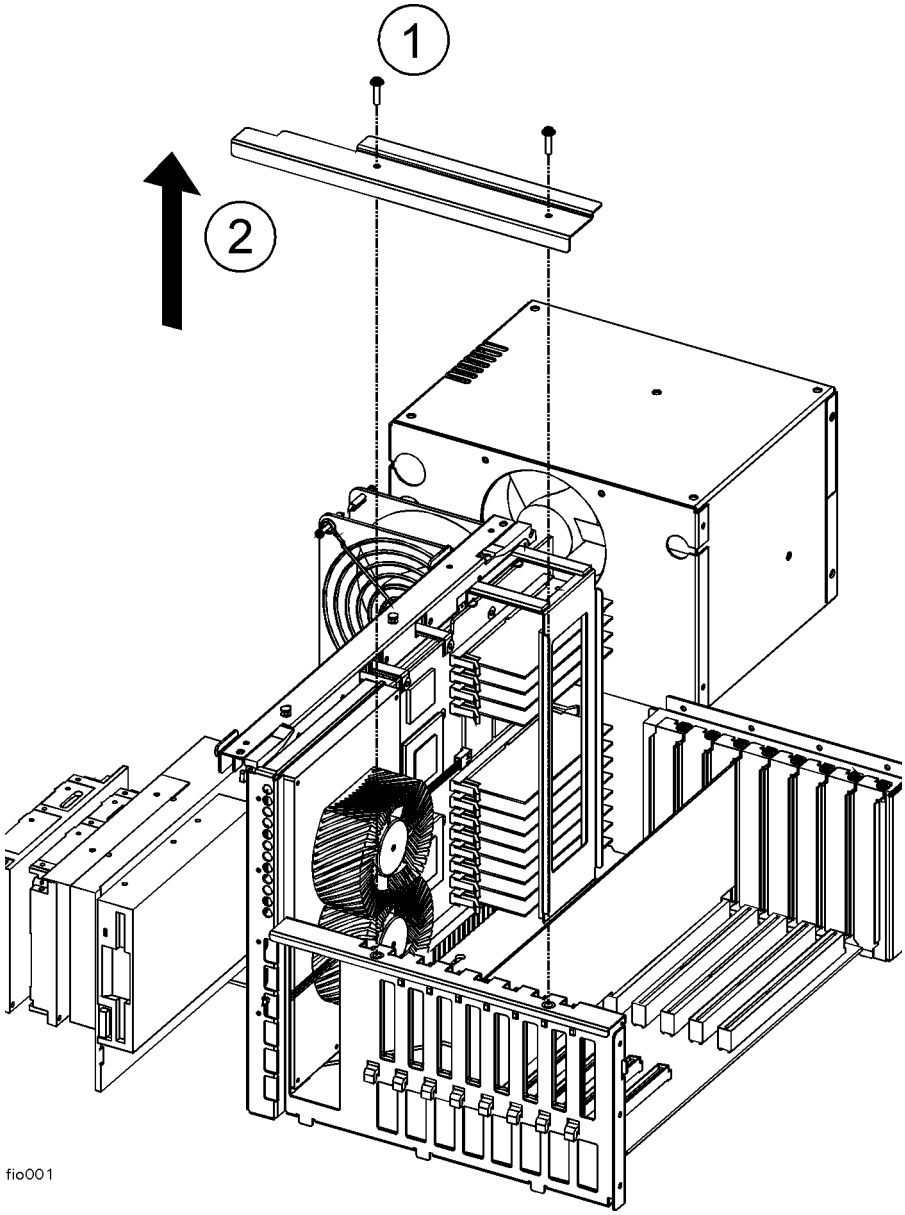
E. Remove the EMI Cover

1. Loosen the two notches at the top of the EMI cover from the tabs on the Processor/Memory card by pulling back and slightly flexing the EMI cover until the notches come loose.
2. Pull the EMI cover up slightly until the two notches at the bottom of the cover come loose from the tabs at the side server chassis.



F. Remove the I/O Card Retainer Bracket

1. Loosen and remove two screws that secure the I/O card retainer bracket to the I/O card guide.
2. Pull the retainer bracket out of the server.



fio001

G. Remove the I/O Slot Cover Plate

1. Loosen and remove the single screw that secures the I/O slot cover plate to the bulkhead.
2. Remove the I/O slot cover plate.

