

# ESCALA E5-700 removal and replacement procedures□□

ESCALA Power7



REFERENCE  
86 A1 54FF 03



# ESCALA Power7

## ESCALA E5-700 removal and replacement procedures□□

This publication concerns the following models:

- Bull Escala E5-700 (Power 750 / 8233-E8B)
- Bull Escala M6-700 (Power 770 / 9117-MMB)
- Bull Escala M7-700 (Power 780 / 9179-MHB)
- Bull Escala E1-700 (Power 710 / 8231-E2B)
- Bull Escala E2-700 / E2-700T (Power 720 / 8202-E4B)
- Bull Escala E3-700 (Power 730 / 8231-E2B)
- Bull Escala E4-700 / E4-700T (Power 740 / 8205-E6B)

References to Power 755 / 8236-E8C models are irrelevant.

## Hardware

May 2011

BULL CEDOC  
357 AVENUE PATTON  
B.P.20845  
49008 ANGERS CEDEX 01  
FRANCE

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## Safety notices

Safety notices may be printed throughout this guide:

- **DANGER** notices call attention to a situation that is potentially lethal or extremely hazardous to people.
- **CAUTION** notices call attention to a situation that is potentially hazardous to people because of some existing condition.
- **Attention** notices call attention to the possibility of damage to a program, device, system, or data.

### World Trade safety information

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the safety information in your national language with references to the U.S. English source. Before using a U.S. English publication to install, operate, or service this product, you must first become familiar with the related safety information in the booklet. You should also refer to the booklet any time you do not clearly understand any safety information in the U.S. English publications.

### German safety information

Das Produkt ist nicht für den Einsatz an Bildschirmarbeitsplätzen im Sinne § 2 der Bildschirmarbeitsverordnung geeignet.

### Laser safety information

IBM<sup>®</sup> servers can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

### Laser compliance

IBM servers may be installed inside or outside of an IT equipment rack.

## DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

## DANGER



Observe the following precautions when working on or around your IT rack system:

- Heavy equipment—personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

#### CAUTION

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers.)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.

(R001)

**CAUTION:**

Removing components from the upper positions in the rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building:

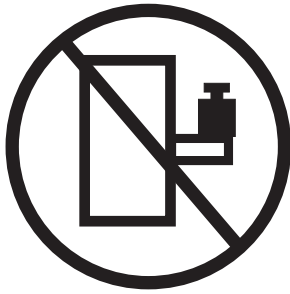
- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
  - Remove all devices in the 32U position and above.
  - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
  - Ensure that there are no empty U-levels between devices installed in the rack cabinet below the 32U level.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
  - Lower the four leveling pads.
  - Install stabilizer brackets on the rack cabinet.
  - If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.
- If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.

(R002)

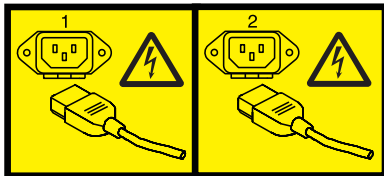
(L001)



(L002)



(L003)



or



All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

**CAUTION:**

This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

(C026)

**CAUTION:**

Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

**CAUTION:**

This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

**CAUTION:**

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information: laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

**Power and cabling information for NEBS (Network Equipment-Building System) GR-1089-CORE**

The following comments apply to the IBM servers that have been designated as conforming to NEBS (Network Equipment-Building System) GR-1089-CORE:

The equipment is suitable for installation in the following:

- Network telecommunications facilities
- Locations where the NEC (National Electrical Code) applies

The intrabuilding ports of this equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of this equipment *must not* be metallically connected to the interfaces that connect to the OSP (outside plant) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

**Note:** All Ethernet cables must be shielded and grounded at both ends.

The ac-powered system does not require the use of an external surge protection device (SPD).

The dc-powered system employs an isolated DC return (DC-I) design. The DC battery return terminal *shall not* be connected to the chassis or frame ground.

---

# Removal and replacement procedures for the 8233-E8B and 8236-E8C

Maintenance information for the IBM Power 750 Express® (8233-E8B) and IBM Power 755 (8236-E8C) includes procedures for start-of-call, isolation, and removal and replacement.

---

## Management console-based procedures

Follow these procedures to exchange one field-replaceable unit (FRU) with another.

For HMC:

1. Log into the HMC as the service representative.
2. In the navigation area, select **Servers** from the **Systems Management** navigation.
3. Select the server that requires a parts exchange.
4. Select **Serviceability**, then **Hardware**, and then **Exchange FRU**.
5. The **Exchange FRU** window opens. Select the FRU to exchange, next click on **Launch Procedure**, and follow the instructions.

For SDMC:

1. On the **Welcome** page, under the **Resources** tab, select the server.
2. Click **Actions > Service and Support > Hardware > Exchange FRU**.
3. Select an installed enclosure type from the drop-down list.
4. From the list of FRU types for this enclosure, select a FRU type.
5. Click **Next** to display a list of locations for the FRU type.
6. Select the location code for a specific FRU.
7. Click **Add** to add the FRU location to **Pending Actions**.
8. Click **Launch Procedure** to begin replacing the FRUs listed in **Pending Actions**.
9. Click **Finish** when you have completed the FRU installation.

---

## Non-management console-based procedures

Use the removal and replacement procedures when you repair, maintain, or exchange your system parts.

The removal and replacement procedures are divided into field replaceable units (FRUs) and customer replaceable units (CRUs). CRUs can be removed and replaced by customers, but FRUs can only be removed and replaced by an IBM authorized service representative.

Use the following procedures after the server has identified a failing part. The server information details how to activate and deactivate LEDs. After the part or parts are replaced, refer to the server's documentation to verify the repair, and close the service call.

## Battery

Use this procedure to service the battery.

1. **Access the ASMI**

The Advanced System Management Interface (ASMI) is the interface to the service processor that is required to perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power. The ASMI might also be referred to as the service processor menus.

To access the ASMI, see [Accessing the Advanced System Management Interface](#).

When you have accessed the ASMI, continue with the next step.

---

## **2. Check and record the server firmware and service processor settings**

1. Check and record the admin user ID's password.
  2. Check and record the server firmware level prior to replacing this field replaceable unit (FRU). You might need to update the system to the latest server firmware code level after you replace this FRU.
  3. Check the service processor settings that you previously set using Advanced System Management (ASM). This can be done by using a management console or a PC to access ASM. You need to reset these service processor settings after you replace this FRU or the default settings will be used.
  4. Record any service processor settings you might have set by using operating system commands:
    - System Name setting
    - System Power Control settings
    - System Service Aids settings
    - System Configuration settings
    - Network Services settings
    - Performance Option settings
    - Login Profile settings
    - Boot List settings
    - Host Ethernet Adapter settings
- 

## **3. Save the partition data.**

Use the management console to save the partition data. For more information, see [Backing up partition profile data](#).

---

## **4. Power off the unit**

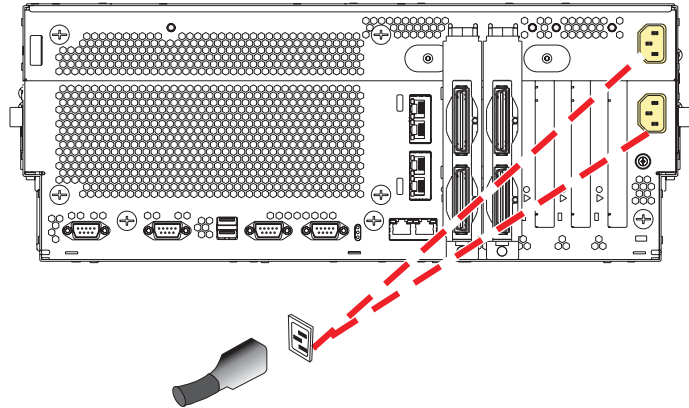
Power should be removed from the unit that contains the battery. To power off the unit, complete the following steps.

1. If the system is running, stop the system as described in [Stopping the system or logical partition](#).
  2. If this unit is powered on, power it off now.
- 

## **5. Disconnect the power cords**

To disconnect the power cords, complete the following steps:

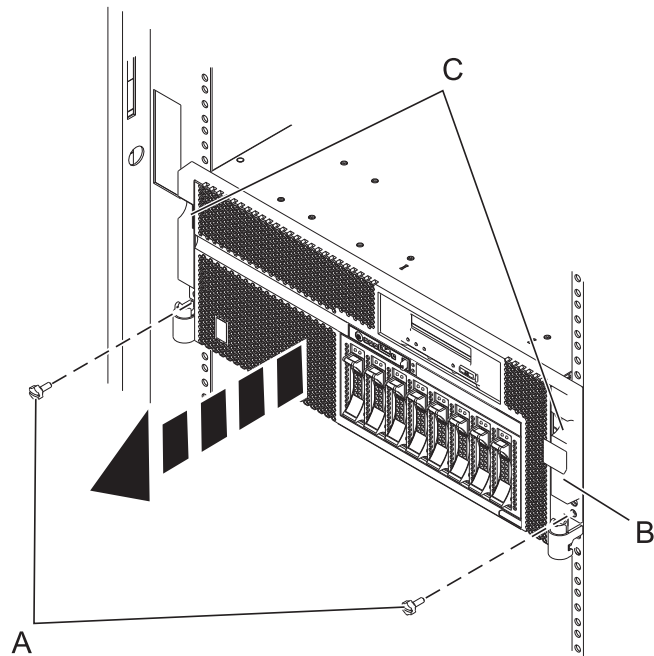
1. Open the rear rack door.
2. Disconnect all power cords from the unit you are servicing.



---

## 6. Remove the front cover

1. Open the front rack door.
2. Remove the two thumbscrews (A) that secure the front cover to the system unit.
3. Push the cover release latches (C) in the direction of the arrow to release the cover from the system unit.
4. Pull the cover out and away from the system unit.

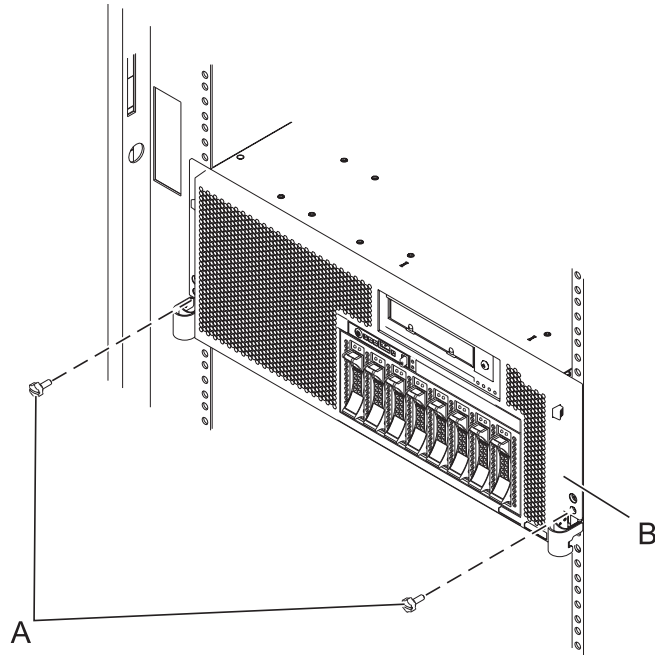


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## 7. Place the unit into the service position

**Attention:** When placing the model rack into the service position, it is essential that all stability plates are firmly in position to prevent the rack from toppling. Ensure that only one system unit is in the service position at a time.

Remove two screws (A) securing the system unit (B) to the rack.

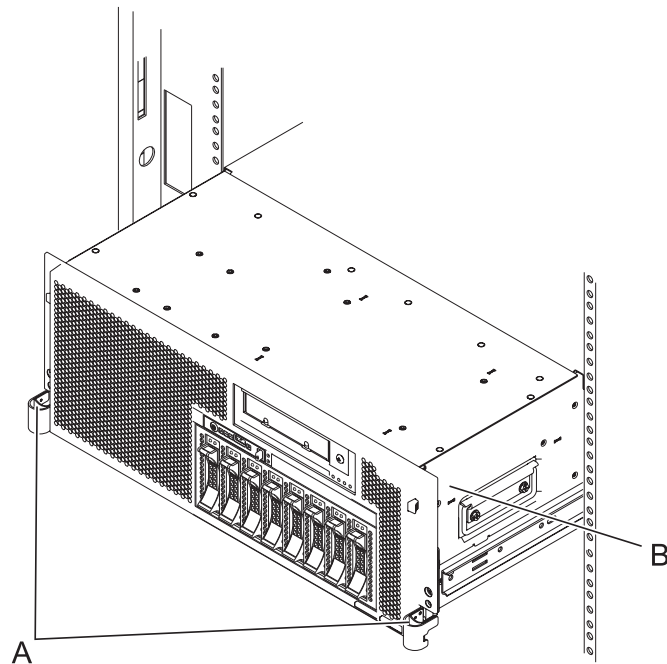


#### 8. Place the unit into the service position (continued)

**Notes:**

1. Ensure that the cables at the rear of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.

While holding the system-unit release latches (A) down on both the left and right sides, pull the system unit (B) out from the rack until the rails are fully extended and locked.

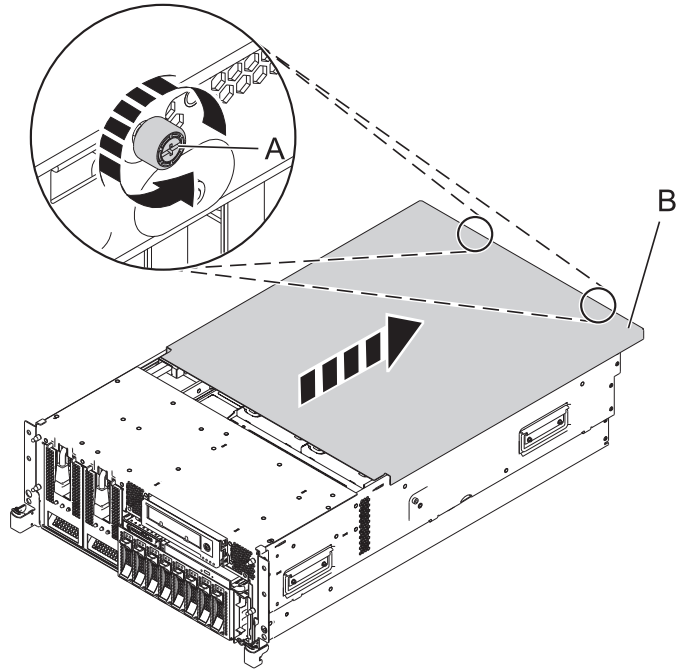


#### 9. Remove the service access cover



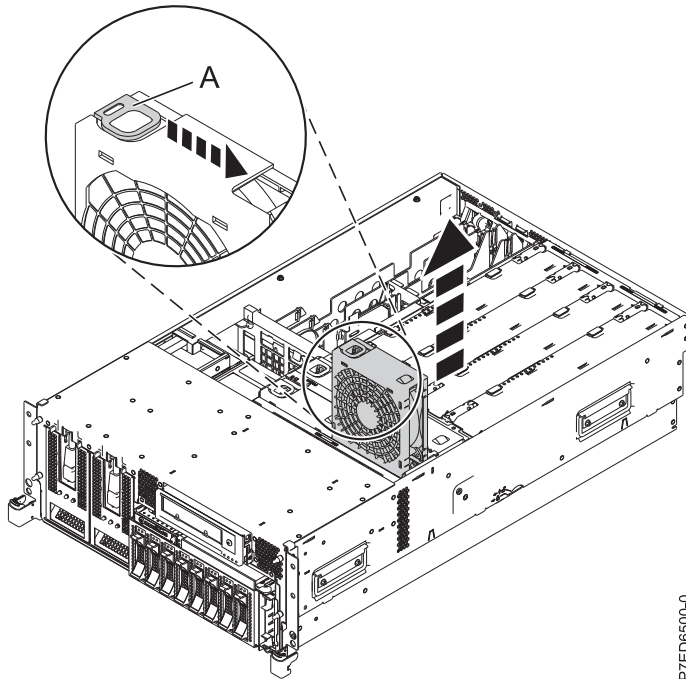
1. Loosen the two thumbscrews (A) located at the rear of the cover.
2. Slide the cover (B) toward the rear of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

**Attention:** For proper cooling and airflow, replace the cover before turning on the system. Operating the system without the cover for more than 30 minutes could damage the system components.



## 10. Remove the front fan

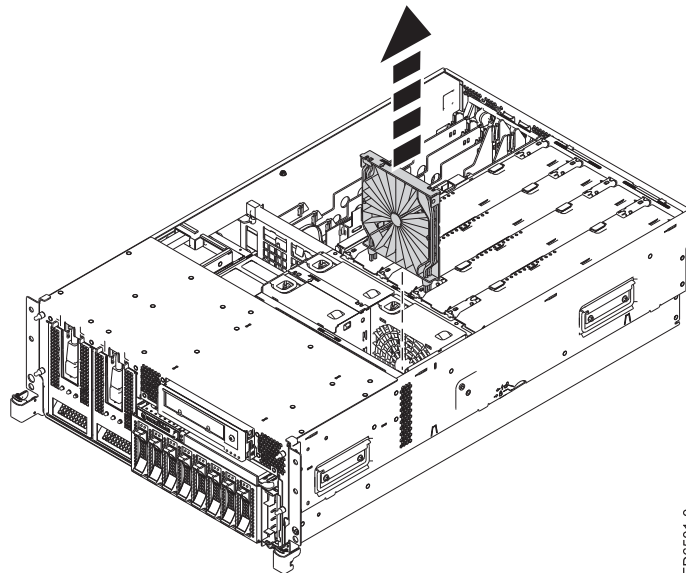
1. While squeezing the latch (A) on the front right fan, grasp the fan firmly and pull the fan out of the fan cage.
2. Repeat these steps until all system fans are removed from the fan cage.



P7ED6600-0

## 11. Remove the air baffle

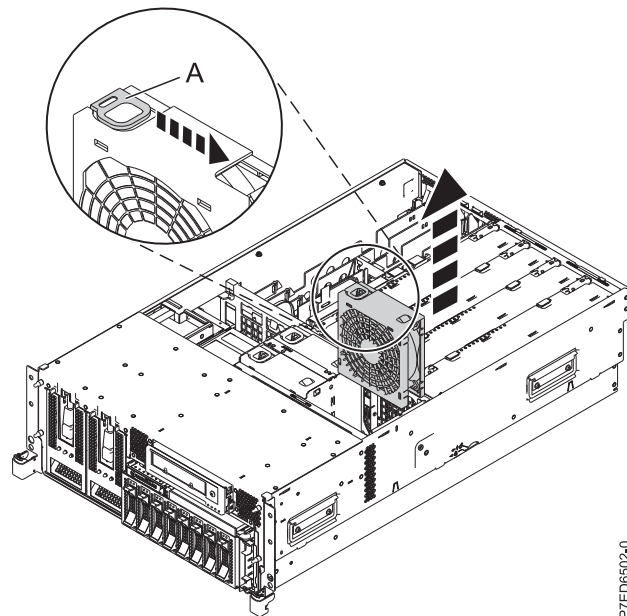
Grasp the right side air baffle and pull it out of the fan cage.



P7ED6501-0

## 12. Remove rear fan.

1. While squeezing the latch (A) on the rear right fan, grasp the fan firmly and pull the fan out of the fan cage.



P7ED6502-0

## 13. Remove the time-of-day battery

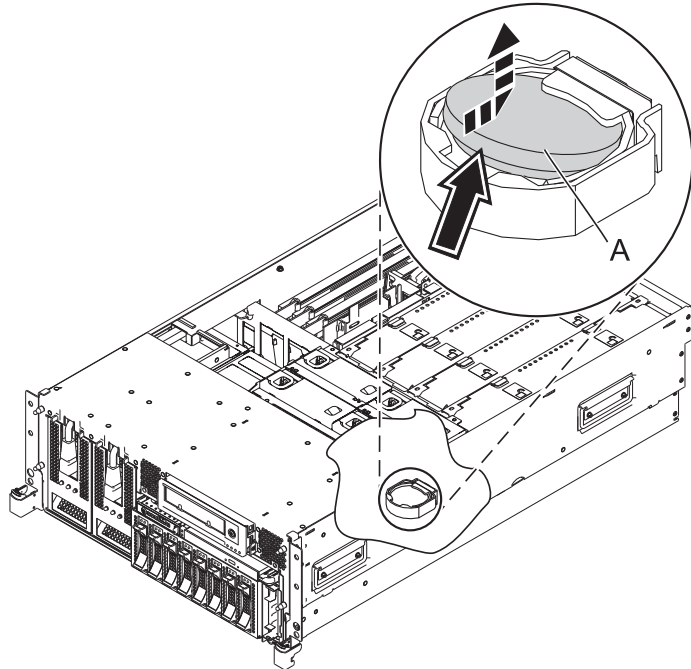
Remove the time-of-day battery (A) from the system backplane.

**CAUTION:**  
The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.

Do not:

- Throw or immerse into water.
- Heat to more than 100°C (212°F).
- Repair or disassemble.

Exchange only with the IBM-approved part.  
Recycle or discard the battery as instructed by local regulations.

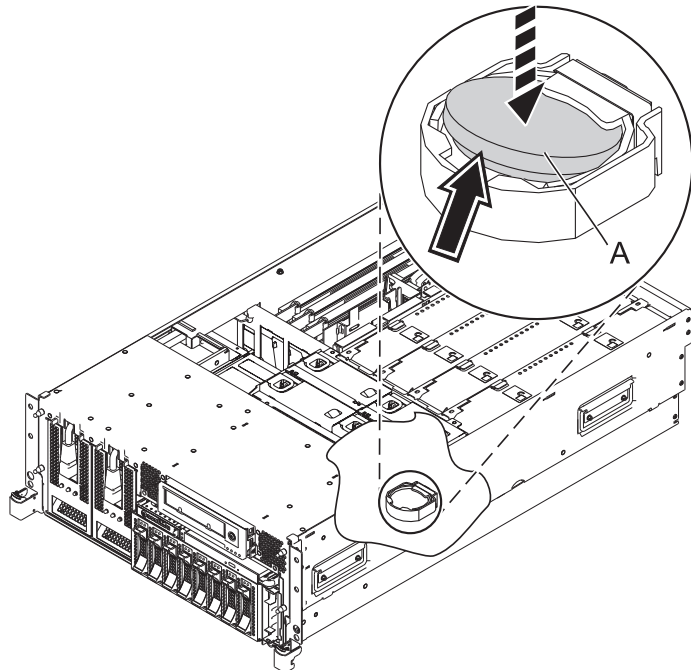


---

#### 14. Install the time-of-day battery

**CAUTION:**  
Do not use conductive tools to insert the battery. To avoid corrosion, use latex or nitril gloves to touch the battery. If tools are needed, use plastic tools to avoid electrical shorts on the battery.