H. Set I/O Card Configuration

Set the configuration for your I/O card, such as jumper and switch settings, according to the instructions provided with your I/O card.

CAUTION

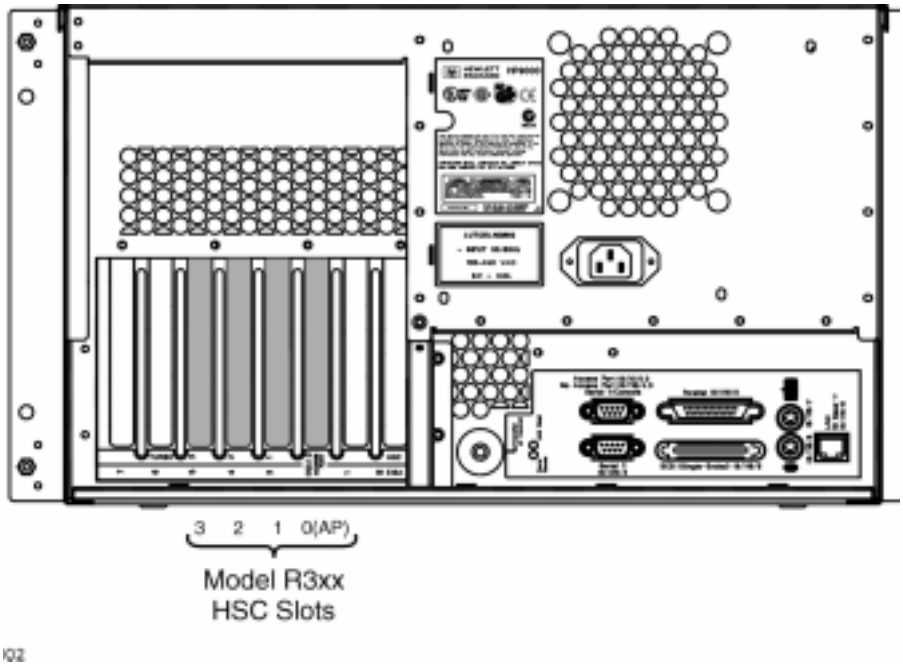
Some I/O configurations can compete for bus usage with the 802.3 LAN port integrated on the system /core I/O board of the R Class servers. This results in possible performance degradation due to an increase in Cyclic Redundancy Check events and LAN retries.

It is recommended that customers use an 802.3 LAN I/O card as the primary LAN interface on R3xx models with sustained high I/O activity.

I. Install HSC Cards

To install HSC cards, refer to the following HSC path information.

The figure below shows the cabinet rear view of the HSC slots for the R Class servers. The slot labeled 0 (AP) in the figure is the slot for the Remote Management card (also called the Access Port or AP card).



R3xx HSC Path Information

HSC 0 Path	HSC 1 Path
<4 x slot #>	n/a
8/<4 x slot #>	10/12

Specific HSC Slot Paths for Model R3xx Servers

HSC 1, slot 3, path 10/12 (Turbo slot)

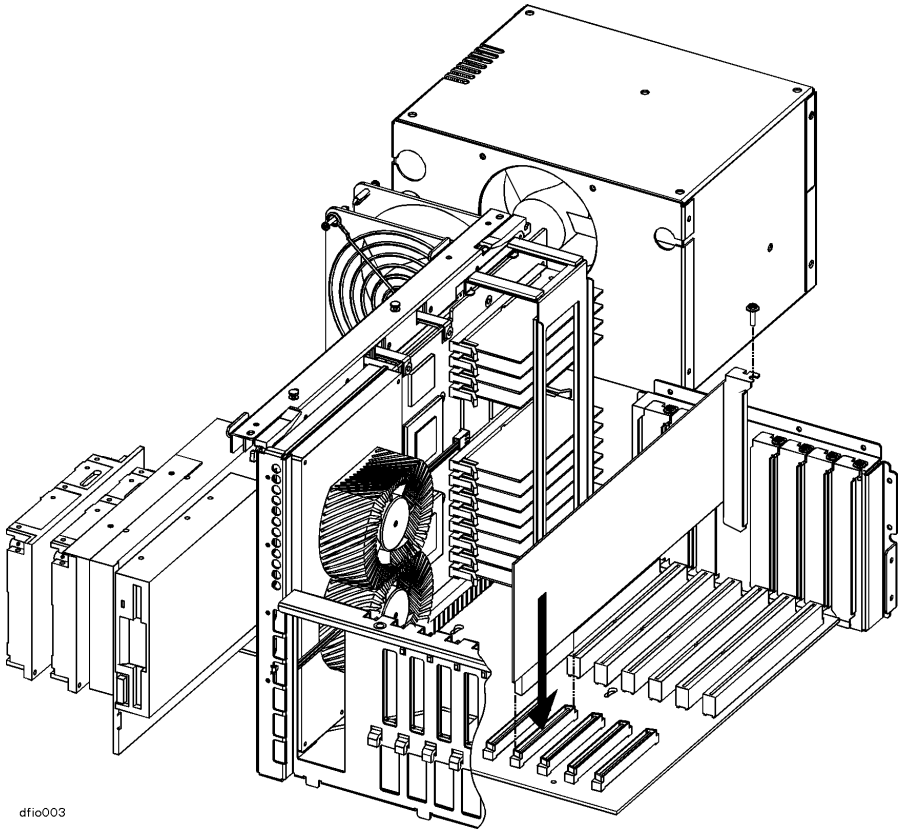
HSC 0, slot 3, path 8/12

HSC 0, slot 2, path 8/8

HSC 0, slot 1, path 8/4

HSC 0, slot 0, path 8/0 (Slot for Remote Management card)

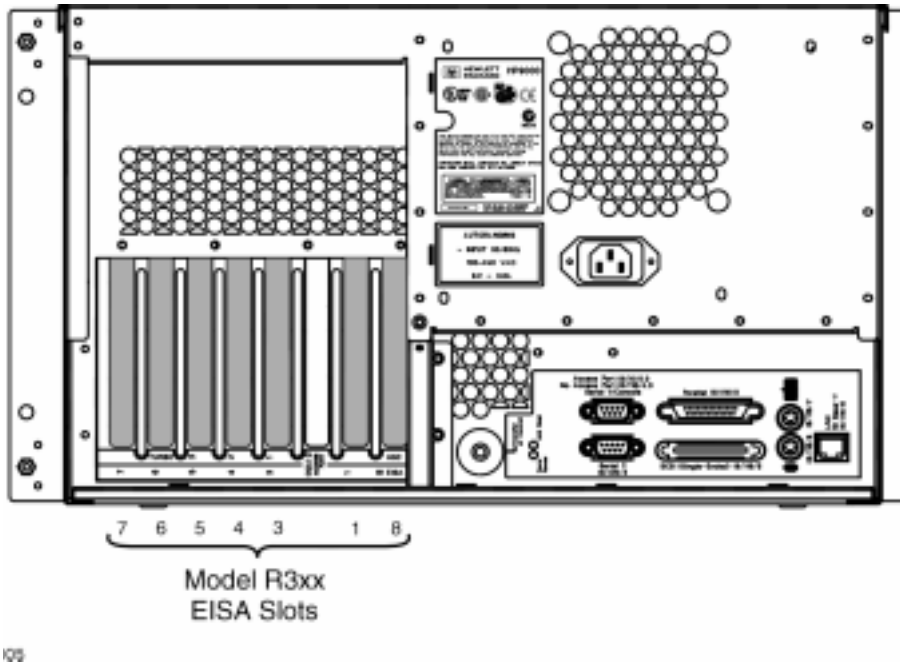
In the example shown in the diagram below, an HSC card is being inserted in HSC 0, slot 1, path 8/4.



J. Install EISA Cards

To install EISA cards, refer to the following EISA path information. .

The figure below shows the cabinet rear view of the EISA slots for the R Class servers.