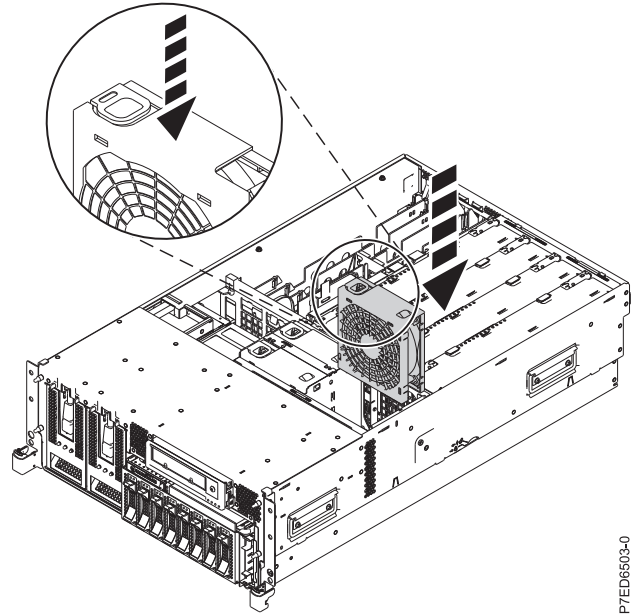
Install the time-of-day battery (A) in the slot on the system backplane.



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#### 15. Install the rear fan.

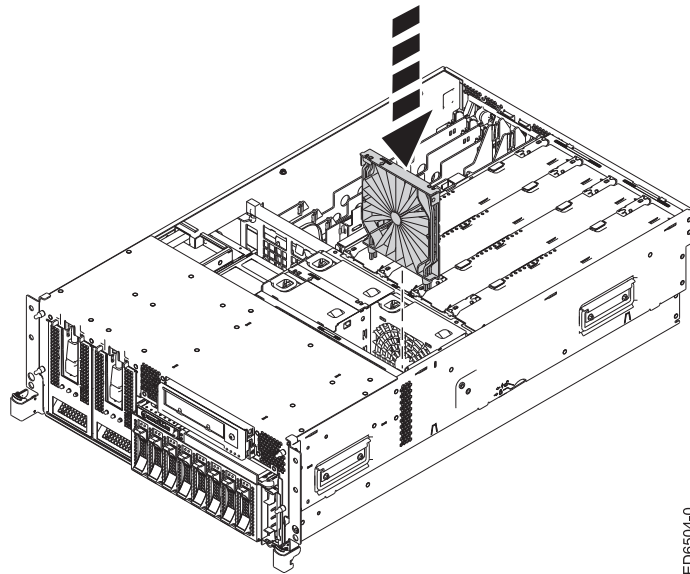
1. Lower the rear fan into its location in the fan cage.
2. Push down on the fan until it locks into place.



P7ED6503-0

## 16. Install the air baffle

1. Lower the air baffle into its location in the fan cage, ensuring that the arrows on the air baffle point toward the front of the system.
2. Push down on the air baffle until it locks into place.

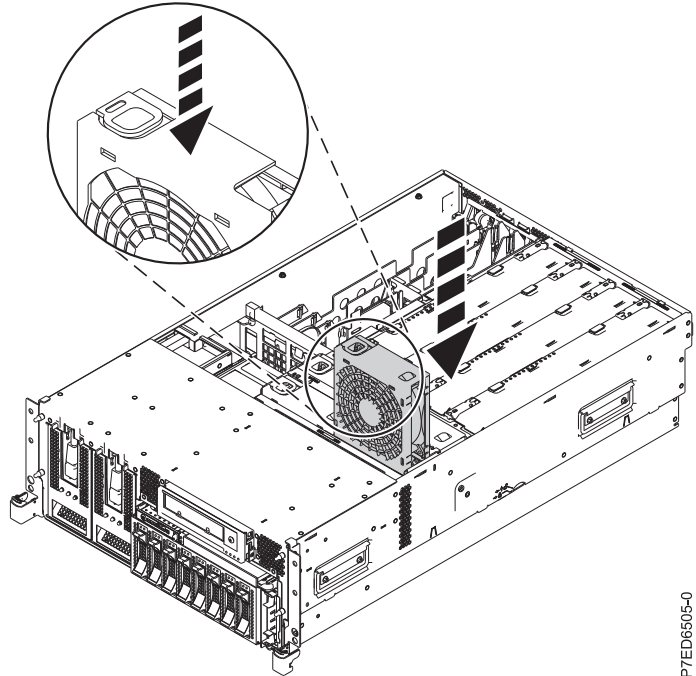


P7ED6504-0

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## 17. Install the front fan

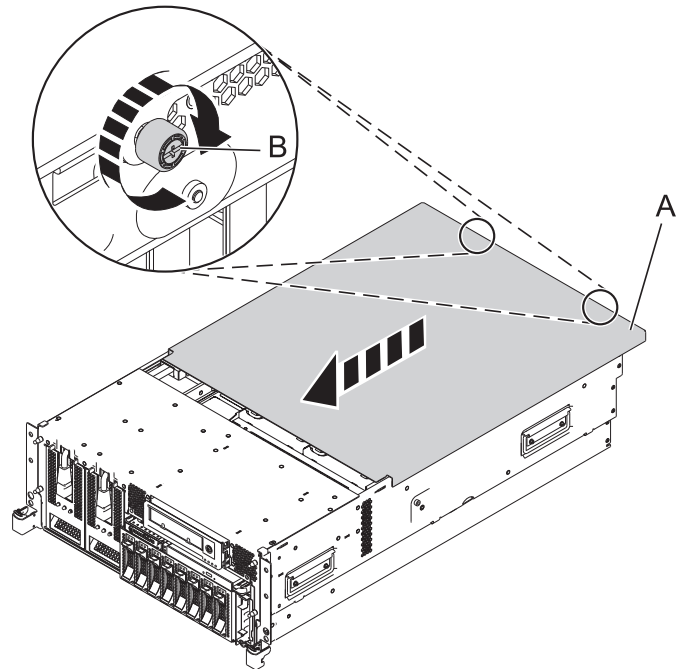
1. Lower the fan into its location in the fan cage.
2. Push down on the fan until it locks into place.



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#### 18. Install the service access cover

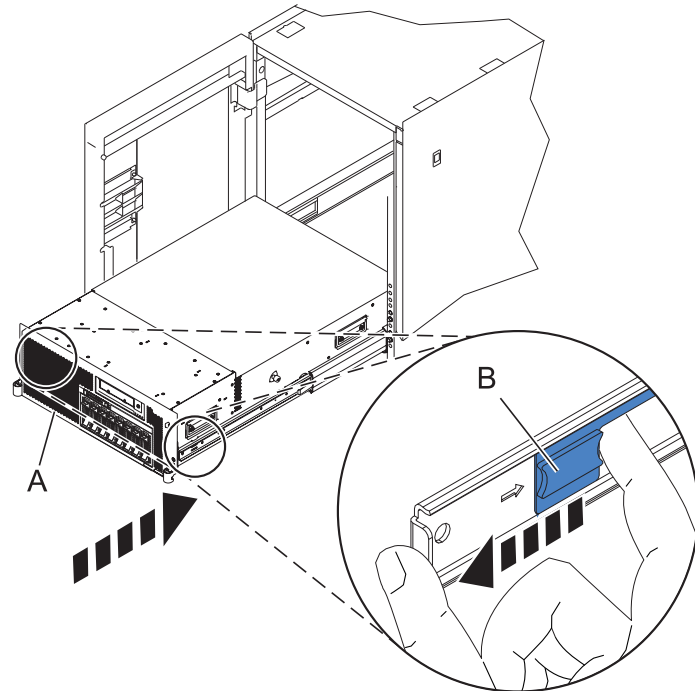
1. Place the service access cover **(A)** on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align the two thumbscrews **(B)** located on the rear of the service access cover with the two holes on the rear of the system chassis.
4. Tighten the thumbscrews to secure the service access cover.



#### 19. Place the unit in the operating position

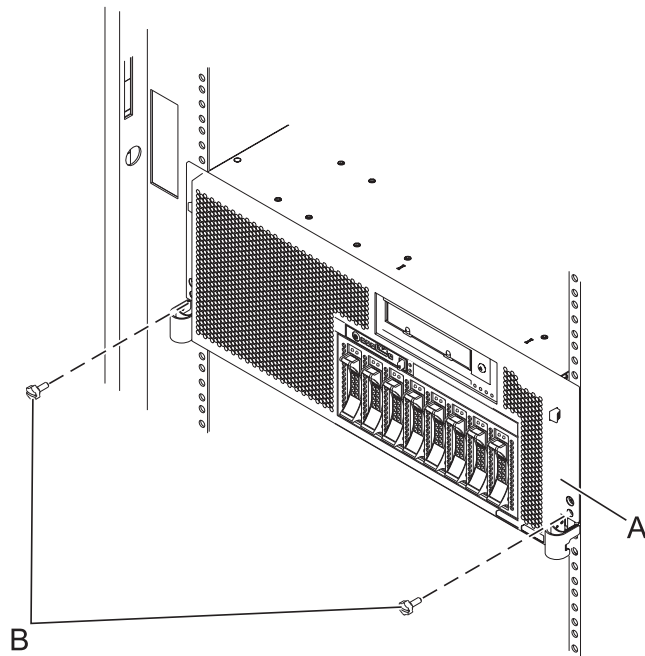
1. To unlock the rail safety latches (B), slide the latches toward the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches lock into position.

**Note:** Ensure that the cables at the rear of the system do not catch or bind as you push the system unit back into the rack.



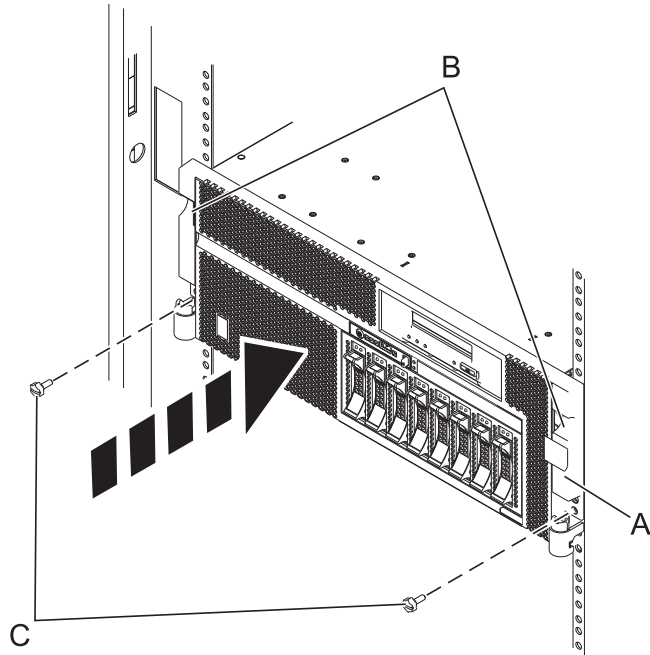
## 20. Place the unit in the operating position (continued)

Replace and tighten the two screws (B) that secure the system unit (A) to the rack.



## 21. Install the front cover

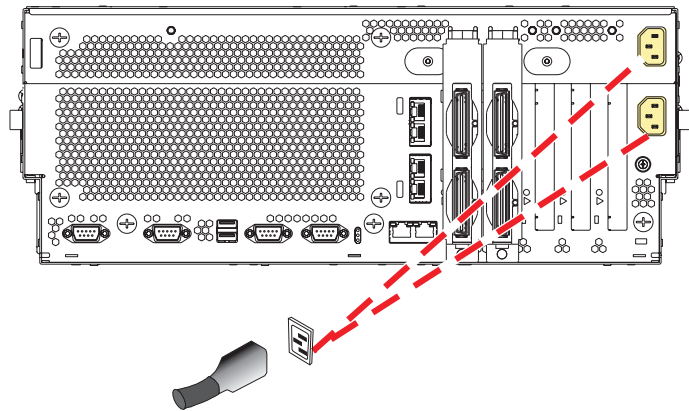
1. Position the cover on the front of the system unit so that the two thumbscrews (C) align with the screw holes on the front of the system unit (A).
2. Push the cover release latches (B) in the direction of the arrows to attach the cover to the front of the system unit as shown in the figure.
3. Tighten the thumbscrews.
4. Close the front rack door.



---

## 22. Connect the power cords

If you removed the power cords, connect all power cords to the unit you are servicing.



---

## 23. Power on the system

---

## 24. Restore network connectivity

The installed service processor must connect to the network to be accessible from the management console.

#### How will the IP address of the service processor be managed?

Obtain an IP address automatically from a DHCP server

Configure a static IP address

↓

Go to step 26.

### 25. Restore service processor settings

**Note:** If the network connection uses the Dynamic Host Configuration Protocol (DHCP) to establish an IP address, and uses the Hardware Management Console (HMC) as the DHCP server, no additional configuration is necessary to enable network access to the service processor.

To enable network access to the service processor, complete the following steps.

1. Ensure that the service processor is connected to the existing service network by verifying that the HMC cable is connected to the HMC port on the service processor assembly.
2. If not already connected, connect all system power cables by plugging them into power outlets.

**Note:** Do not start the system at this time.

#### Can you access the service network?

Yes

No

Go to step 28.

Go to step 26.

---

### 26. Restore service processor settings

If the network connection uses static IP address assignments, complete the following steps:

1. Connect a client with a Web browser directly to the service processor network port using one of the following URLs:

- <https://169.254.2.147>

- <https://169.254.3.147>

**Note:** For additional information on IP address assignments, see *Accessing the ASMI using a PC or notebook and Web browser*.

2. If not already connected, connect all system power cables by plugging them into power outlets.

**Note:** Do not start the system at this time.

3. Log in to Advanced System Management (ASM) with the user ID admin and the default password admin.
  4. Change the admin user ID's password and the general user ID's password when prompted.
  5. Configure network access using the static IP address.
- 

### 27. Restore service processor settings

With the network connection now configured to use static IP address assignments, access the service network.

#### Can you access the service network?

Yes

No

↓

Go to step 29.

---

### 28. Access the ASMI



The Advanced System Management Interface (ASMI) is the interface to the service processor that is required to perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power. The ASMI might also be referred to as the service processor menus.

To access the ASMI, see [Accessing the Advanced System Management Interface](#).

When you have accessed the ASMI, continue with the next step.

---

29.

Go to step 33.

---

### 30. Restore service processor settings

If the network connection uses DHCP to establish an IP address, but does not use a management console as the DHCP server, do the following steps:

1. Complete any network configuration necessary to allow the DHCP server to recognize and assign an IP address to the service processor.
2. Ensure that the service processor is connected to the existing service network by verifying that the network cable is connected to the network port on the service processor assembly.
3. If not already connected, connect all system power cables by plugging them into power outlets.

**Note:** Do not start the system at this time.

#### Can you access the service network?

No	Yes
↓	Go to step 28 on page 12.

---

### 31. Restore service processor settings

You have indicated that you are still not able to access the service network.

You will need to reset the service processor network interfaces (and passwords) by moving the reset jumpers.

---

### 32. Restore service processor settings

Go to step 24 on page 11.

---

### 33. Restore service processor settings

Change the admin user ID's password when prompted by following these steps:

1. In the navigation area of ASM, expand **Login Profile**.
2. Select **Change Password**.
3. Specify the required information, and click **Continue**.

**Note:** Passwords can be any combination of up to 64 alphanumeric characters. The default password for the administrator ID is admin. After your initial login to ASM, the administrator passwords must be changed.

As a security measure, you are required to enter the password for your user ID in the **Current password for current user** field.

---

### 34. Restore service processor settings

Set the system name. The system name can be changed to any valid ASCII string. It does not have to follow the initialized machine type, model number, and serial number format.

To change the system name, complete the followings steps:

1. In the navigation area of ASM, expand **System Configuration**.
2. Select **System Name**.
3. Enter the desired system name using the previous naming convention.
4. Click **Save settings** to update the system name to the new value.

The new system name is displayed in the status frame, the area where the **logout** button is located. If another method, such as the management console, is used to change the system name, the status frame does not reflect the change.

---

### 35. Restore service processor settings

Set the time of day by completing these steps:

1. In the navigation area of ASM, expand **System Configuration**.
  2. Select **Time of Day**. If the system is powered off, the right pane displays a form that shows the current date (month, day, and year) and time (hours, minutes, and seconds).
  3. Change the date value, the time value, or both, and click **Update Time Of Day**.
- 

### 36. Restore service processor settings

Reenter any of the following settings that you previously changed through ASM, unless you want to use the default settings:

1. System Power settings
  2. ASMI Service Aids settings
  3. System Configuration settings
  4. Network Services settings
  5. Login Profile settings
- 

### 37. Restore service processor settings

1. Reset any service processor settings that you might have set by using the operating system commands. You recorded these settings at the beginning of this procedure.
2. If you reset the management console access password, use one of the following methods:

For HMC:

- a. From the HMC GUI (preferred method):
  - 1) Expand the **Systems Management** folder in the navigation tree pane.
  - 2) Double click the **Servers** folder.
  - 3) Select a server in the central panel.
  - 4) Under the **Operations** folder, select **Change Password**.
  - 5) Provide the desired information and click **OK**.
- b. From the HMC command line, type `chsyspwd -m managed system -t access --passwd --newpasswd newpassword`  
where:
  - The value for *managed system* is the new service processor's managed system name.
  - No value for *--passwd* is entered thereby allowing authentication.
  - The value for *newpassword* is the new password value.

For SDMC:

- a. Go to the **Resources** tab and click **Hosts**.
  - b. Select a server in the right pane.
  - c. On the **Actions** menu, click **Operations > Change Password**.
  - d. Provide the desired information and click **OK**.
- 

### 38. Recover partition data on the service processor

The profile data that is stored in the managed server has been cleared or corrupted.

To recover profile data by using the HMC, complete the following steps:

1. Expand the **Systems Management** folder in the navigation tree pane.
2. Double click the **Servers** folder.
3. Use the check box to select a server, in the central panel.
4. In the **Configuration** folder if you have the **Manage Partition Data** folder, select **Restore**.

To recover profile data using the SDMC, complete the following steps:

1. Go to the **Resources** tab and click **Hosts**.
  2. Select a server in the right pane.
  3. On the **Actions** menu, click **System Configuration > Manage Partition Data > Restore**.
  4. Select the desired restore option and click **OK**.
- 

### 39. Restore boot list and Host Ethernet Adapter settings.

The boot list might have been erased when the battery was replaced. Verify, and set if necessary, the list of boot devices by booting into the system management services (SMS) menus. Refer to *Selecting boot options for information on setting the boot device list*.

After the operating system is booted, the bootlist command can be used to verify, or make additional changes to, the list of boot devices for a system or partition.

To restore the Host Ethernet Adapter settings, see *Configuring physical ports on a Host Ethernet Adapter*.

---

### 40. Verify the repair.

Go to *Verifying a repair*.

---

## Removing and installing the cache battery pack

To service the cache battery pack, complete the following procedure:

1. Begin with power on.

To prevent data loss, the cache battery pack must be in an error state before it is removed from the system.

If you have powered the system off, power it on before you continue.

2. Select your operating system:

- AIX: Go to step 3
- Linux: Go to step 5
- IBM i: Go to step 7

3. Force the cache battery pack into an error state on AIX® (to prevent possible data loss), as follows:

- a. Navigate to the IBM SAS Disk Array Manager by using the following steps:

- 1) At the command prompt, type `smit`, and press Enter.
- 2) Select **Devices**.
- 3) Select **Disk Array**.
- 4) Select **IBM SAS Disk Array**.
- 5) Select **IBM SAS Disk Array Manager** from the menu with options for configuring and managing the IBM SAS RAID Controller.

- b. Select **Diagnostics and Recovery Options**.

- c. Select **Controller Rechargeable Battery Maintenance**.

- d. Select **Force Controller Rechargeable Battery Error**.

- e. Select the **IBM SAS RAID Controller** whose battery you want to replace.

- f. This option places the battery into the error state, which requires it to be replaced.

- g. Determine that it is safe to replace the cache battery pack. See the following **Displaying Rechargeable Battery Information** procedure. It is safe to replace the cache battery pack when **Yes** is displayed next to **Battery pack can be safely replaced**. You might need to reselect the option **Display Controller Rechargeable Battery Information** multiple times as it might take several minutes before it is safe to replace the cache battery pack.

- h. Verify that the Cache Present LED is not flashing.

Displaying Rechargeable Battery Information

- a. Navigate to the **IBM SAS Disk Array Manager** by using the previous procedure.

- b. Select **Diagnostics and Recovery Options**.

- c. Select **Controller Rechargeable Battery Maintenance**.

- d. Select **Display Controller Rechargeable Battery Information**.

- e. Select **IBM SAS RAID Controller**.

4. Go to step 8.

5. Force the cache battery pack into an error state on Linux (to prevent possible data loss), as follows:

- a. Run the `iprconfig` utility by typing `iprconfig`.

- b. Select **Work with disk unit recovery**.

- c. Select **Work with resources containing cache battery packs**.