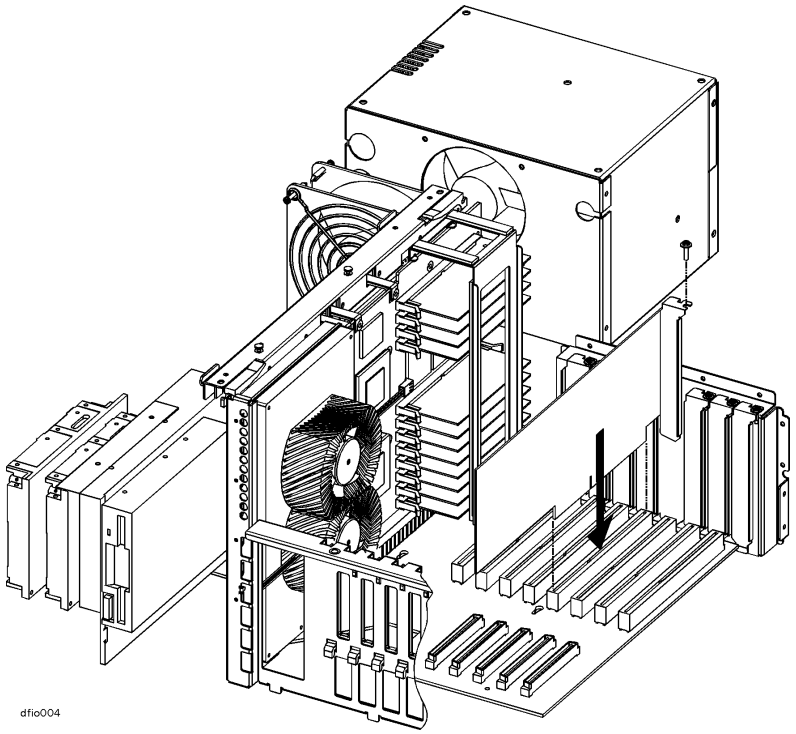
In the example shown in the diagram below, an EISA card is being inserted in EISA slot 4, path 8/20/5/4.

R3xx EISA Path Information

Model Number	EISA Paths
All R3xx models	8/20/5/<slot #>

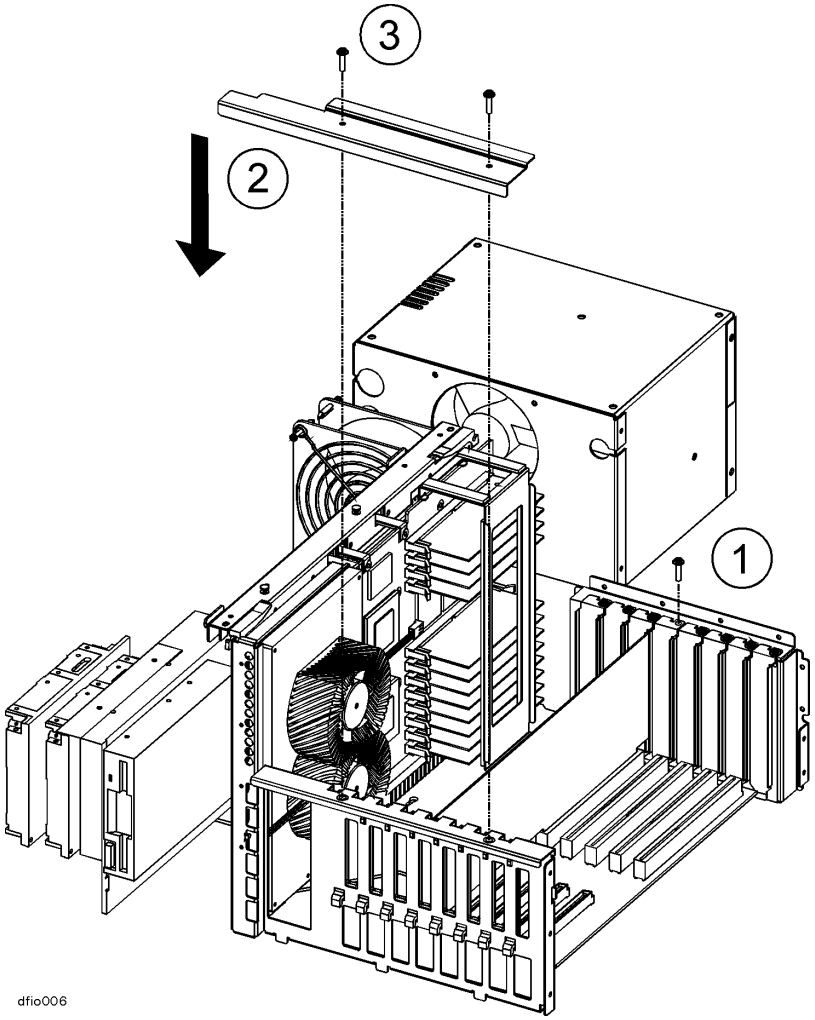
Specific EISA Slot Paths for R Class Servers

R3x0 EISA Paths
EISA slot 7, path 8/20/5/7
EISA slot 6, path 8/20/5/6
EISA slot 5, path 8/20/5/5
EISA slot 4, path 8/20/5/4
EISA slot 3, path 8/20/5/3
(not used)
EISA slot 1, path 8/20/5/1
EISA slot 8, path 8/20/5/8



K. Replace the I/O Card Retainer Bracket

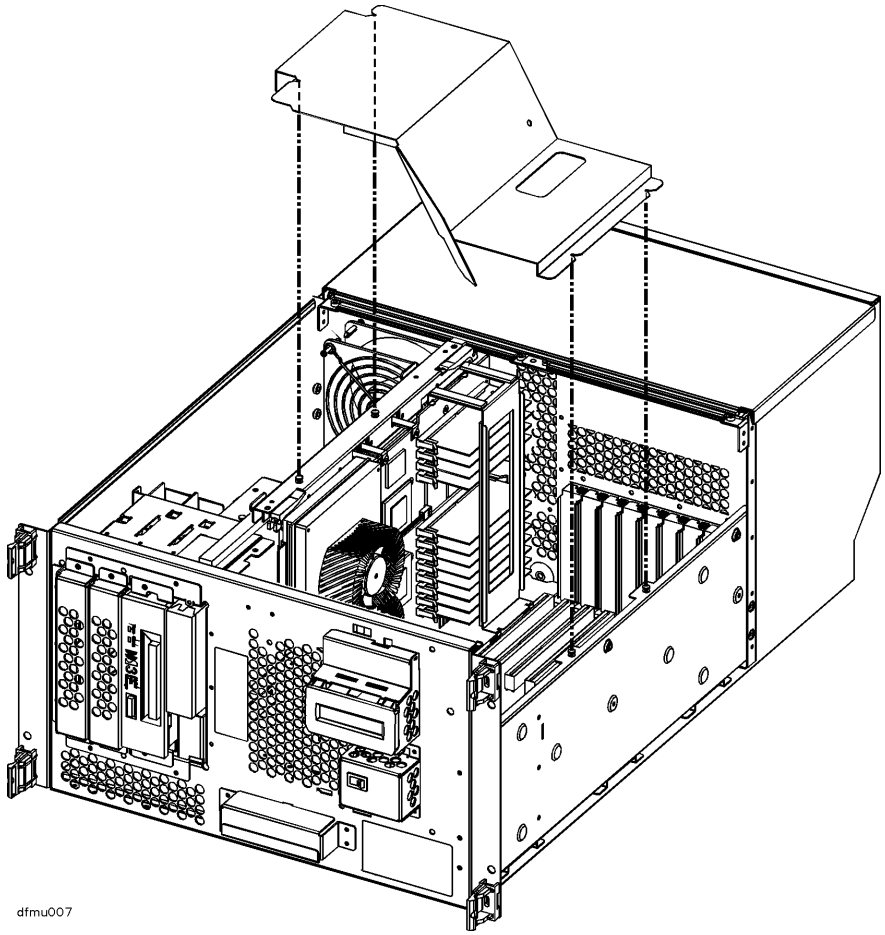
1. On all cards you have installed, insert and tighten the slot retaining screw (one per card) to secure each card to the rear panel of the cabinet.
2. Place the I/O card retainer bracket onto the I/O card guide.
3. Insert and tighten two screws to secure the retainer bracket.