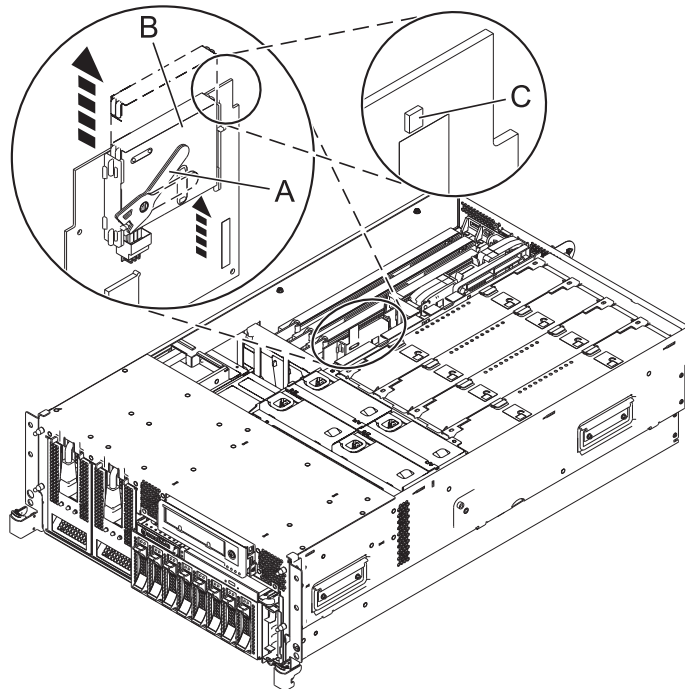
- d. Select your adapter and type `2`. Then press Enter to force the battery error.

**Note:** This option places the battery into the error state, which requires it to be replaced.

- e. If you are sure you want to force a battery error, type `c` to confirm. If you do not want to force a battery error, type `q` to cancel.

- f. Determine that it is safe to replace the cache battery pack. See **Displaying Rechargeable Battery Information**.

- g. It is safe to replace the cache battery pack when **Yes** is displayed next to **Battery pack can be safely replaced**. You might need to reselect the option **Display Controller Rechargeable Battery Information** multiple times as it might take several minutes before it is safe to replace the cache battery pack.
6. Go to step 8.
7. Force the cache battery pack into an error state on IBM i (to prevent possible data loss), as follows on the system or partition that contains the adapter:
  - a. Be sure that you are signed on to the system with at least service level authority.
  - b. Type `strsst` on the command line and press Enter.
  - c. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
  - d. Select **Start a Service Tool** from the System Service Tools (SST) display and press Enter.
  - e. Select **Hardware Service Manager** from the Start a Service Tool display and press Enter.
  - f. Select **Work with resources containing cache battery packs** from the Hardware Service Manager display and press Enter.
  - g. Select **Force battery pack into error state** for the I/O card that you are working with from the **Work with Resources containing cache battery packs** display and press Enter.
  - h. On the **Force Battery Packs Into Error State** display, verify that the correct I/O adapter has been selected and press the function key that confirms your choice.
  - i. Return to the Work with Resources containing cache battery packs display and select **Display battery information**. Ensure that the field **Safe to replace cache battery** is set to **Yes**. This might take several minutes and you might need to press the refresh key to see the field update.
8. Place a rack-mounted system into service position. Go to Placing a 8233-E8B or 8236-E8C in the service position
9. Remove the service access cover. Go to Removing the service access cover from an 8233-E8B or 8236-E8C system
10. Check cache battery LED by examining the LED on the cache battery pack (C).



**Is the cache battery LED flashing?**

Yes, the LED is flashing

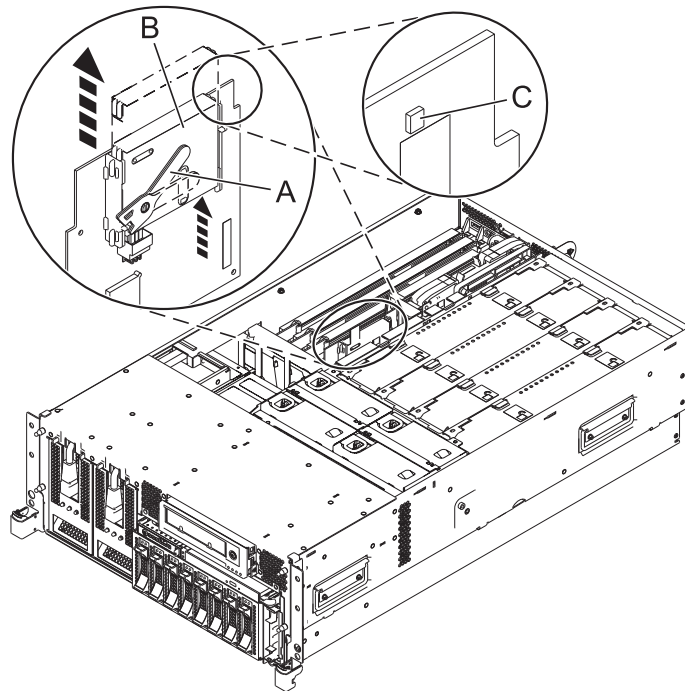
↓

No, the LED is not flashing.

Go to step 12.

**11. Stop removing the cache battery pack**

The flashing LED indicates that there is cached data on the battery that has not been saved. This data will be lost if the battery is removed at this time. Complete this service procedure without replacing the battery, and then retry it to ensure all cache data is saved before the battery is replaced.

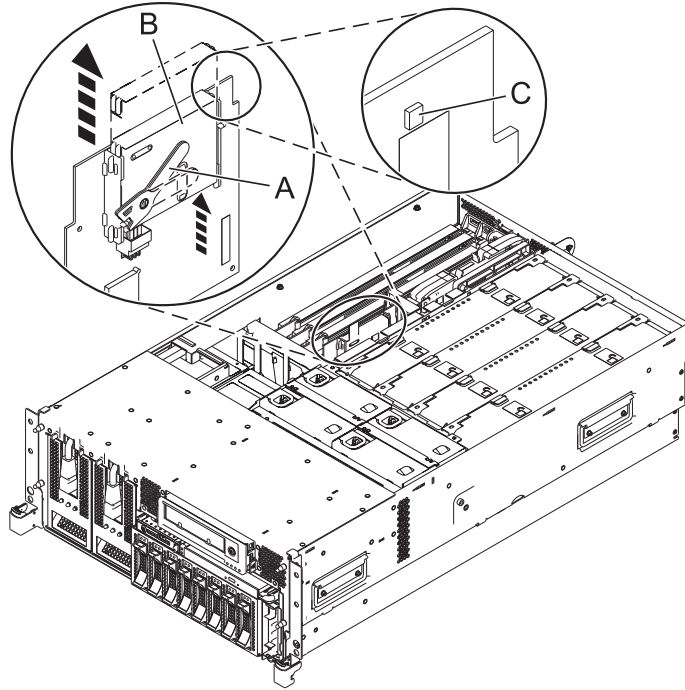


Go to step 18.

**12. Remove the cache battery pack as follows:**

**Attention:** Do not remove the cache battery if the LED (C) is flashing because this indicates cache data exists.

- a. Move the cache battery lever (A) away from the connector to disengage the battery from the connector.
- b. Slide the cache battery pack (B) out of the mounting guides and remove it from the controller.

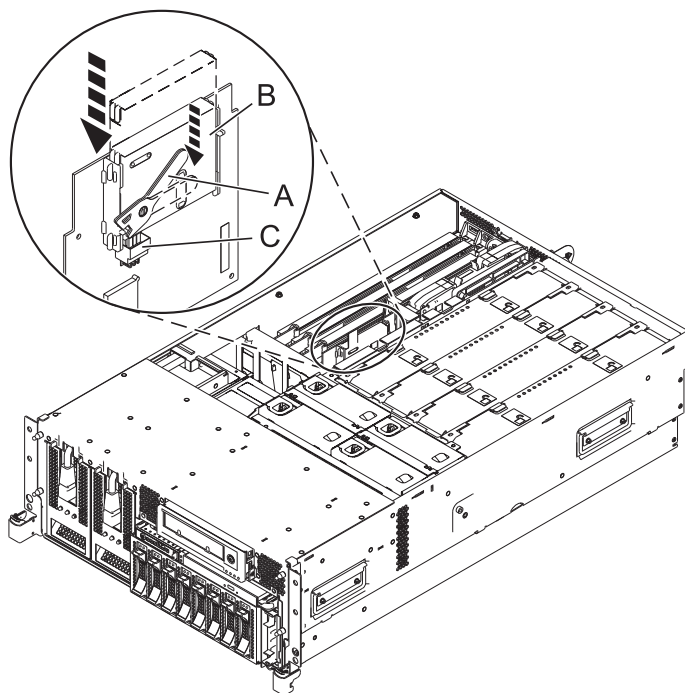


13. Install the cache battery pack as follows:

**Attention:**

Ensure that the cache battery pack is disconnected for at least 60 seconds before you connect the new battery. This is the minimum amount of time needed for the card to recognize that the battery has been replaced.

- a. Slide the cache battery pack (**B**) into the mounting guides on the controller until it is seated in the battery connector (**C**).
- b. After the battery is seated in the connector, move the lever (**A**) to the latched position to fully seat the battery into the connector.



14. Restart the adapter's write cache by doing the following steps:  
Select your operating system:
  - AIX: Go to step 15
  - Linux: 16
  - IBM i: Go to step 17
15. Perform the following steps:
  - a. Navigate to the IBM SAS Disk Array Manager by using the information in step 3a.
  - b. Select **Diagnostics and Recovery Options**.
  - c. Select **Controller Rechargeable Battery Maintenance**.
  - d. Select **Start Adapter Cache**.
  - e. Select the controller with the battery you just replaced and press Enter.
  - f. Go to step 18.
16. Perform the following steps:
  - a. Run the iprconfig utility by typing iprconfig.
  - b. Select **Work with disk unit recovery**.
  - c. Select **Work with resources containing cache battery packs**.
  - d. Start the I/O adapter cache on the adapter for the battery that you just replaced by typing 3 and press Enter.



- e. Go to step 18.
17. Perform the following steps:
  - a. Return to the Work with Resources containing Cache Battery Packs display using the information in step 7a to 7f and select the **Start IOA cache**. Press Enter.
  - b. Ensure that you get the message Cache was started.
  - c. Go to step 18.
18. Install the service access cover. Go to Installing the service access cover on an 8233-E8B or 8236-E8C system
19. Place into operating position. Go to Placing the 8233-E8B or 8236-E8C in the operating position
20. Close the back door on the unit you are servicing.
21. Verify that the new resource is working correctly, as described in Verifying the installed part.

## Control panel and signal cable

You can remove or replace the control panel (operator panel) or signal cable in the server.

### Removing the control panel with the power off

These procedures describe the removal of the control panel with the power off.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the control panel from the server. For instructions, see Removing a part by using the Systems Director Management Console. If you do not have an SDMC, complete this procedure to remove a control panel.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for removing a control panel. For instructions, see Removing a part by using the Hardware Management Console. If you do not have an HMC, complete this procedure to remove a control panel.

To remove the control panel with the power off, complete the following procedure:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Stop the system. For instructions, see Stopping a system or logical partition.
3. Disconnect the power source from the system by unplugging the system.

**Note:** This system is equipped with a second power supply. Before continuing with this procedure, disconnect all the power sources to the system.

4. Unlock the control panel by pressing release button **(A)**, and pull the control panel out of the system, as shown in the following figure. Remove the control panel by pressing the locking tabs **(C)** located on either side of the panel, grasping the edges of the panel, and pulling the panel out of its bay.

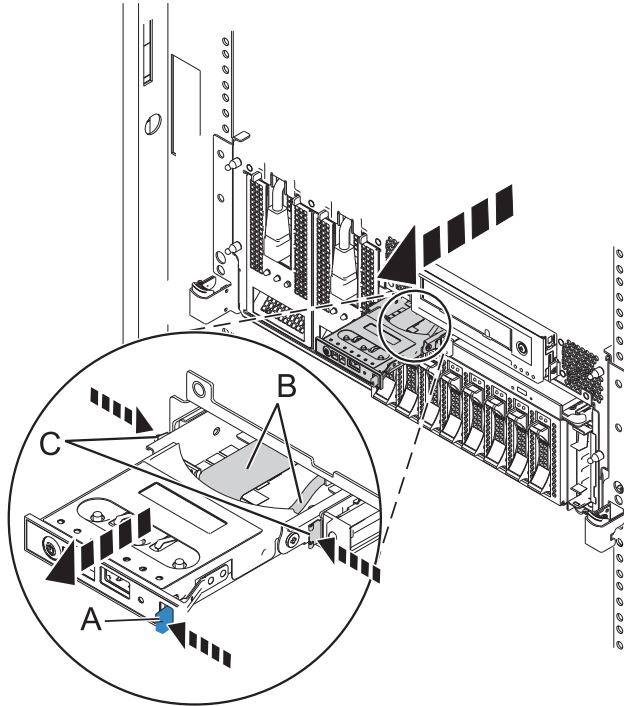


Figure 1. Removing a control panel from a rack-mounted system

5. Disconnect the control-panel signal cable (**B**) from the back of the control panel.
6. If you are removing the control panel as part of another procedure, return to that procedure now.
7. Replace the control panel with the power off. For instructions, see Replacing the 8233-E8B or 8236-E8C control panel with the power off.

## Replacing the control panel with the power off

These procedures describe the replacement of the control panel with the power off.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the control panel in the server. For instructions, see Replacing a part by using the Systems Director Management Console. If you do not have an SDMC, complete this procedure to replace a control panel.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to complete the steps for replacing a control panel. For instructions, see Replacing a part by using the Hardware Management Console. If you do not have an HMC, complete this procedure to replace a control panel.

To replace the control panel with the power off, complete the following procedure:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Remove the control panel with power off. For more information, see Removing the 8233-E8B or 8236-E8C control panel with the power off.
3. If necessary, remove the new control panel from its packaging.
4. Connect the control-panel signal cable (**A**) to the back of the control panel, as shown in the following figure.
5. Carefully slide the control panel into the control panel bay until you feel the locking tabs lock in place.

**Note:** If the control panel does not lock in place, the media device cable might be in the path of the control panel signal cable. You need to move the media device cable out of the path of the control panel signal cable before replacing the control panel. To access the media device cable, you must remove the fans.

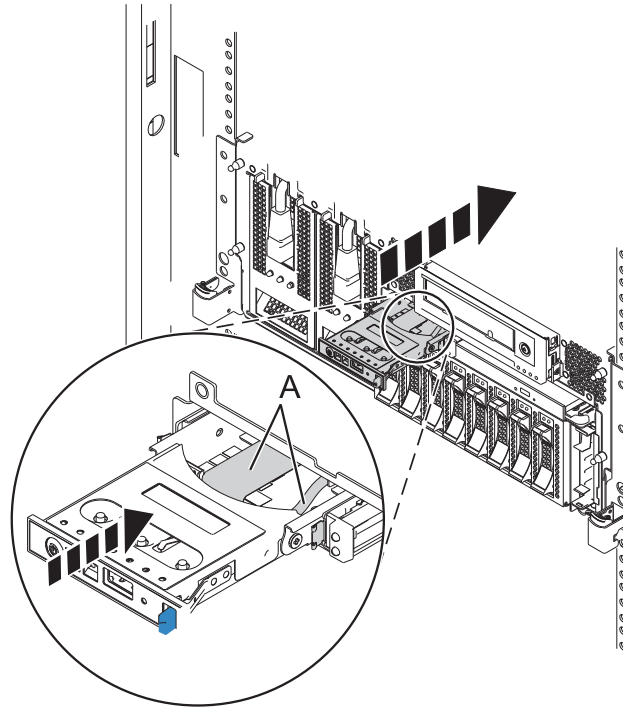


Figure 2. Replacing a control panel in a rack-mounted system

6. If you replaced the control panel as part of another procedure, return to that procedure now. If you replaced the control panel because it was not operational, verify that the new resource is functional. For instructions, see *Verifying the installed part*.
7. Start the system. For instructions, see *Starting the system or logical partition*.

**Note:** If a ball or dot appears in the middle of the control panel, toggle between function 02 and function 01 until the ball or dot disappears.

## Removing and replacing the control panel signal cable

These procedures describe the removal and replacement of the control-panel signal cable.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove and replace the control-panel signal cable. For instructions, see *Removing a part by using the Systems Director Management Console* and *Replacing a part by using the Systems Director Management Console*. If you do not have an SDMC, complete this procedure to remove and replace a control-panel signal cable.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing a control-panel signal cable. For instructions, see *Replacing a part by using the Hardware Management Console*. If you do not have an HMC, complete this procedure to remove and replace a control-panel signal cable.

To replace the control-panel signal cable, complete the following procedure:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Remove the disk-drive backplane. For instructions, see Removing the 8233-E8B or 8236-E8C disk drive backplane.
3. Remove and replace the control-panel signal cable for the 2.5-inch disk drive using the following instructions:

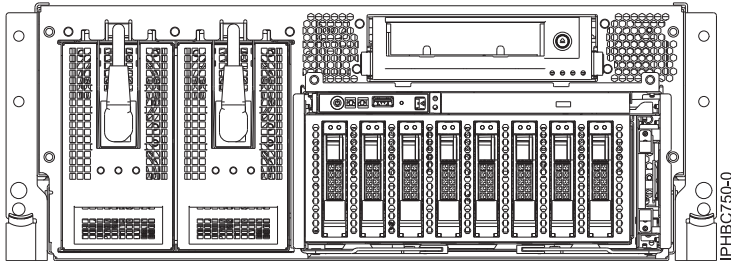


Figure 3. 2.5-inch disk drive

- a. To remove the control panel cable, perform the following step:

**Important:** When removing the cable, note where the connections are and how the cable is routed. You can use this information to complete the replacement procedure.

- 1) Disconnect the signal cable (B) from port (A) on the back of the backplane and lift the cable out of the system.

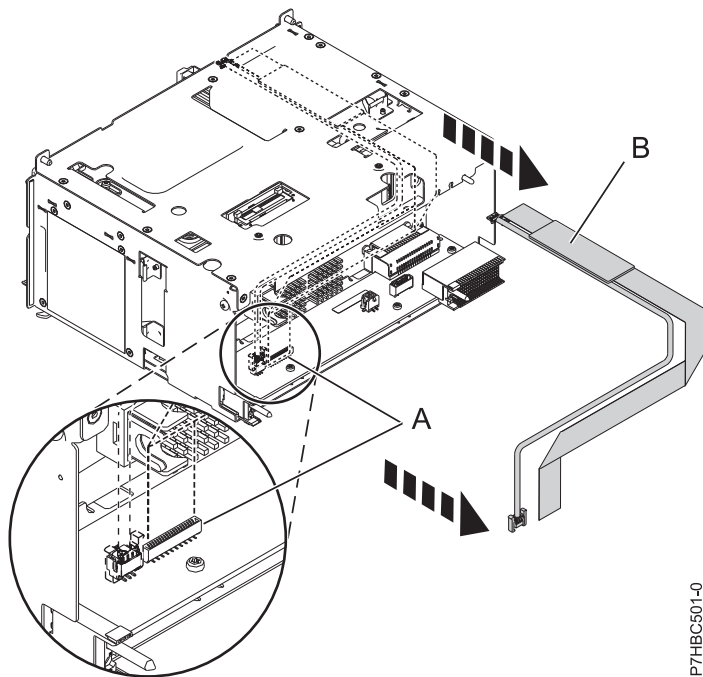


Figure 4. Removing a signal cable in a rack-mounted system

- b. Install the replacement control-panel signal cable into the system by performing the following steps:
  - 1) Attach the signal cable (B) to port (A) on the back of the backplane.

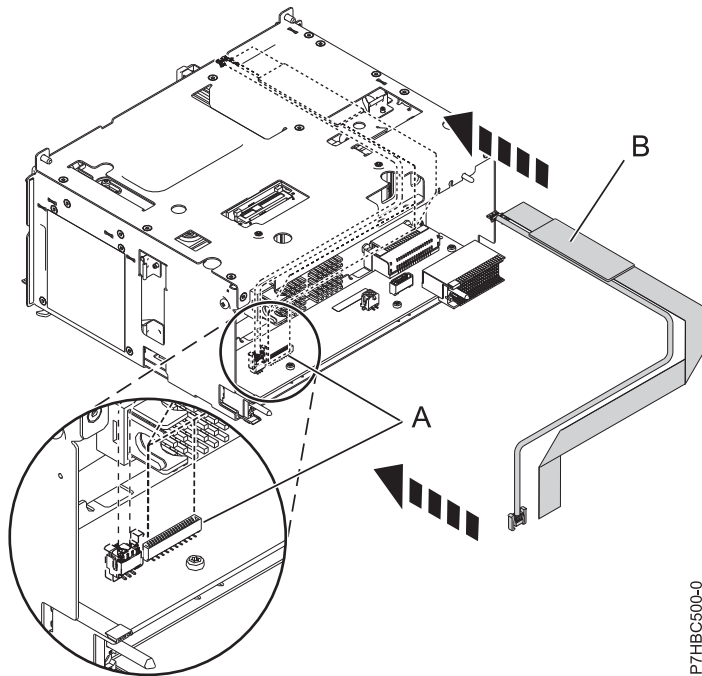


Figure 5. Installing a signal cable in a rack-mounted system

- 2) Route the signal cable to the front of the system.
4. Replace the control panel with the power off. For instructions, see Replacing the 8233-E8B or 8236-E8C control panel with the power off.

**Note:** When installing a new signal cable, you can replace the control panel while the disk-drive backplane is still outside the system. After you have replaced the control panel, replace the disk-drive backplane as instructed in Disk drive backplanes.

## Disk drive backplane

Use this procedure to service the disk drive backplane.

### Removing the disk drive backplane

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for removing the disk drive backplane from the server. For instructions, see Removing a part using the Systems Director Management Console.

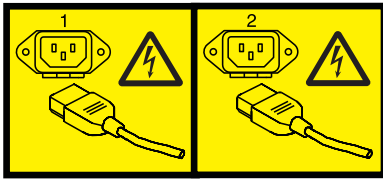
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the disk drive backplane from the server. For information about using the HMC to remove the disk drive backplane, see Removing a part using the Hardware Management Console.

If you do not have an HMC or SDMC, complete the following steps to remove the disk drive backplane:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Do one of the following steps, as applicable:
  - a. If you are removing the disk drive backplane for a system upgrade or as part of another procedure, continue to the next step.
  - b. If you are removing the disk drive backplane because of a system failure, use the service action log to help identify the failing part. See Identifying a part .
3. Stop the system or logical partition. For instructions, see Stopping a system or logical partition.
4. Disconnect the power source from the system by unplugging the system.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

(L003)



or



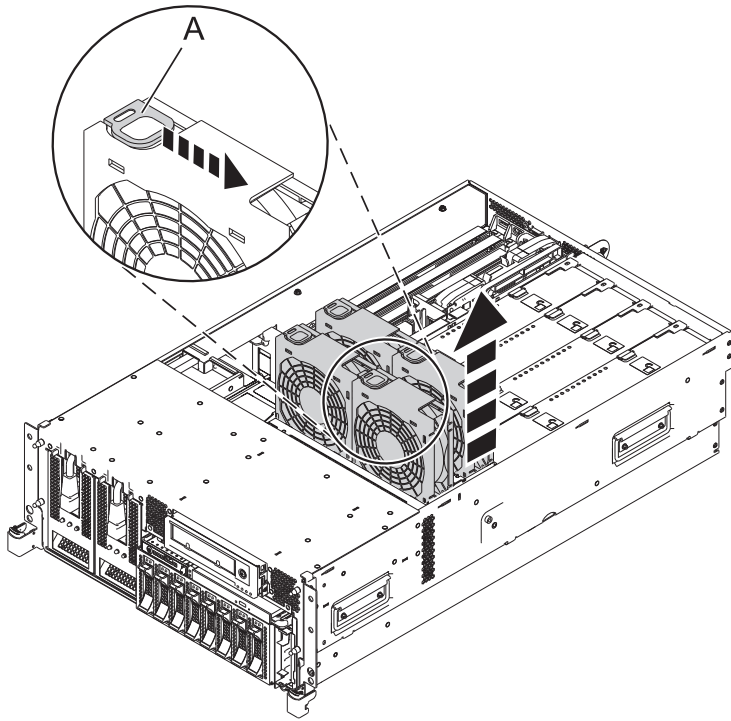
5. Remove the front cover. For instructions, see Removing the front cover from an 8233-E8B or 8236-E8C system.
6. Place the system into the service position. For instructions, see Placing a 8233-E8B or 8236-E8C in the service position.
7. Remove the service access cover. For instructions, see Removing the service access cover from an 8233-E8B or 8236-E8C system.
8. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
9. To remove the fans and the fan cage, complete the following steps:
    - a. To remove the fans, squeeze the tab (A) and lift the fan out of the fan cage as shown in Figure 6 on page 27.

**Note:** If the thumbscrews are too tight, you might need a flat-head screwdriver to complete this step. To pull the fan cage out of the system, you might need to unplug the control panel cable to

allow more space.



*Figure 6. Removing the fan from the fan cage*

- b. To remove the air baffles, grasp and pull the air baffle out of the fan cage, as shown in Figure 7 on page 28.

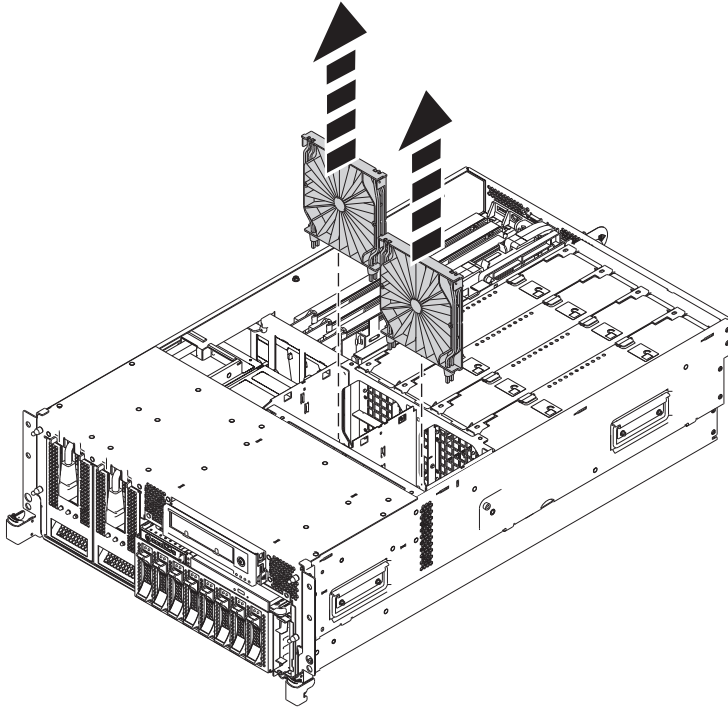


Figure 7. Removing the air baffles from the fan cage

- c. To remove the fan cage, loosen the two thumbscrews (A) and lift the fan cage (B) out of the system as shown in Figure 8.

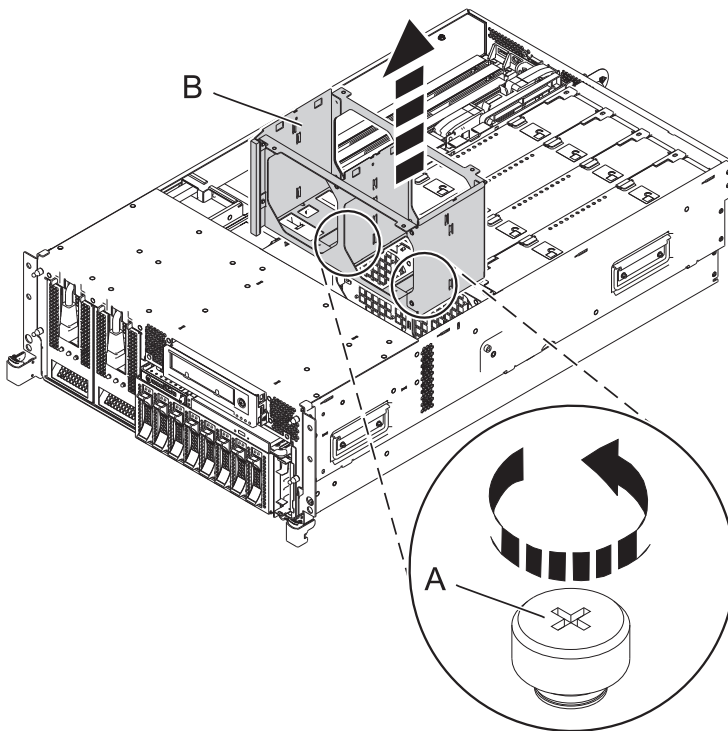


Figure 8. Removing the fan cage from the system



10. Disconnect the cables from the back of the disk drive backplane, as shown in Figure 9. If you have connected an external SAS cable, ensure that you disconnect the SAS cable from the disk drive backplane. For more information about external SAS port, refer to Installing the external SAS port on a model 8233-E8B or 8236-E8C.

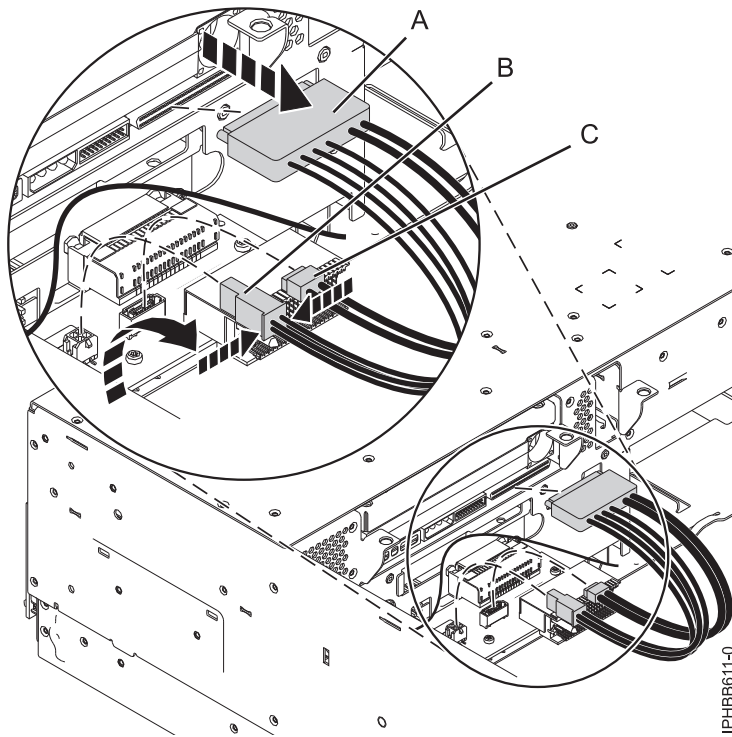


Figure 9. Disconnecting the media device cables from the disk drive backplane

11. If you need to replace the backplane because of an upgrade or system failure, complete the following steps to remove the disk drives, depending on your backplane:

**Note:** If you remove a backplane that is populated with disk drives, the backplane will be heavy. Ensure that you can safely complete the procedure.

- a. To remove the disk drive from the backplane, perform the following steps:

**Note:** Record the location of each disk drive you remove so the disk drive can be replaced into the same location again.

- 1) Unlock the disk drive handle (**A**) and pull it toward you to unseat the disk drive.
- 2) Place one hand under the disk drive and carefully pull the drive out of the system as shown in Figure 10 on page 30.

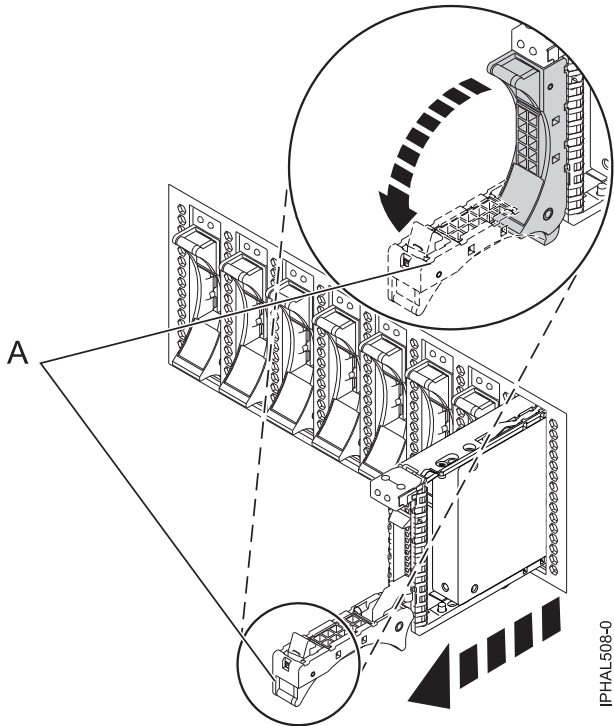


Figure 10. Removing the disk drive from the backplane

12. Remove the media device by pressing in on the latch (A) and sliding the media device out of the system, as shown in the following figure.

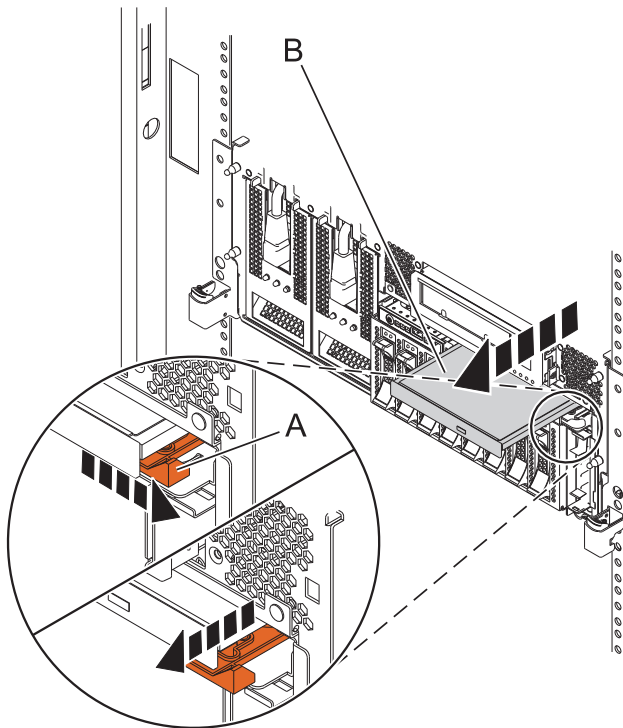
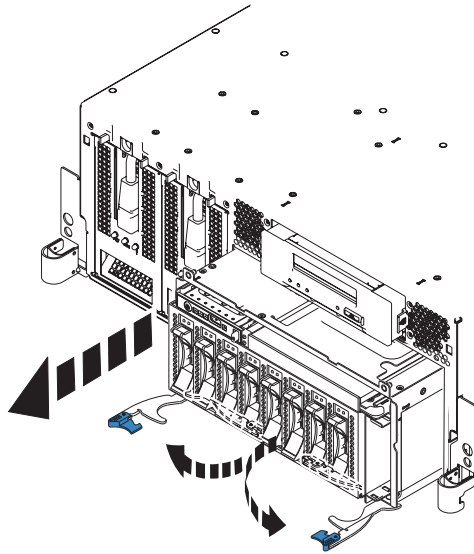


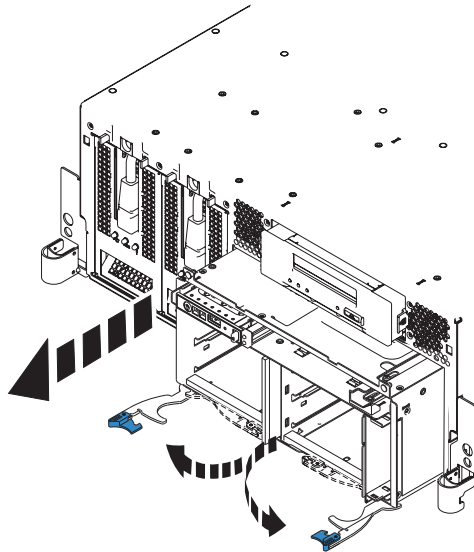
Figure 11. Removing the media device from the disk drive backplane

13. Unlock the disk drive backplane by pulling the handles open from the center of the backplane as shown in Figure 12 and Figure 13.



AREBY515-0

*Figure 12. Removing the populated disk drive backplane*



*Figure 13. Removing the unpopulated disk drive backplane*

14. Pull the backplane out of the server.
15. Remove the control panel and signal cable from the backplane to use in the replacement backplane. For instructions, see Control panel and signal cables.

16. If you removed the backplane as a part of another procedure, continue with that procedure. To replace the backplane or install a new backplane, see Replacing the 8233-E8B or 8236-E8C disk drive backplane.

## Replacing the disk drive backplane

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for replacing the disk drive backplane in the server. For instructions, see Replacing a part using the Systems Director Management Console.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the disk drive backplane in the server. For instructions, see Exchanging a part using the Hardware Management Console.

If you do not have an HMC or SDMC, complete the following steps to replace the disk drive backplane:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Install the control panel and signal cable. For instructions, see Control panel and signal cables.
3. Check for a protective cover that might be present on the lower-right connector pins. If a protective cover is present, remove the cover (A), as shown in Figure 14.

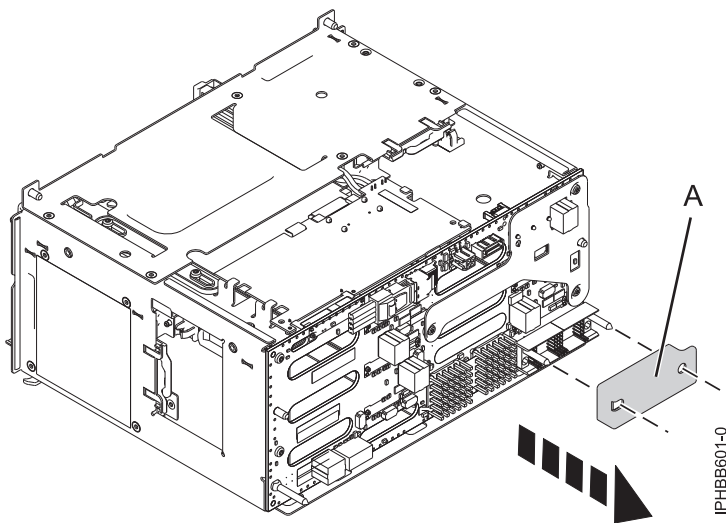


Figure 14. Removing the protective cover from the connector pins

4. Carefully lift the backplane along two sides and align it with the slot in the server.

**Important:** If you remove a backplane that is populated with disk drives, the backplane will be heavy. Ensure that you can safely perform this task before you begin.

5. Insert the backplane firmly into the server, as shown in the following figures.

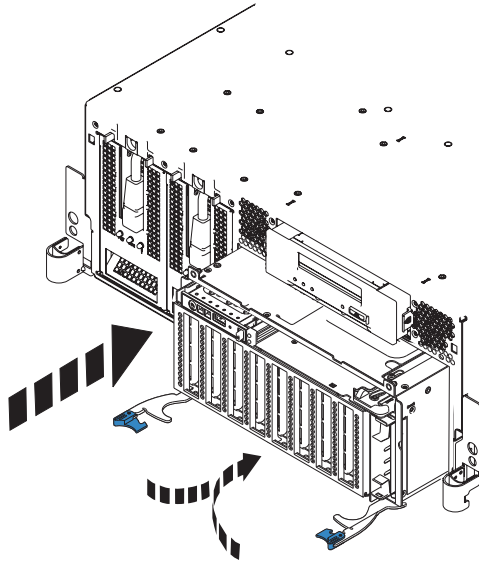
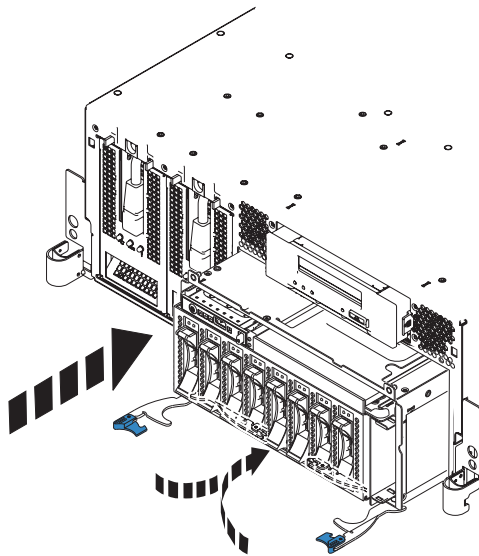


Figure 15. Installing the unpopulated disk drive backplane on a rack-mounted model



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Figure 16. Installing the populated disk drive backplane on a rack-mounted model

6. Secure the backplane with the locking tabs.
7. Connect the cables to the backplane, as shown in the following figure. You can also connect an external SAS cable to the backplane. For more information about external SAS port, refer to Installing the external SAS port on a model 8233-E8B or 8236-E8C.

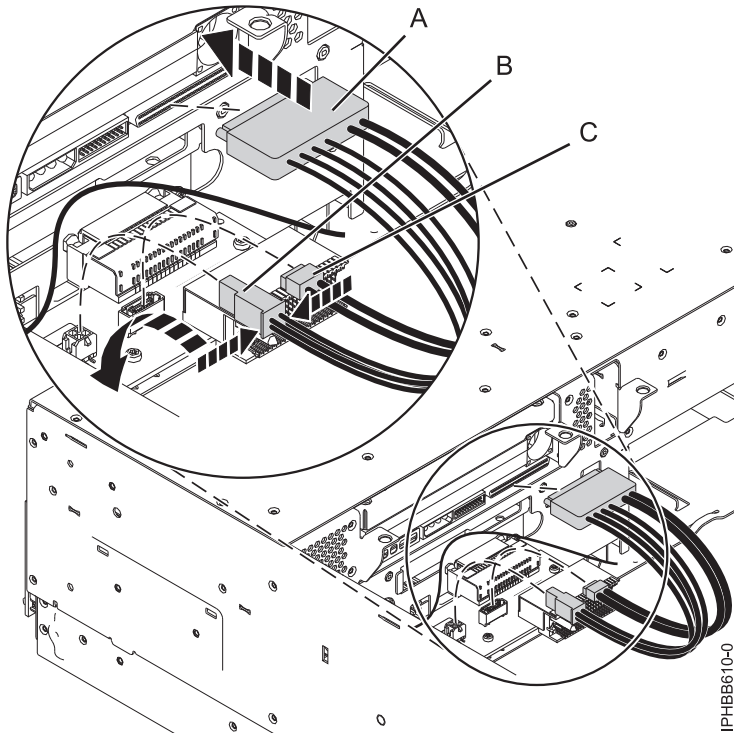


Figure 17. Connecting the cables to the disk drive backplane

8. Replace the disk drives, if you removed them earlier. To replace the disk drives, perform the following steps:
  - a. Hold the disk drive by the top and bottom edge as you position the drive and insert it into the expansion unit. Do not hold the disk drive by the handle.
  - b. Slide the disk drive all the way into the system or expansion unit, and push the disk drive handle (A) in until it locks, as shown in the following figure.