L. Replace the EMI Cover

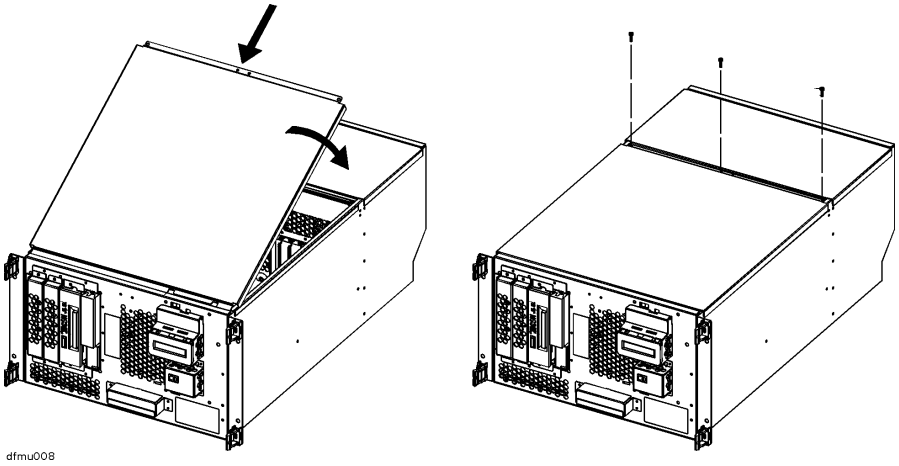
Place the EMI cover as shown in the illustration below.

1. Insert the two lower notches of the EMI cover onto the tabs at the side of the server cabinet.
2. Flex the EMI cover slightly to insert the two notches at the top of the EMI cover onto the tabs on the processor/memory card.



M. Replace the Top Covers

1. Position the hinge tab of the top rear panel so that it goes into the slot at the rear of the system cabinet. Lower the top rear panel into place.
2. Position the hinge tab of the top front panel so that it goes into the slot at the front of the system cabinet. Lower the top front panel into place.
3. Align and tighten the three screws of the top front panel into the holes as shown in the illustration.



N. Replace the Front Bezel

1. Align the control panel bezel over the power switch and LCD display and push gently to secure the bezel in place..

CAUTION

Until the LCD and power switch bezel is attached, the area surrounding the LCD is ESD sensitive. See “Electrostatic Discharge Precautions” on page 2-2.

2. Align the front bezel over the front of the chassis and push gently to secure the bezel in place.

O. Refer to I/O Card-specific documents

Refer to the documentation accompanying the I/O card for information regarding external connections.

This completes the I/O card installation procedure. Proceed to the **I/O Card Installation Verification** procedure starting on the next page.

I/O Card Installation Verification

Overview

The following list is a summary of the verification process. Refer to the **I/O Card Installation Verification Procedure** below for detailed instructions.

A. Connect power cord.

B. Turn on power to the system.

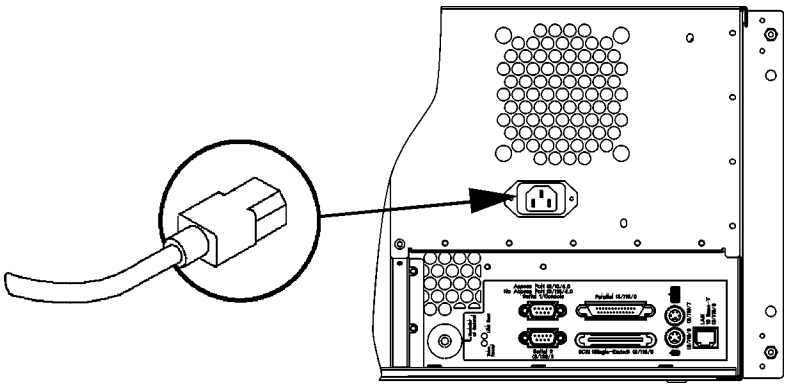
C. Observe console display for self-test error messages.

D. Halt boot process to get the Boot Console prompt.

E. Confirm I/O card installation by typing “in io” at the Boot Console Handler.

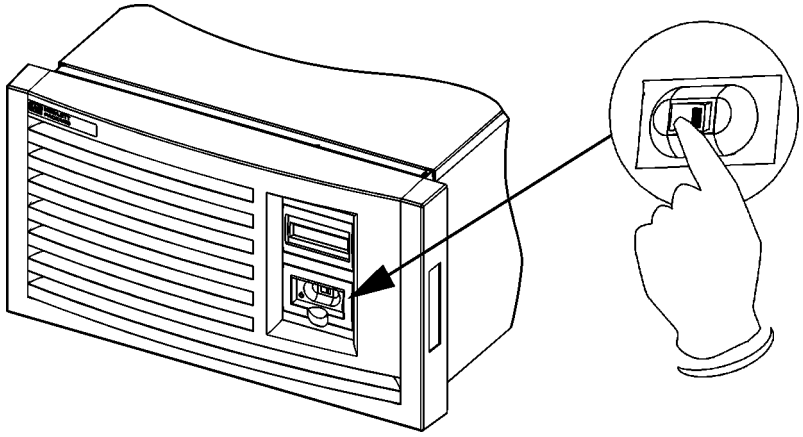
I/O Card Installation Verification Procedure

A. Connect the Power Cord



B. Turn On Power to the System

Set the front panel Power switch to the ON position.



C. Observe Console Display

During the power-on cycle, the system will perform selftests. These selftests may generate messages that will appear on the console screen if a problem is detected.

D. Halt the Boot Process

If Autoboot is set to ON, you will have to interrupt the boot process to get to the Boot Console Handler, where you will have access to the commands for verifying the I/O card installation.

When prompted by the following message, halt the boot process by hitting any key on the keyboard

```
Processor is booting from first available device.

To discontinue, press any key within 10 seconds.

Boot terminated.

------- Main Menu -----------------------------------------------------------

        Command                          Description
        -------                          -----------
        BOot [PRI|ALT|<path>]            Boot from specified path
        PAth [PRI|ALT|CON|KEY] [<path>] Display or modify a path
        SEArch [DIsplay|IPL] [<path>]    Search for boot devices
        TOC                              Soft boot the system


        COnfiguration [<command>]        Access Configurationmenu/commands
        INformation [<command>]          Access Information menu/commands
        SERvice [<command>]              Access Service menu/commands

        DIsplay                          Redisplay the current menu
        HElp [<menu>|<command>]          Display help for menu or command
        RESET                            Restart the system

-------
Main Menu: Enter command >
```

E. Confirm I/O Card Installation

1. At the Main menu of the Boot Console Handler, type “in io” to display I/O card information.
2. Confirm that the I/O cards listed in the I/O information display includes the card or cards you have just installed.

```
-------
Main Menu: Enter command > in io

I/O MODULE INFORMATION
                                                                    IODC   IODC
Path (dec)   Type                Bus Slot Mod HVERSION  SVERSION  Vers   Dep
----         ----                --- ---- --- -------- ---------- ------ ----
8            I/O Adapter          0   2   0   0x5807  0x00000b50 0x00   0x00
8/16         Bus Adapter          1   4   0   0x02f0  0x00008100 0x00   0x00
8/16/4       Built-in RS232      16   1   0   0x02f0  0x00008c00 0x00   0x00
8/16/5       Built-in SE SCSI    16   1   1   0x02f0  0x00008280 0x00   0x00
8/16/6       Built-in LAN        16   1   2   0x02f0  0x00008a00 0x02   0x00
8/16/0       Built-in Parallel   16   0   0   0x02f0  0x00007400 0x00   0x00
8/16/7       Built-in Keyboard   16   1   3   0x02f0  0x00008400 0x00   0x00
8/16/8       Built-in Mouse      16   2   0   0x02f0  0x00008400 0x00   0x00
8/20         Bus Adapter          1   5   0   0x0310  0x00008e00 0x00   0x00
8/20/5       Bus Adapter         20   1   1   0x0310  0x00009000 0x00   0x00
8/20/2       RS232 Port          20   0   2   0x0310  0x00008c00 0x00   0x00
10           I/O Adapter          0   2   2   0x5807  0x00000b50 0x00   0x00

<Press any key to continue (q to quit)>
```

I/O Card Installation Verification

Press any key on the keyboard to view the list of EISA cards installed. A list similar to the example shown below is displayed:

```
<Press any key to continue (q to quit)>

Hot Swap module is not present.

EISA Cards

Path        Type                            EISA ID
----        ----                            -------
8/20/5/1    Single-Ended SCSI card          HWP0C80
8/20/5/4    Low-cost PSI card               HWP19A0
8/20/5/5    SS8-E 8 port mux card           HWP1510
8/20/5/7    Smart 16/4 Ringnode card        MDG0002
8/20/5/8    PSI card                        HWP1870


Information Menu: Enter command >
```

Troubleshooting

If you are not able to verify the correct installation of I/O cards, refer to the *HP 9000 D Class and R Class Operator's Guide* for troubleshooting information.