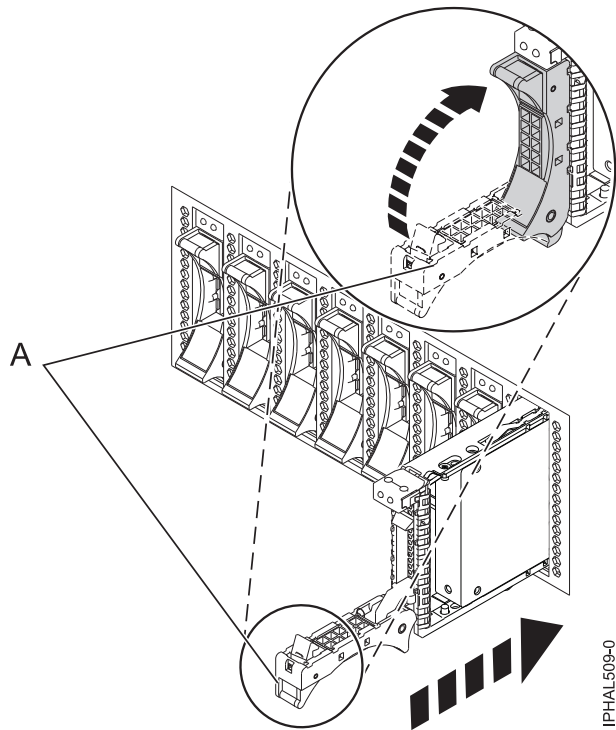
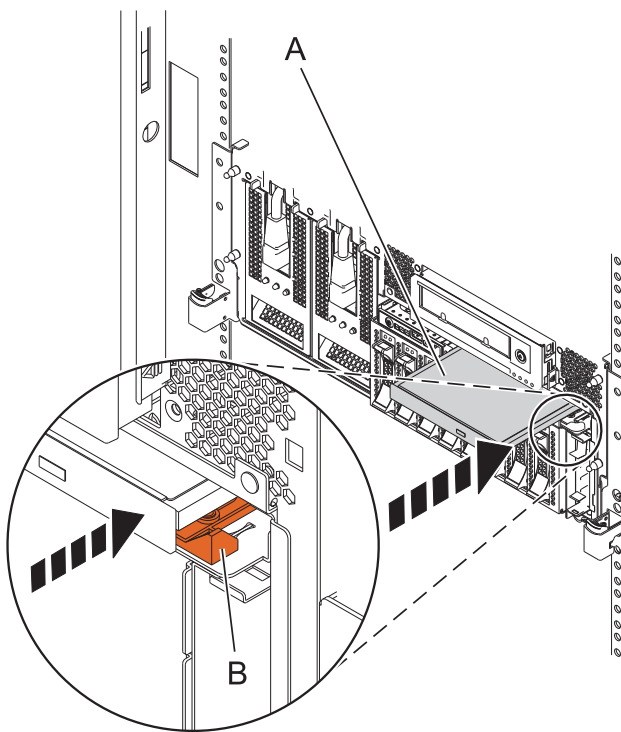


Figure 18. Installing the backplane disk drives

9. Replace the Slimline media device by inserting it into the slot and pushing it in until the lever (B) locks into place, as shown in the following figure.



10. Replace the fans, air baffles, and the fan cage.

- a. To replace the fan cage (A), align the locator pins through the holes, and tighten the two thumbscrews (B), as shown in Figure 19.

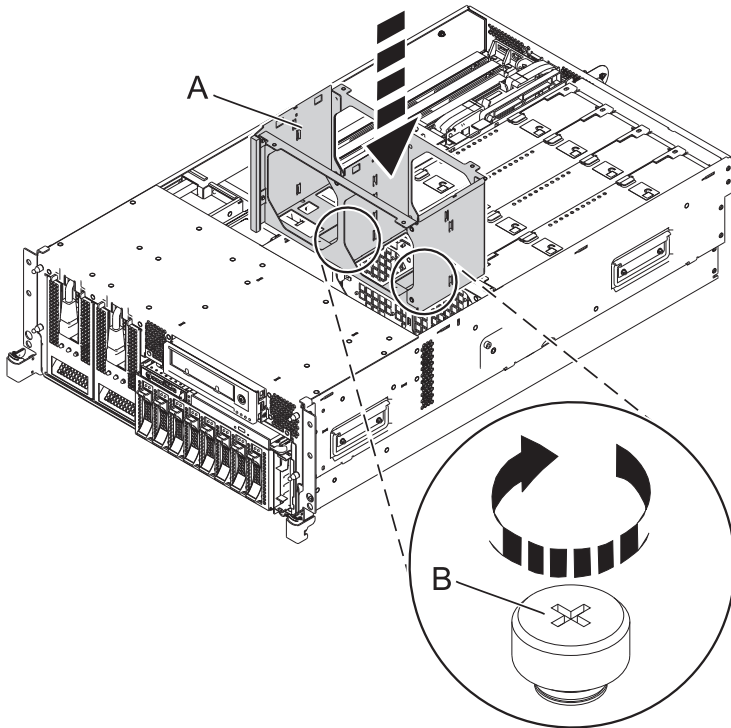


Figure 19. Replacing the fan cage

- b. To install the air baffles, insert the air baffles into their locations in the fan cage, and push down until they lock into place, as shown in Figure 20 on page 37.



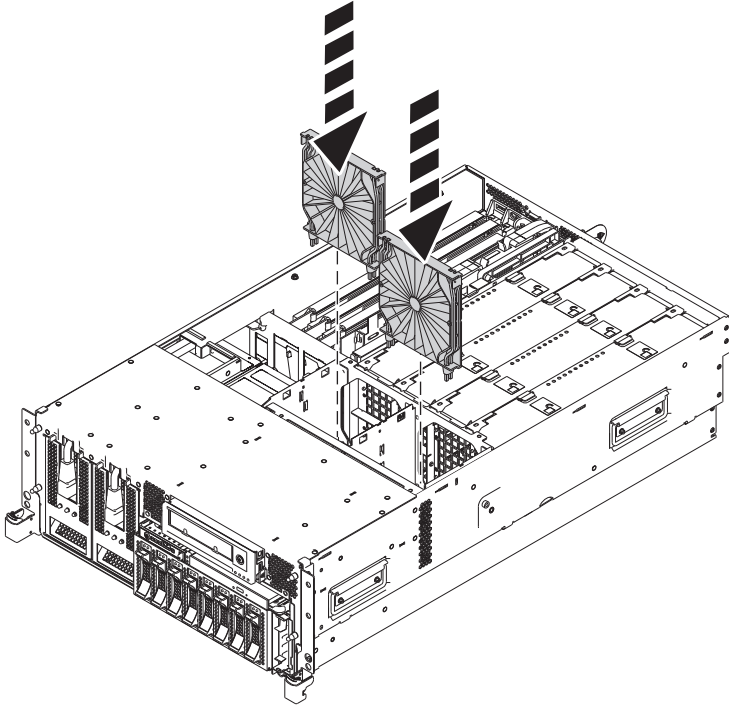


Figure 20. Installing the air baffles in the fan cage

- c. To install the fans, insert the fans into their locations in the fan cage, and push down on each fan until it locks into place, as shown in Figure 21.

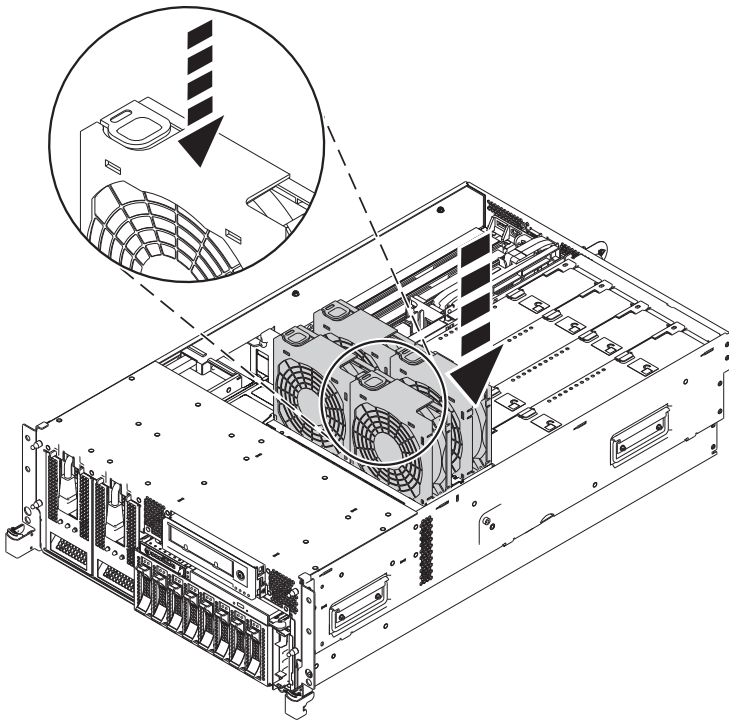


Figure 21. Installing the fans in the fan cage

11. Replace the service access cover. See Installing the service access cover on an 8233-E8B or 8236-E8C system.
12. Replace the front cover. See Installing the front cover on an 8233-E8B or 8236-E8C system.
13. Place the system in the operating position. For more information, see Placing the 8233-E8B or 8236-E8C in the operating position.
14. Start the system or logical partition. See Starting the system or logical partition.
15. Verify the installed part. For instructions, see Verifying the installed part.

## External cables

Use this procedure to service the external cables except the service processor cable or SMP cable.

### 1. Remove the external cables

Use the graphics in the locations table to locate the cable.

Trace the cable and record the system location at the other end, and then remove the cable.

---

### 2. Install the external cables

Use the graphic in the locations table to locate where the cable is to be installed.

Install the cable, and then route and install the other end of the cable to the system location that was previously recorded.

---

### 3. Verify the repair

Go to Verifying a repair.

---

## Fans

Use this procedure to service the fan.

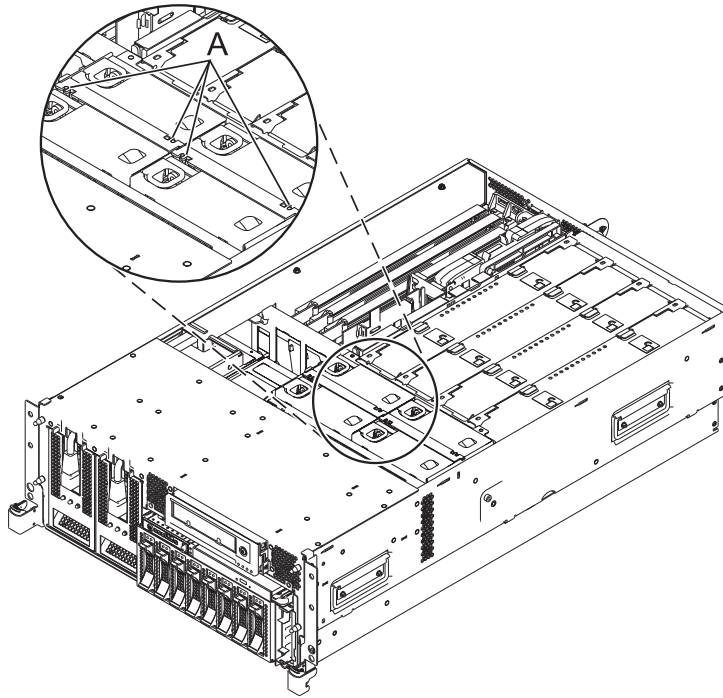
### Removing the fan

For information about using the HMC to remove fans, see Removing a part by using the Hardware Management Console

To remove the fan from a system that is not managed by the HMC, complete the following steps:

1. Complete the prerequisite tasks described in “Before you begin” on page 115.
2. Determine if the repair can continue concurrently. To continue the repair concurrently, the following conditions must be true:
  - Air moving devices (AMDs) must be installed in all four positions.  
Each of these four AMD units has a green LED and an amber LED. The green LED will be on for all four of the fans, but the fan with the failure on it will have the amber fault LED lit.
  - If only amber fault LED is on, the repair can be performed concurrently.

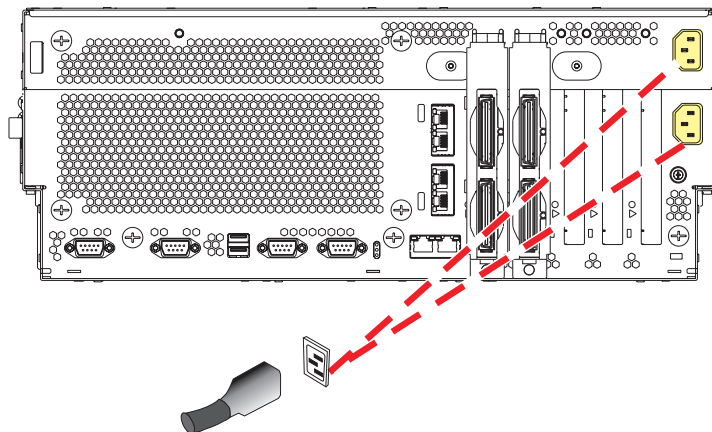
**Note:** If more than one amber fault LED is on then the repair must be done nonconcurrently.



### 3. Select an action

Nonconcurrent repair. Power off the unit and continue the repair.	Concurrent repair. Continue the repair with unit power on.	Delay the repair.
↓	Go to step 9 on page 40.	<b>This ends the procedure.</b>

4. Stop the system, as described in Stopping a system or logical partition.
5. Disconnect all power cords from the unit you are servicing.



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6. If you have a rack-mounted system, place it in the service position, as described in Placing a 8233-E8B or 8236-E8C in the service position.
7. Remove the service access cover, as described in Removing the service access cover from an 8233-E8B or 8236-E8C system.

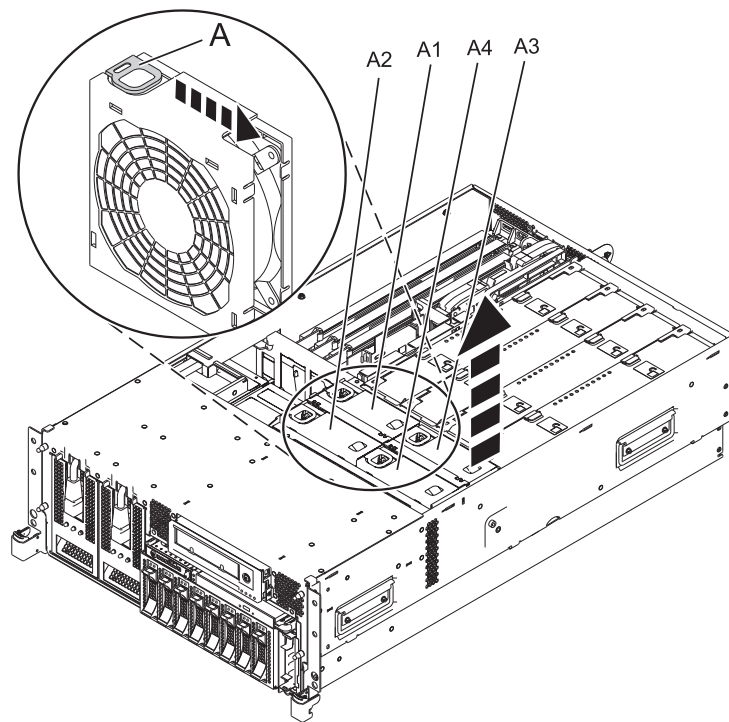
8. Attach the wrist strap

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
- When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.

9. Remove the fan

- a. Locate the failing system fan to be replaced. It is the fan indicated by the amber fault LED being on.
- b. While squeezing the latch (A), reach through the hole of the failing fan and pull the fan out of the fan cage.



If you removed the fan as part of another service action, or if you need to replace the fan that you removed, see Replacing the 8233-E8B or 8236-E8C system unit fan.

## Replacing the fan

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see IBM Prerequisite. If the required software is not installed, see the following Web sites to download it, and then install it before continuing:

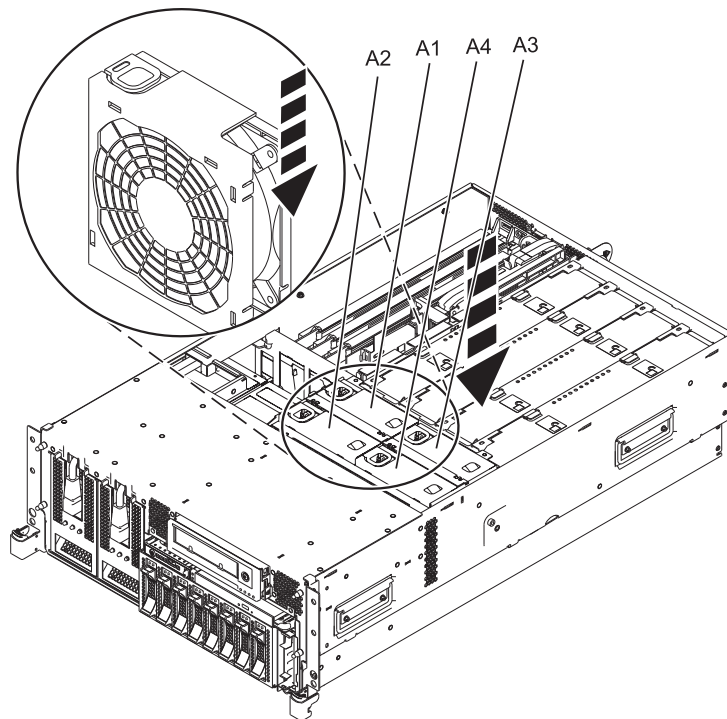
- To download firmware and software updates and fixes, see Fix Central.
- To download Hardware Management Console (HMC) updates and fixes, see Hardware Management Console Support and downloads.

If your system is managed by the HMC, use the HMC to complete the steps for replacing the fan in the server. For information about using the HMC to replace fans, see Replacing a part by using the Hardware Management Console. If you do not have an HMC, complete the following steps to replace the fan.

1. Complete the prerequisite tasks described in “Before you begin” on page 115.
2. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
3. If necessary, remove the fan from its antistatic package.
  4. **Install the fan**
    - a. Lower the fan into its location in the fan cage. Orient the fan so the latch is located towards the middle of the system.
    - b. Push down on the fan until it locks into place.



5. Replace the service access cover, as described in Installing the service access cover on an 8233-E8B or 8236-E8C system.
6. Place the system in the operating position, as described in Placing the 8233-E8B or 8236-E8C in the operating position.
7. If you removed the power cords, connect all power cords to the unit you are servicing.
8. Verify the installed part, as described in Verifying the installed part.

## GX adapters

Use this procedure to service the GX adapters.

### Removing GX adapters

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove an adapter. For instructions, see *Removing a part by using the Hardware Management Console*.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for removing an adapter. For instructions, see *Removing a part by using the Systems Director Management Console*.

To remove the adapter from a system that is not managed by the HMC or SDMC, complete the following steps:

1. Complete the prerequisite tasks described in “Before you begin” on page 115; however do not disconnect the power cords at this time.
2. Stop the system, as described in *Stopping a system or logical partition*.
3. If you are working on a rack-mounted system unit, open the rear rack door.
4. Disconnect the power source from the system by unplugging the system.

**Note:** This system is equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

5. If necessary, disconnect any cables connected to the adapter at the rear of the system.

**Tip:** Label the cables before removing them from the adapter.

6. Place the system in the service position, as described in *Placing a 8233-E8B or 8236-E8C in the service position*.
7. Remove the access cover, as described in *Removing the service access cover from an 8233-E8B or 8236-E8C system*.
8. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
9. Remove the existing adapter assembly by sliding the retainers **(A)** into the open position. Unlatch the blue locking latches **(B)** on the adapter assembly by pushing them together and pulling them up into the open position, and then lift the adapter out of the system.

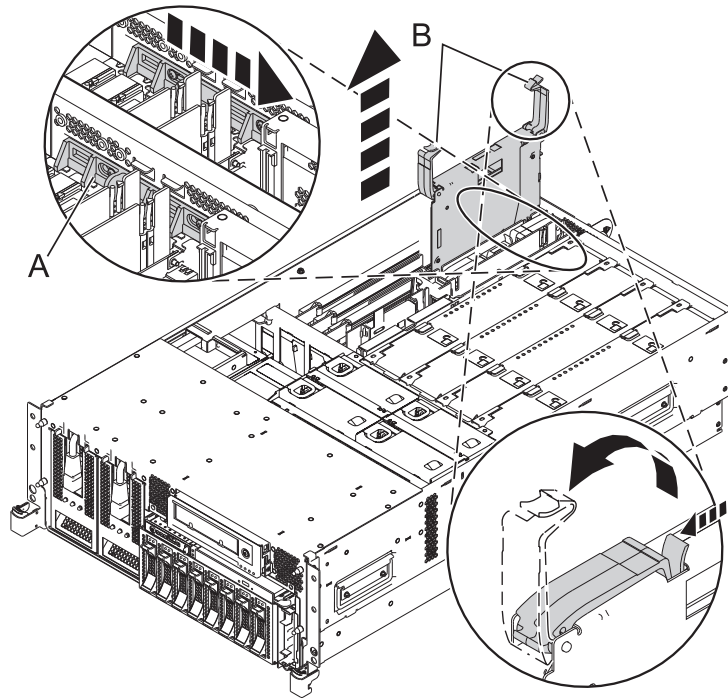


Figure 22. Adapter removal from a rack-mounted system

10. Place an adapter or a filler panel in the expansion slot of the system unit for proper airflow and cooling:
  - To replace the adapter, see Replacing GX adapters in an 8233-E8B or 8236-E8C with power turned off.
  - If you are not replacing the adapter, place a filler panel in the slot and continue with the next step.
11. Seal the expansion slot by using an expansion slot cover.
12. Replace the service access cover, as described in Installing the service access cover on an 8233-E8B or 8236-E8C system.
13. If you are working on a rack-mounted system unit, ensure that the system cables are routed correctly through the cable-management arm.
14. If you are working on a rack-mounted system unit, place the system in the operating position as described in Placing the 8233-E8B or 8236-E8C in the operating position.
15. Reconnect all power and signal cables to their respective connectors.
16. Close the back rack door or the back system door.
17. Start the system, as described in Starting the system or logical partition.
18. Verify that the new resource is working correctly, as described in Verifying the installed part.

Replace the GX adapter with the power turned off.

## Replacing GX adapters

**Note:** Replacing this feature is a customer task. You can perform this task yourself, or contact a service provider to perform the task for you. You might be charged a fee by the service provider for this service.

If your system is managed by the Hardware Management Console (HMC), use the HMC to replace an adapter. For instructions, see Exchanging a part by using the Hardware Management Console.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for replacing an adapter. For instructions, see Replacing a part by using the Systems Director Management Console.

To replace the adapter on a system that is not managed by the HMC or SDMC, complete the following steps:

1. Remove the adapter from the system unit.
2. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
3. Carefully grasp the new adapter assembly by its top edge, and align the adapter assembly with the slot and its connector on the system backplane.
  4. Press the adapter assembly firmly into its connector. When you install an adapter into the system, ensure that it is completely and correctly seated in its connector.
  5. Seat the adapter. Push down evenly on both of the blue locking latches (**A**) at the same time until the latches snap into place, indicating that the adapter assembly is seated correctly and locked into position. Slide the retainers (**B**) into the closed position.

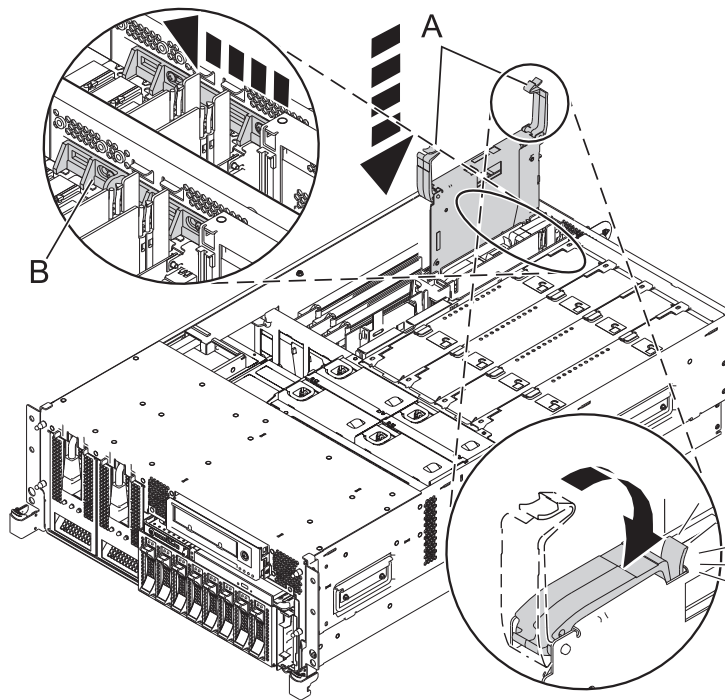


Figure 23. Adapter installation in a rack-mounted system

6. Replace the service access cover, as described in Installing the service access cover on an 8233-E8B or 8236-E8C system.



7. If you are working on a rack-mounted system unit, ensure that the system cables are routed through the cable-management arm correctly.
8. If you are working on a rack-mounted system unit, place the system in the operating position as described in *Placing the 8233-E8B or 8236-E8C in the operating position*.
9. Reconnect all power and signal cables to their respective connectors.
10. Close the rear rack door or the rear system door.
11. Start the system, as described in *Starting the system or logical partition*.
12. Verify that the new resource is working correctly, as described in *Verifying the installed part*.

## Host Ethernet Adapter

Use this procedure to service the Host Ethernet Adapter.

### Removing the Host Ethernet Adapter

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the host Ethernet adapter from the server. For instructions, see *Replacing a part by using the Hardware Management Console*.

**Note:** This procedure is for the internal Host Ethernet Adapter. For PCI Ethernet adapter information, see *PCI Adapters*.

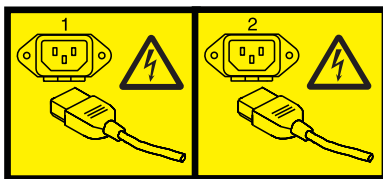
If you do not have an HMC, complete the following steps to remove the Host Ethernet Adapter:

**Note:** Removing the Host Ethernet Adapter is a nonconcurrent service action.

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. If you are removing the Host Ethernet Adapter for a system upgrade or as part of another procedure, continue to the next step. If you are removing the Host Ethernet Adapter because of a system failure, use the service action log to help identify the failing part. For more information, see *Identifying a part*.
3. Stop the system. For instructions, see *Stopping a system or logical partition*.
4. Disconnect the power source from the system by unplugging the system.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)



or



5. Place the system in the service position. For more information, see *Placing a 8233-E8B or 8236-E8C in the service position*.
6. Remove the service access cover. For more information, see *Removing the service access cover from an 8233-E8B or 8236-E8C system*.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
7. Locate the Ethernet adapter you want to remove as shown in the following figures.
  8. Label and remove the Ethernet cables from the back of the system. Note cable connector locations for future reference.
  9. Unlock the Ethernet adapter by pushing the latch **(A)** out.
  10. Lift the Ethernet adapter **(B)** out of the connector using the blue handle, as shown in the following figures.

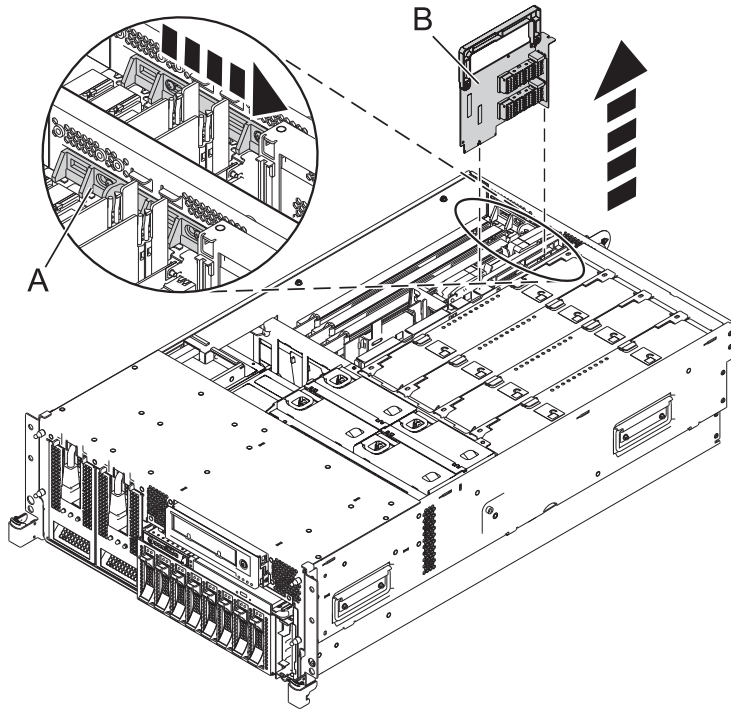


Figure 24. Removing a host Ethernet adapter ( P1-C6) for 8233-E8B or 8236-E8C

11. If you removed the adapter as a part of another procedure, continue with that procedure. To replace the adapter or install a new adapter, see Replacing the 8233-E8B or 8236-E8C Host Ethernet Adapter with the power off.

## Replacing the Host Ethernet Adapter

To remove the Host Ethernet Adapter, see Removing the 8233-E8B or 8236-E8C Host Ethernet Adapter with the power off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing the host Ethernet adapter in the server. For instructions, see Replacing a part by using the Hardware Management Console.

If you do not have an HMC, complete the following steps to replace the Host Ethernet Adapter:

**Note:** Replacing the Host Ethernet Adapter is a nonconcurrent service action.

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Carefully grasp the blue adapter handle. Align the adapter with the connector. Ensure that the hook on the tail stock of the adapter slips into the slot on the back of the system.
3. Insert the adapter (A) firmly into the connector by pushing down on the blue handle, as shown in the following figure.
4. Secure the adapter with the locking tabs (B).

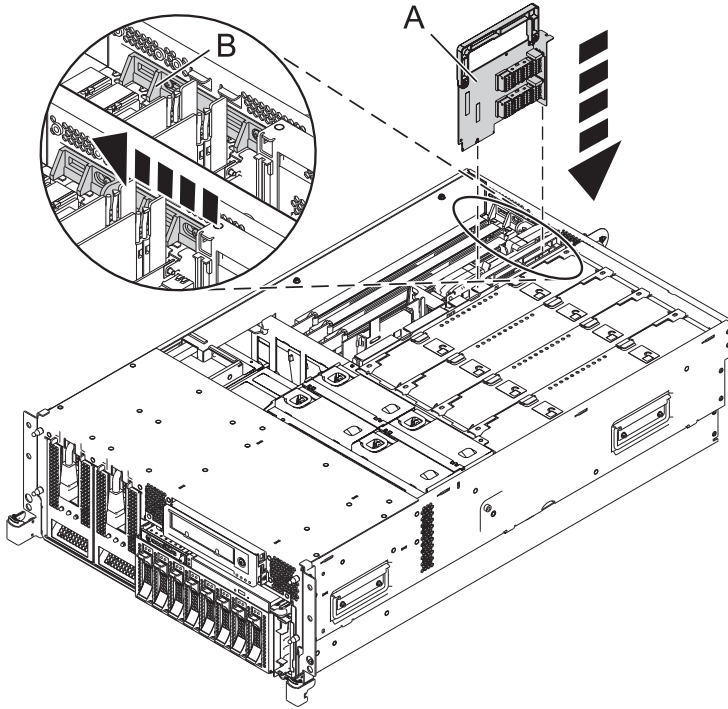


Figure 25. Install the Host Ethernet Adapter on a rack-mounted model for 8233-E8B or 8236-E8C

5. Replace the service access cover. For more information, see *Installing the service access cover on an 8233-E8B or 8236-E8C system*.
6. Reconnect the Ethernet cables to the back of the system.
7. Place the system in the operating position. For instructions, see *Placing the 8233-E8B or 8236-E8C in the operating position*.
8. Verify the installed part. For instructions, see *Verifying the installed part*.

## Media devices

Use this procedure to service media devices.

Select the procedure that applies to the media device that needs to be serviced.

- Removing and replacing a SAS media device
- Removing and replacing a Slimline media device with the power on
- Removing and replacing a universal serial bus disk drive
- Installing an external universal serial bus disk drive

### SAS media device

Use this procedure to service SAS media devices.

#### Removing a SAS media device:

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for removing media devices from the server. For instructions, see *Removing a part using the Systems Director Management Console*.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing media devices from the server. For information about using the HMC to remove media devices, see *Removing a part using the Hardware Management Console*.

If you do not have an HMC or SDMC, complete the following steps to remove the media device:

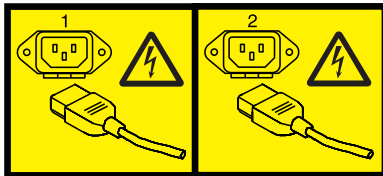
Before you remove a media device, perform the prerequisite tasks described in Before you begin.

To remove a SAS media device, complete the following steps:

1. Stop the media device and eject any media.
2. Power off the system. See Stopping the system or logical partition.
3. Disconnect the power cords from the system.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)



or



4. Remove the front cover. See Removing the front cover.
5. Place the system into the service position. See Placing the system into the service position.
6. Remove the service access cover. See Removing the service access cover.
7. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
- When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.

8. Remove the fans and fan cage.

**Note:** Although the following figures show a media device, you have already removed the media device filler and your system will have an empty space until you complete all the steps.

- a. Remove the fan by squeezing or lifting the tab (A), depending on your model, and lifting it out of the system as shown in the following figure.

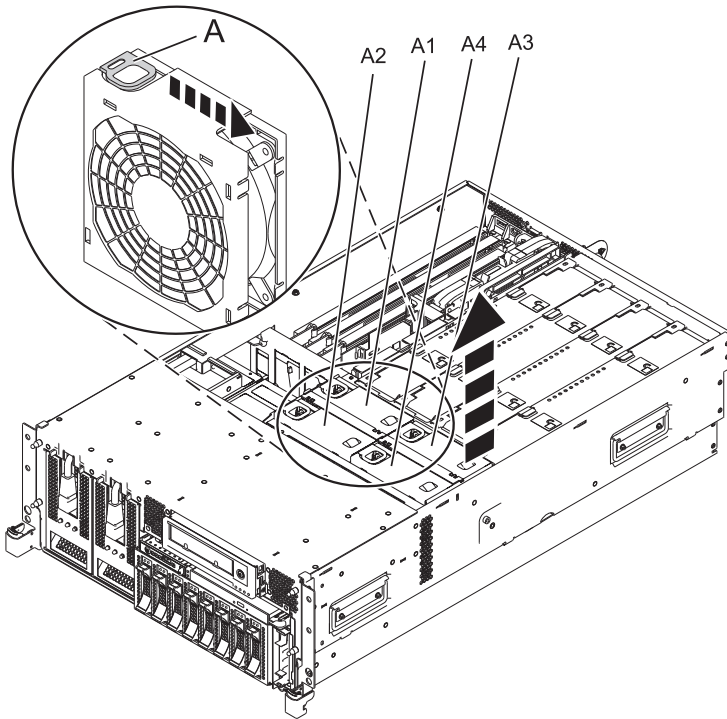


Figure 26. Fan removal

- b. Remove the blue air baffles as shown in the following figure.

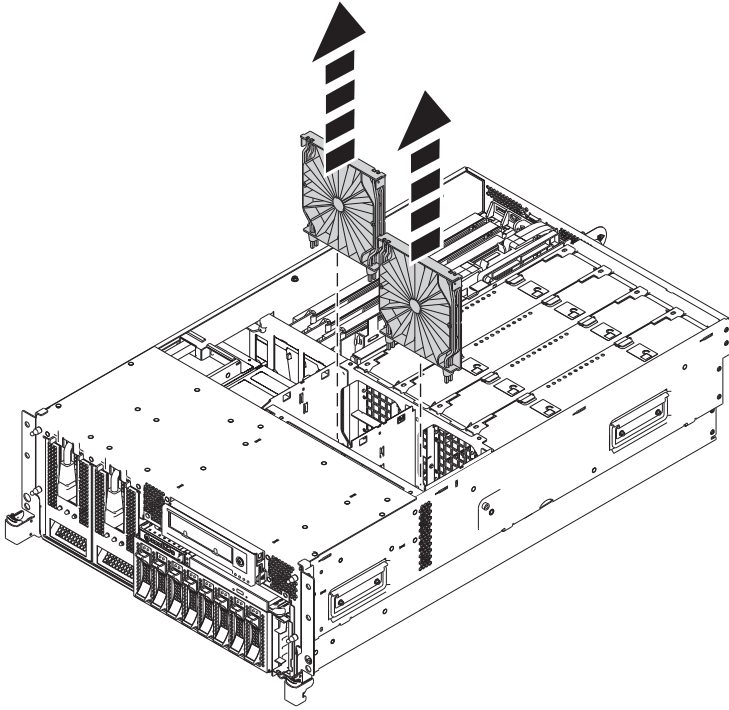


Figure 27. Air baffle removal

- c. Remove the fan cage (B) by unscrewing the thumbscrews (A) and lifting out the fan cage.

**Note:** If the thumbscrews are too tight, you might need a flat-head screwdriver to complete this step. To pull the fan cage out of the system, you might need to unplug the control panel cable to allow more space.

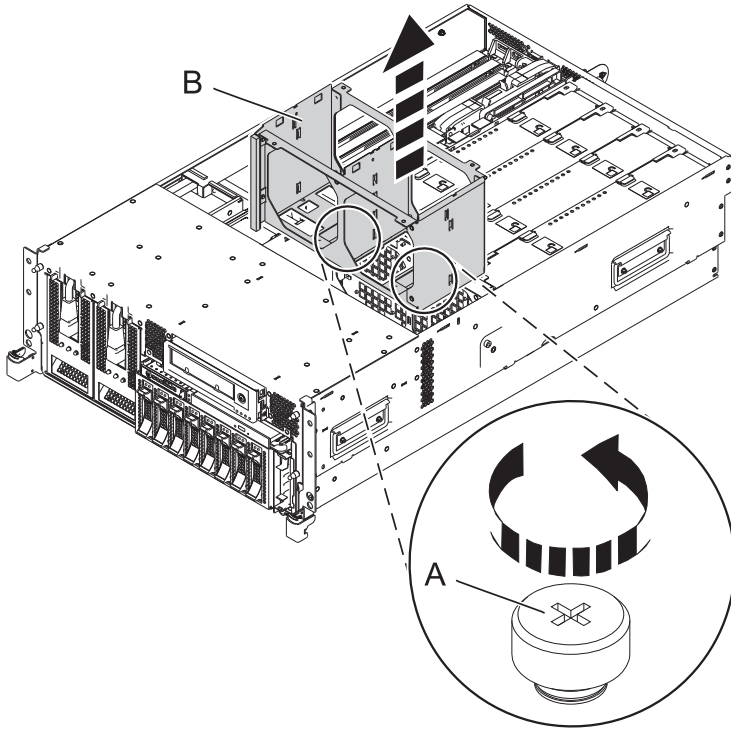
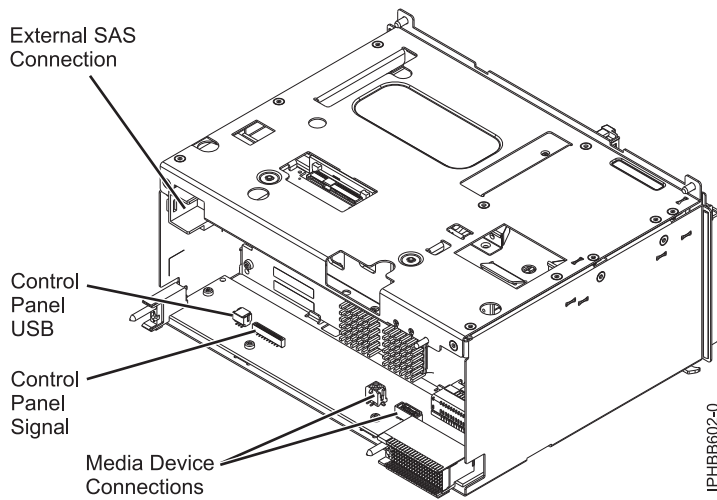


Figure 28. Fan cage removal

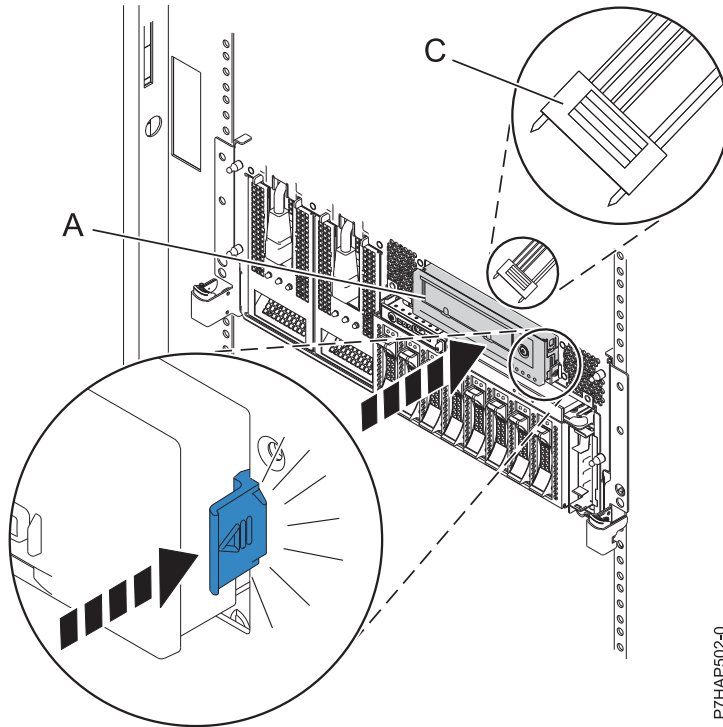
9. If you are replacing the media device cable, disconnect the media-device connections from the system backplane.



10. Press the release latch (A) and unseat the media device (B) from the system as shown.

**Note:** You need to remove the media cable (C) attached at the back of the device before removing the media device.





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11. Pull the media device from the system.
12. If you removed the media device as a part of another procedure, return to that procedure.
13. If you removed the media device to replace the media device, see *Installing a SAS media device in 8233-E8B*.

*Replacing a SAS media device:*

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for installing a feature in the server. For instructions, see *Removing a part using the Systems Director Management Console*.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a feature in the server. For information about using the HMC to install a feature, see *Installing a feature using the Hardware Management Console*.

If you do not have an HMC or SDMC, complete the following steps to install a media device from the system or partition that controls the media device:

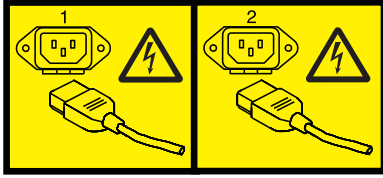
Before you install a SAS media device, perform the prerequisite tasks described in *Before you begin*.

To install a SAS media device, do the following steps:

1. Power off the system. See *Stopping the system or logical partition*.
2. Disconnect the power cords from the system.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

**(L003)**



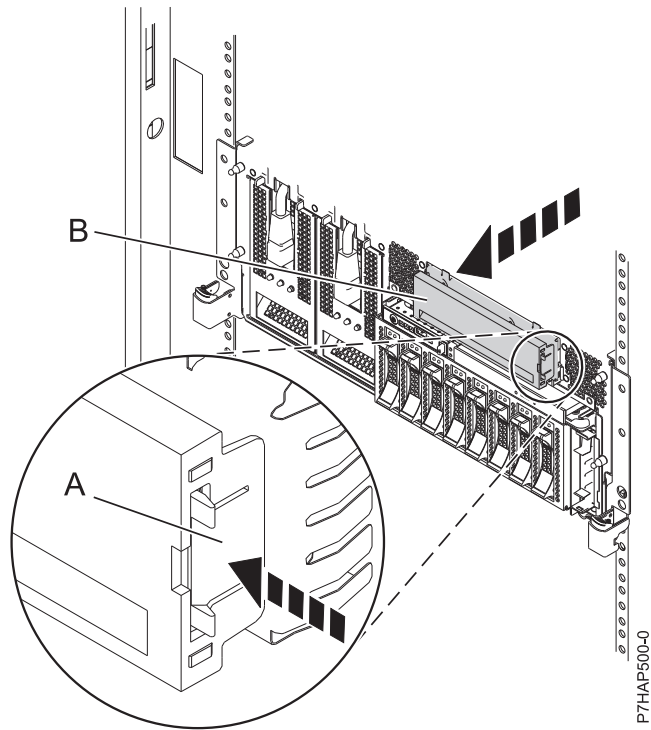
or



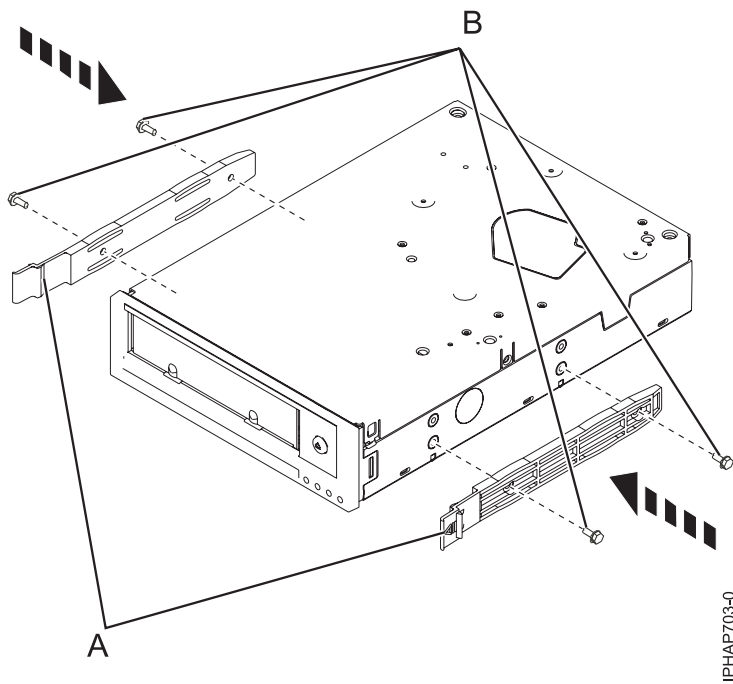
3. Place the system into the service position. See [Placing the system into the service position](#).
4. Remove the front cover. See [Removing the front cover](#) for instructions.
5. Remove the service access cover. See [Removing the service access cover](#) for instructions.
6. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
7. Remove the media device filler, if present, as shown in the following figure.

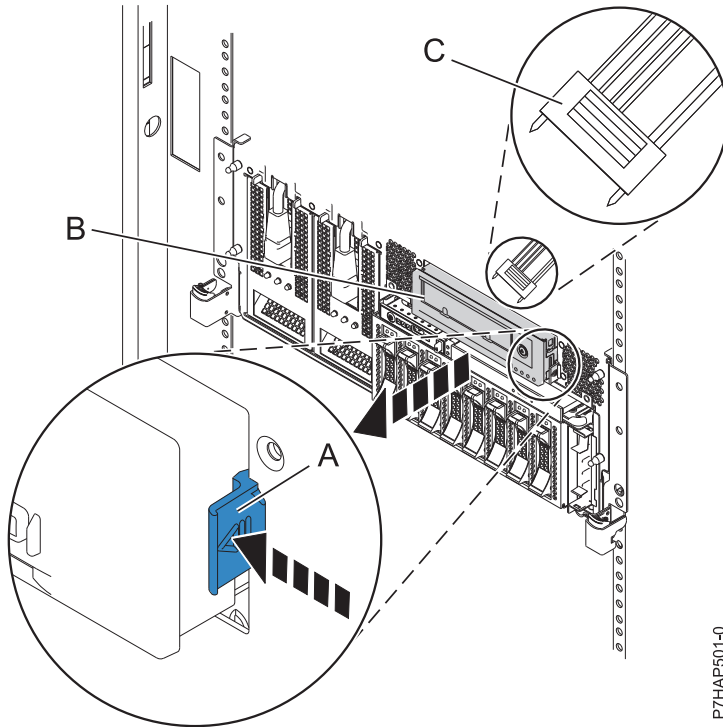


8. Install the rails (A) onto the media device using the two small screws (B) included with your media device. The rails must be placed on each side of the media device. Screw the rails into the side of the media device using the lower screw hole.



9. Push the media device (A) into the system until you feel the latches (B) lock in place as shown.

**Note:** You need to attach the media cable (C) provided at the back of the device before installing the media device.



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10. Remove the fans and fan cage.

**Note:** Although the following figures show a media device, you have already removed the media device filler and your system will have an empty space until you complete all the steps.

- a. Remove the fan by squeezing or lifting the tab (A), depending on your model, and lifting it out of the system as shown in the following figure.

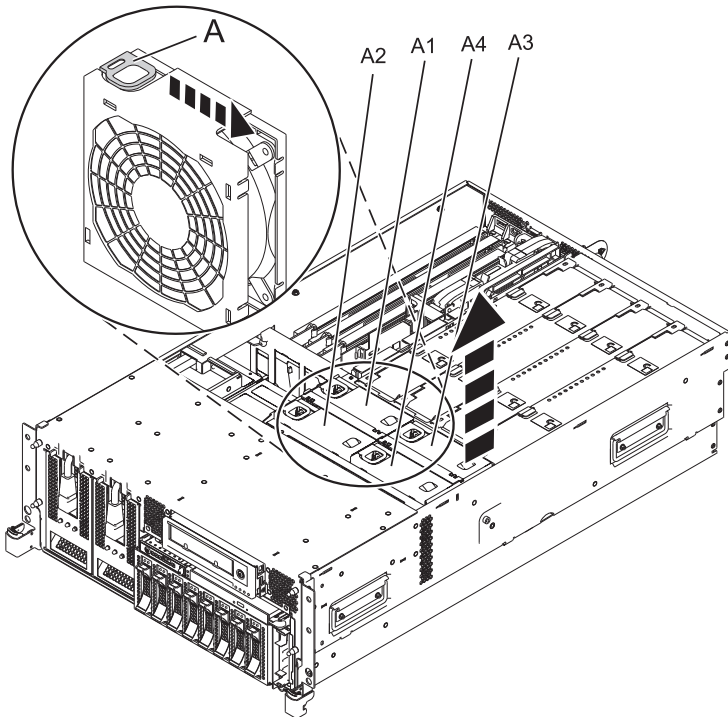


Figure 29. Fan removal

- b. Remove the blue air baffles as shown in the following figure.

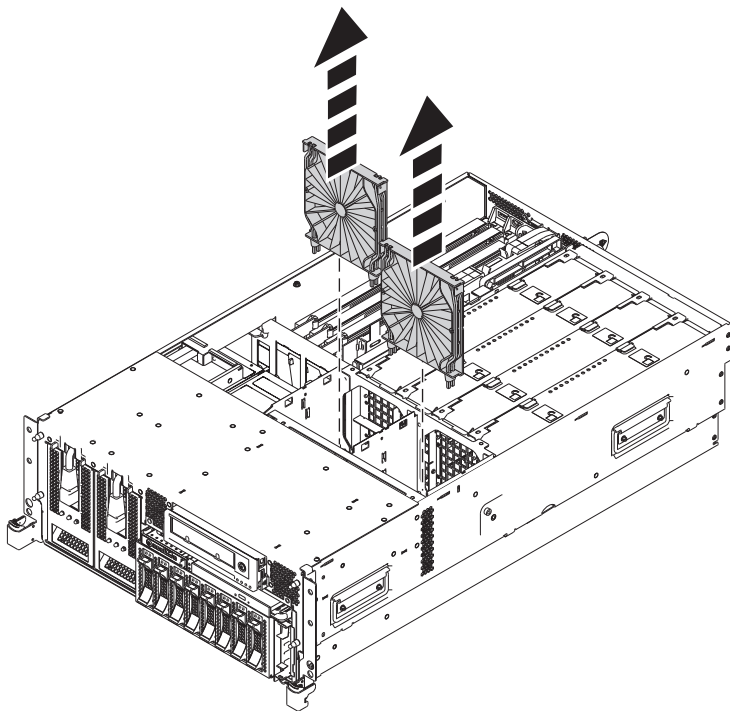


Figure 30. Air baffle removal

- c. Remove the fan cage (B) by unscrewing the thumbscrews (A) and lifting out the fan cage.

**Note:** If the thumbscrews are too tight, you might need a flat-head screwdriver to complete this step. To pull the fan cage out of the system, you might need to unplug the control panel cable to allow more space.

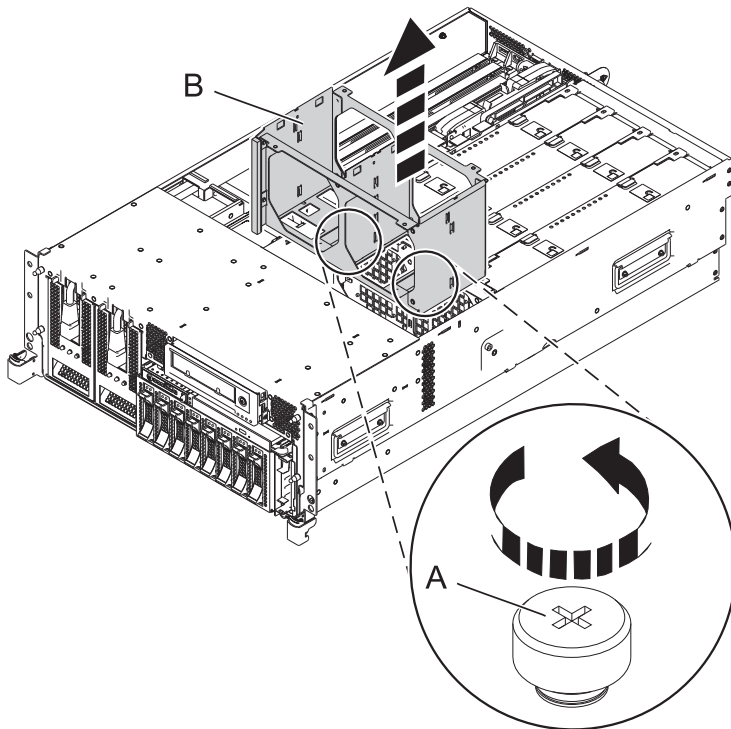
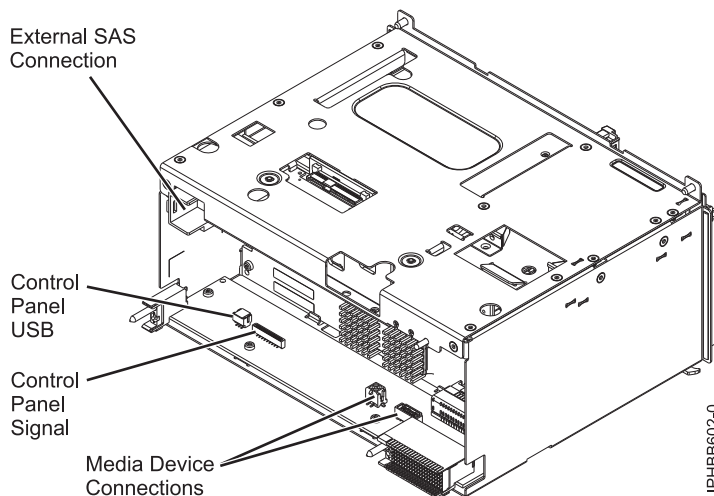
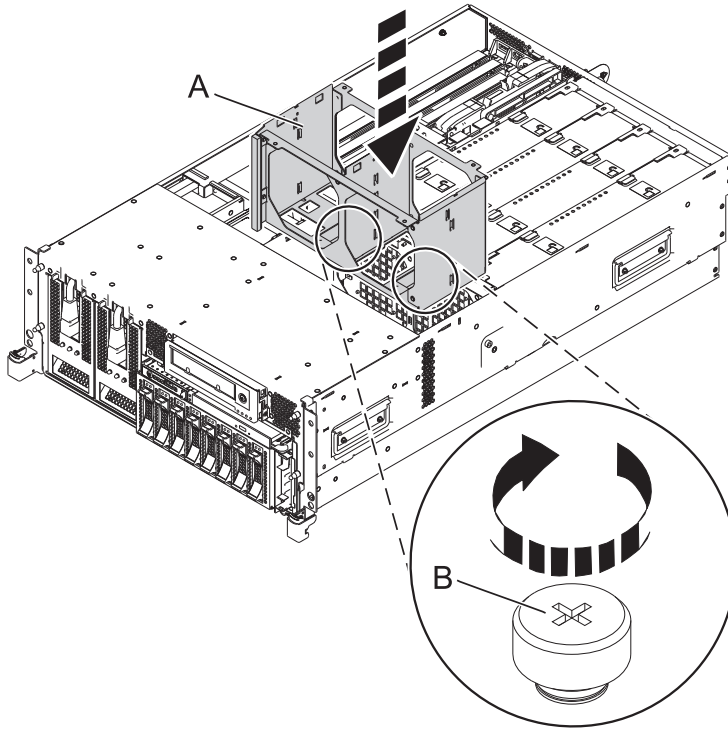


Figure 31. Fan cage removal

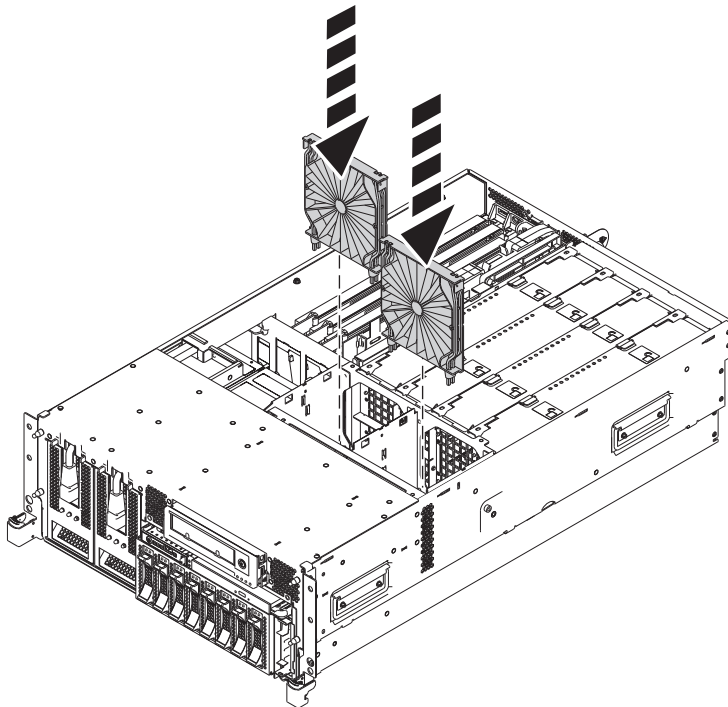
11. Connect the SAS cable to the drive.
12. Attach the media-device connections to the system backplane.



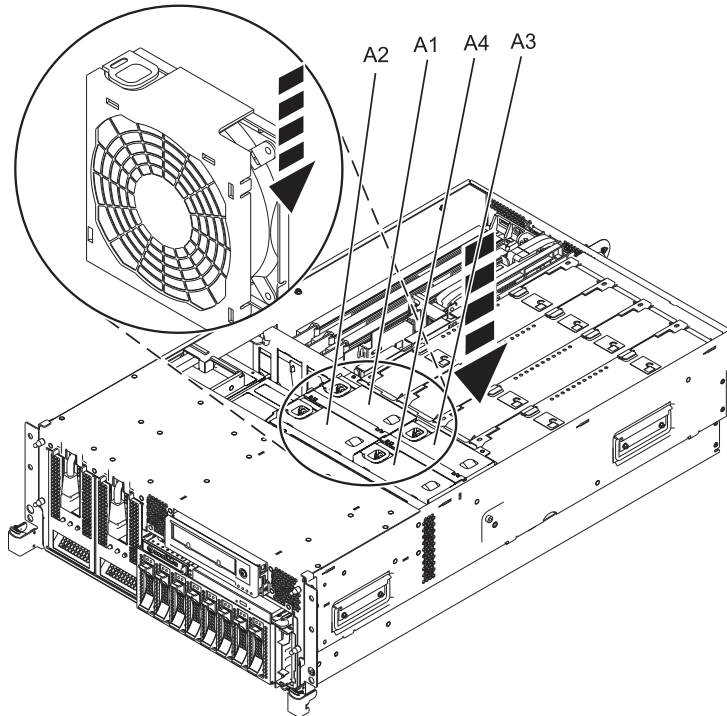
13. Reinstall the fans and fan cage.
  - a. Replace the fan cage by inserting it into the system and tightening the thumbscrews (**B**).



b. Replace the blue air baffles as shown in the following figure.



c. Replace the fans by inserting them into the fan cage until they lock into place, as shown in the following figure.



14. Install the service access cover. See Installing the service access cover on a rack-mounted system for instructions.
15. Attach the front cover. See Installing the front cover on the rack-mounted system.
16. Connect the power cords to the system.
17. Start the system. See Starting the system or logical partition.
18. Verify that the media device is installed and working correctly. See Verifying the installed part.

### **Removing and replacing a Slimline media device with the power on**

Use this procedure to service Slimline media devices.

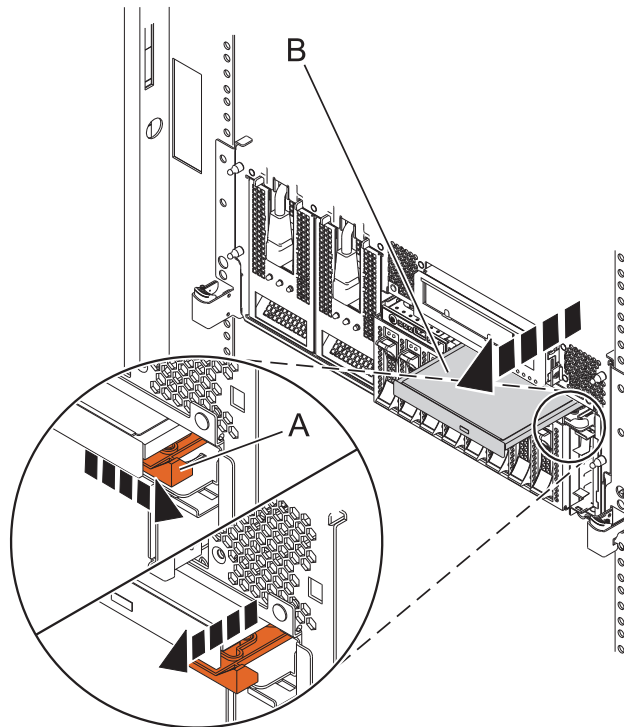
#### **Removing a Slimline media device with the power on:**

Before you remove a media device, perform the prerequisite tasks described in Before you begin.

To remove a Slimline media device, complete the following steps:

1. Remove any media from the drive.
2. Remove the front cover. See Removing the front cover from a rack-mounted system.
3. Press the retaining tab (A) away from the Slimline media device until it is unseated from the media bay as shown.





4. Pull the Slimline media device (B) away from the system.

#### Replacing a Slimline media device with the power on:

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for installing a feature in the server. For instructions, see *Removing a part using the Systems Director Management Console*.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a feature in the server. For information about using the HMC to install a feature, see *Installing a feature using the Hardware Management Console*.

If you do not have an HMC or SDMC, complete the following steps to install a media device from the system or partition that controls the media device:

**Note:** The 8233-E8B and 8236-E8C support only one Slimline media device per processor.

To install a Slimline media device for models 8233-E8B and 8236-E8C with the system or partition powered off, follow these steps from the system or partition that controls the media device:

1. Stop the system. For instructions, see <http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7haj/crustopsys.htm>.

If you have created an IBM i logical partition on your system, see *Logical partitioning*. To find instructions for powering off a system with an IBM i logical partition, see *Shutting down IBM i logical partitions*.

**Attention:** Media devices are fragile. Handle with care.

2. Remove the system unit front cover. For instructions, see *Removing the front cover from a rack-mounted system*.
3. Find the package that contains the new media device and remove it from the static-protective package.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
4. Remove the media-device filler, if present.
  5. Align the media device with the Slimline media bay, and support the bottom of the device as you slide it halfway into the system.
  6. Push the device (A) fully into the system as shown in the following figure. To ensure that the device is held firmly in place, push in the plastic retaining tab (B).

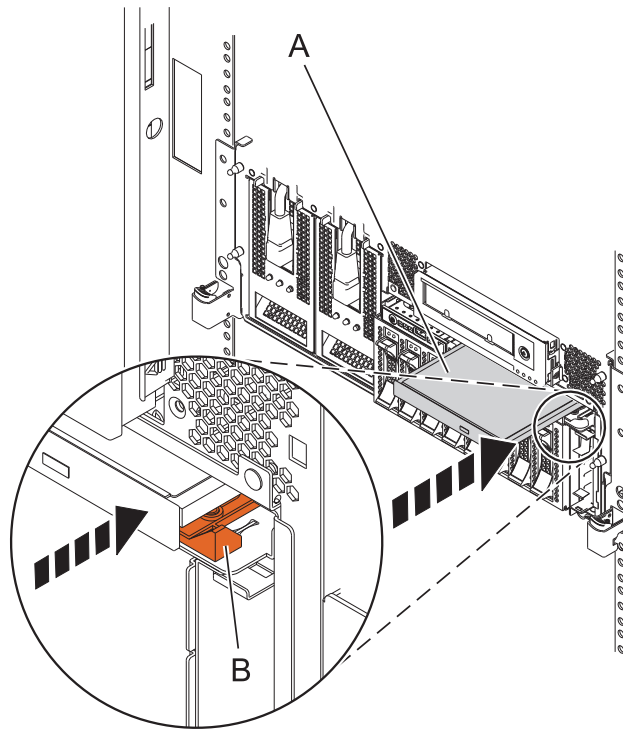


Figure 32. Installation of a Slimline media device

7. Start the system. For instructions on starting the system, see Starting the system or logical partition.
8. Verify that the new resource is functional. See Verifying the installed part.
9. Replace the front cover on the system. For instructions, see Installing the front cover on the rack-mounted system.
10. Close the front rack door, if this is a rack-mounted model.

## Removing and replacing a USB disk drive

Use this procedure to service USB media devices.

### Removing a USB disk drive:

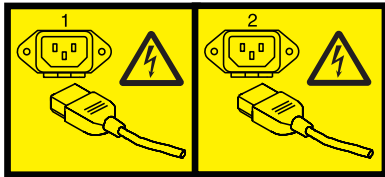
Before you remove a media device, perform the prerequisite tasks described in Before you begin.

To remove a USB disk drive media device, complete the following steps:

1. Power off the system. See Stopping the system or logical partition.
2. Disconnect the power cords from the system.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)



or



3. Remove the front cover. See Removing the front cover.
4. Place the system into the service position. See Placing the system into the service position.
5. Remove the service access cover. See Removing the service access cover.
6. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
7. Remove the fans.
    - a. Remove the fan by squeezing the tab (A) and lifting it out of the system as shown in the following figure.

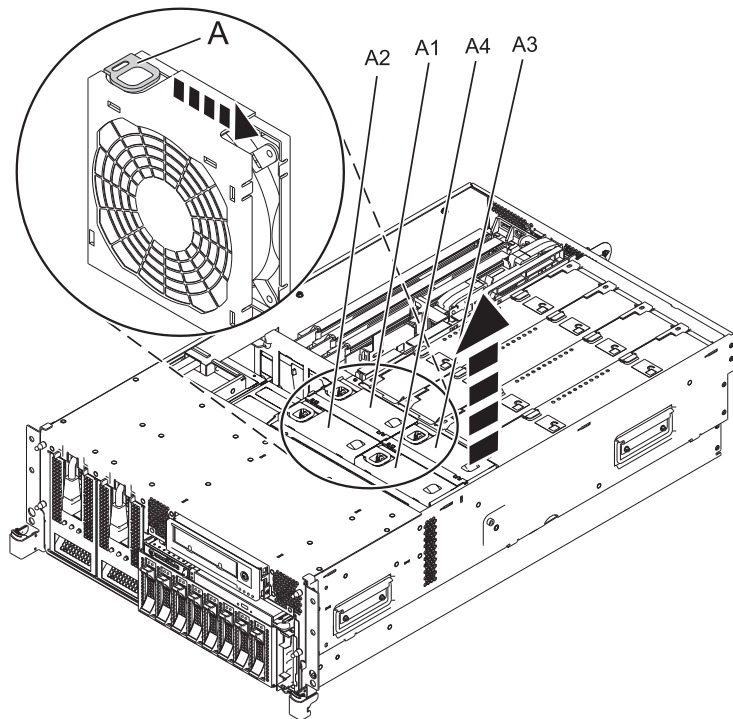


Figure 33. Fan removal

b. Remove the blue air baffles as shown in the following figure.

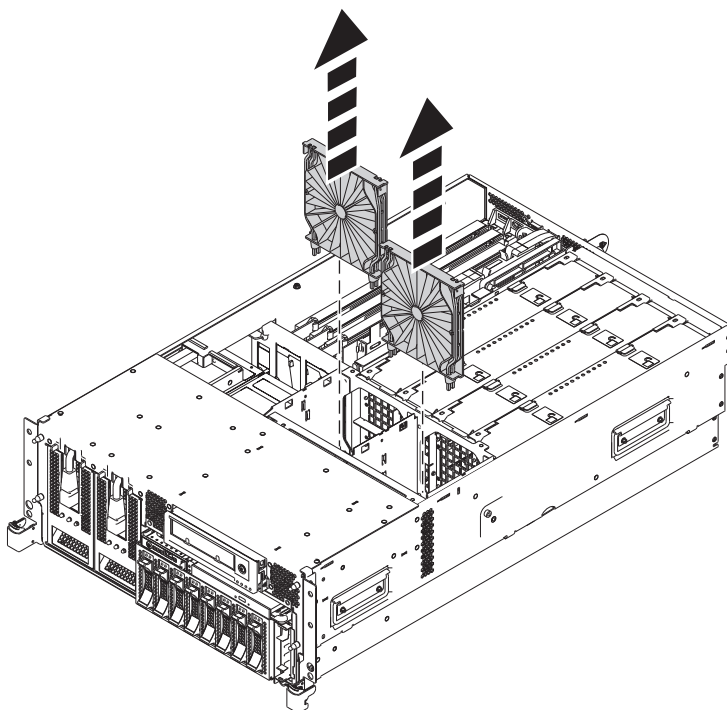


Figure 34. Air baffle removal

8. Remove the fans and fan cage.

**Note:** Although the following figures show a media device, you have already removed the media device filler and your system will have an empty space until you complete all the steps.

- a. Remove the fan by squeezing or lifting the tab (A) and lifting it out of the system, as shown in the following figure.

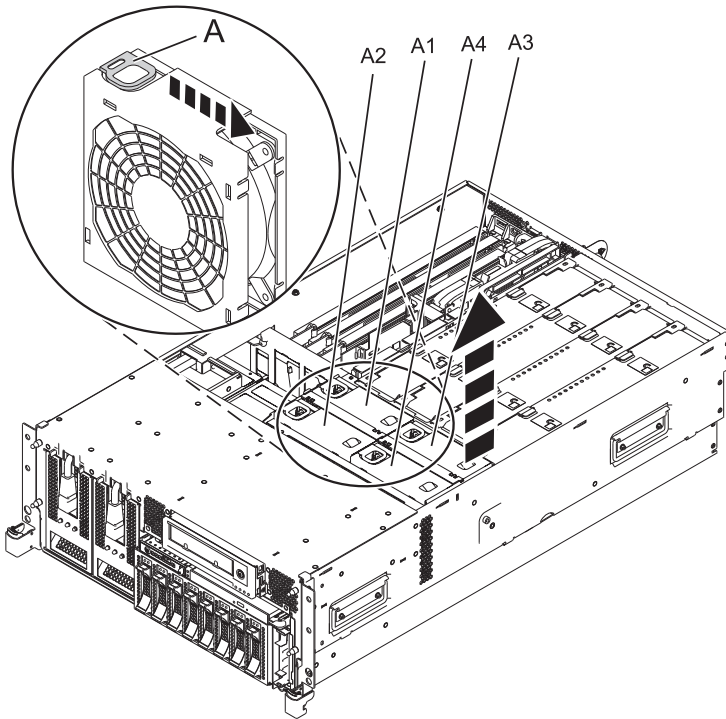


Figure 35. Fan removal

Remove the blue air baffles as shown in the following figure.

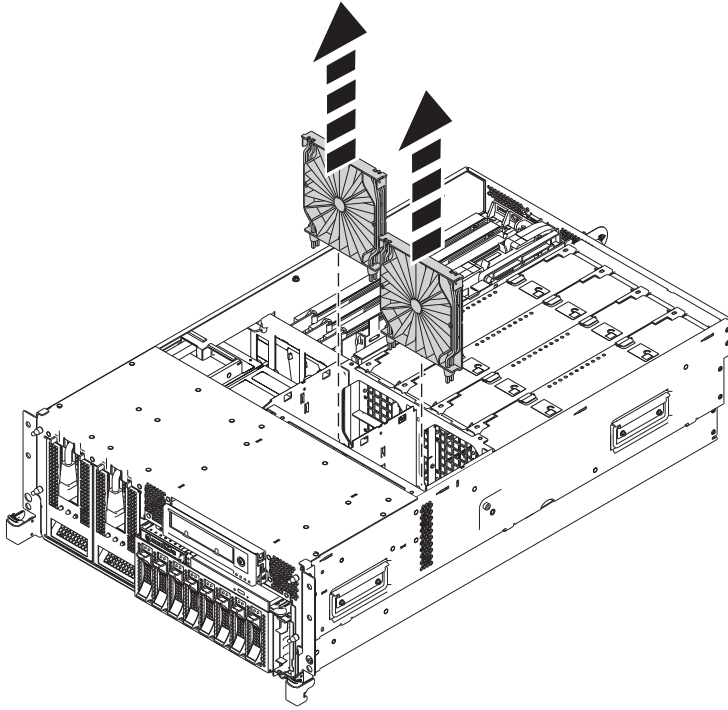


Figure 36. Air baffle removal

Remove the fan cage **(B)** by unscrewing the thumbscrews **(A)** and lifting out the fan cage.

**Note:** If the thumbscrews are too tight, you might need a flat-head screwdriver to complete this step. To pull the fan cage out of the system, you might need to unplug the control panel cable to allow more space.

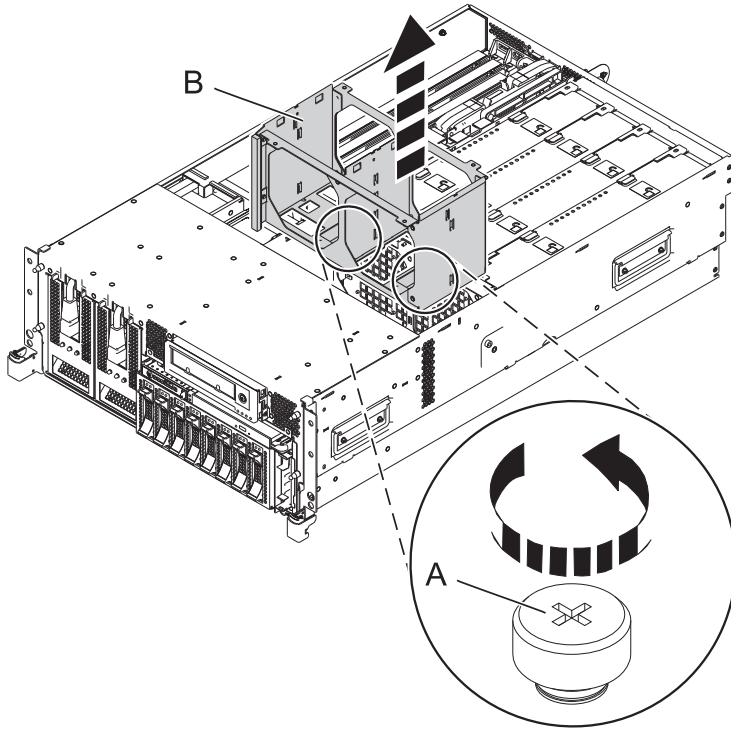
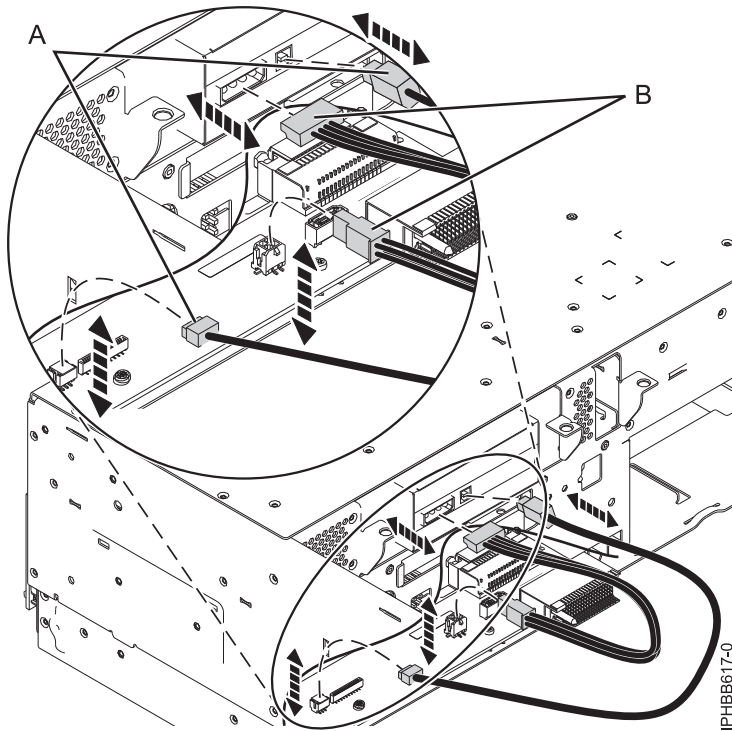


Figure 37. Fan cage removal

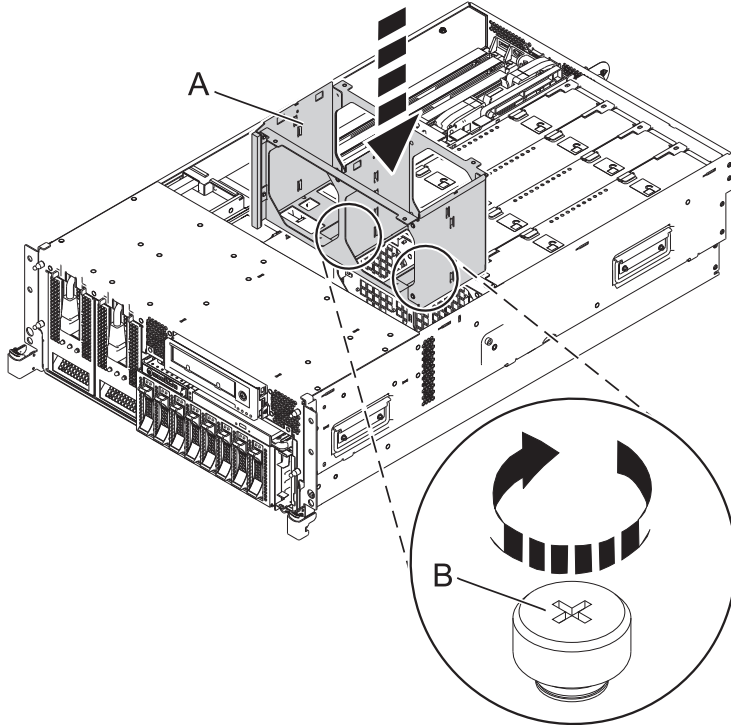
9. Disconnect the media-device connections from the system backplane.



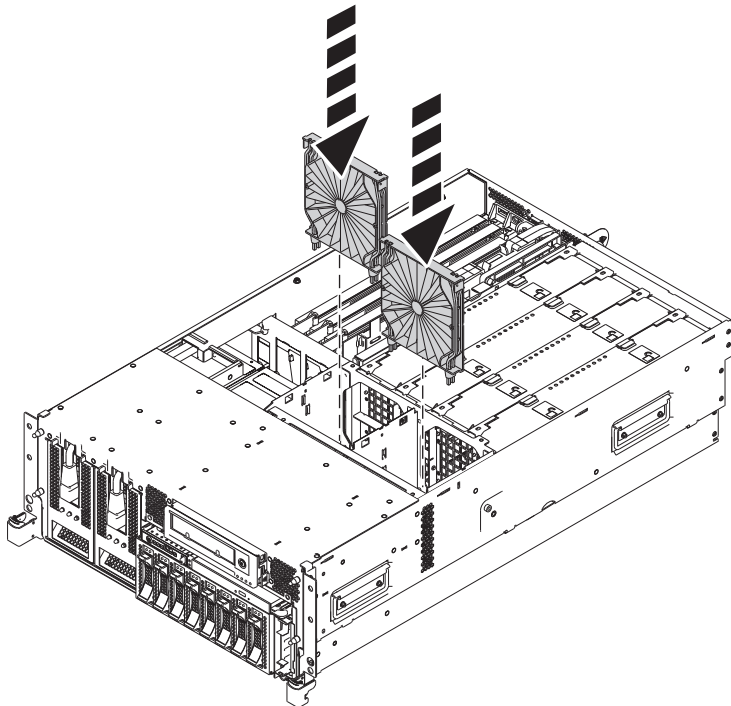
**Note:**

- When removing cables, ensure that you release any cable locks.

- Optional: If you do not intend to replace the USB disk drive, you can reconnect the control panel USB cable and media connections.
10. Reattach any other cables that you previously disconnected from the backplane.
  11. Reinstall the fans into the 8233-E8B or 8236-E8C system.
    - a. Replace the fan cage by inserting it into the system and tightening the thumbscrews **(B)**.

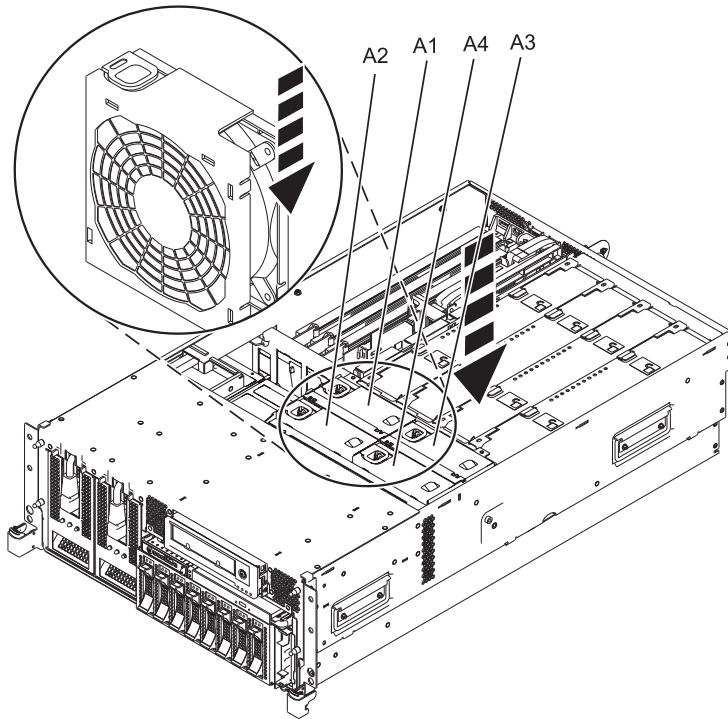


Replace the blue air baffles as shown in the following figure.



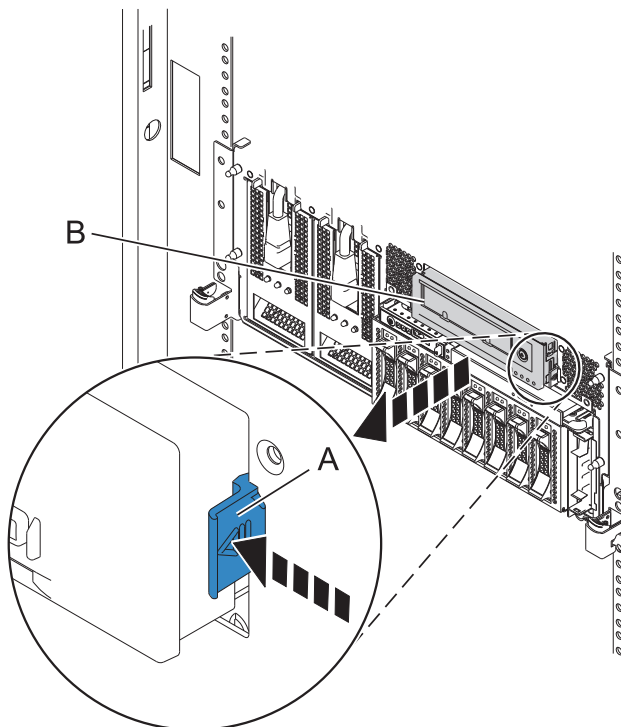


Replace the fans by inserting them into the fan cage until they lock into place, as shown in the following figure.



12. Press the release latch (A) and unseat the media device (B) from the system as shown.

**Note:** You need to remove the media cables (A) and (B) provided at the back of the device before removing the media device.



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13. Pull the media device from the system.
14. If you removed the media device as a part of another procedure, return to that procedure.
15. If you removed the media device to replace the media device, see *Installing a universal serial bus disk drive in 8233-E8B* .

**Replacing a USB disk drive:**

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for installing a feature in the server. For instructions, see *Removing a part using the Systems Director Management Console*.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a feature in the server. For information about using the HMC to install a feature, see *Installing a feature using the Hardware Management Console*.

If you do not have an HMC or SDMC, complete the following steps to install a USB disk drive:

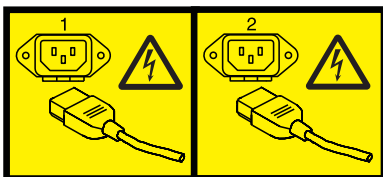
Before you install a USB disk drive, perform the prerequisite tasks described in <http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7haj/beforebegin.htm>.

To install a USB disk drive, do the following steps:

1. Power off the system. See <http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7haj/crustopsys.htm>.
2. Disconnect the power cords from the system.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)



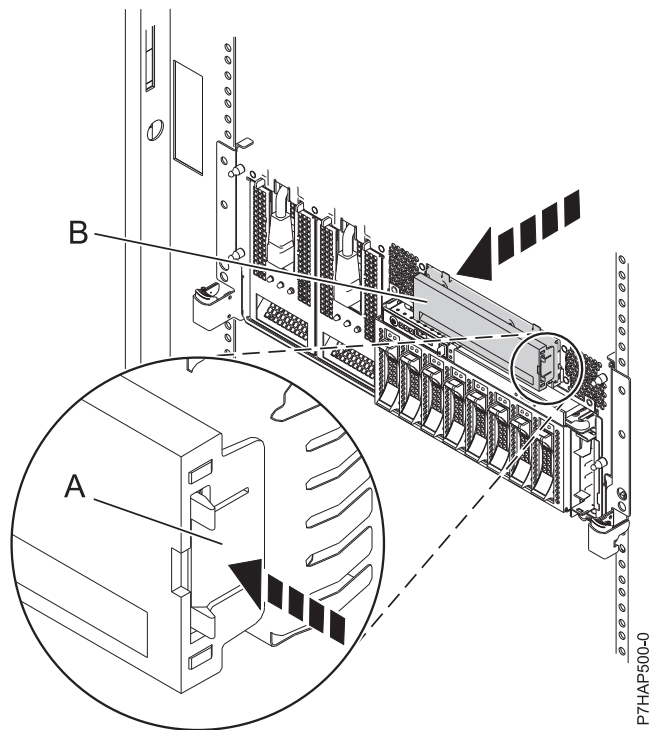
or



3. Place the system into the service position. See *Placing the system into the service position*.
4. Remove the front cover. See *Removing the front cover* for instructions.
5. Remove the service access cover. See *Removing the service access cover* for instructions.
6. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
7. Remove the media device filler, if present, as shown in the following figure.



8. Remove the fans and fan cage.

**Note:** Although the following figures show a media device, you have already removed the media device filler and your system will have an empty space until you complete all the steps.

- a. Remove the fan by squeezing or lifting the tab (A) and lifting it out of the system, as shown in the following figure.

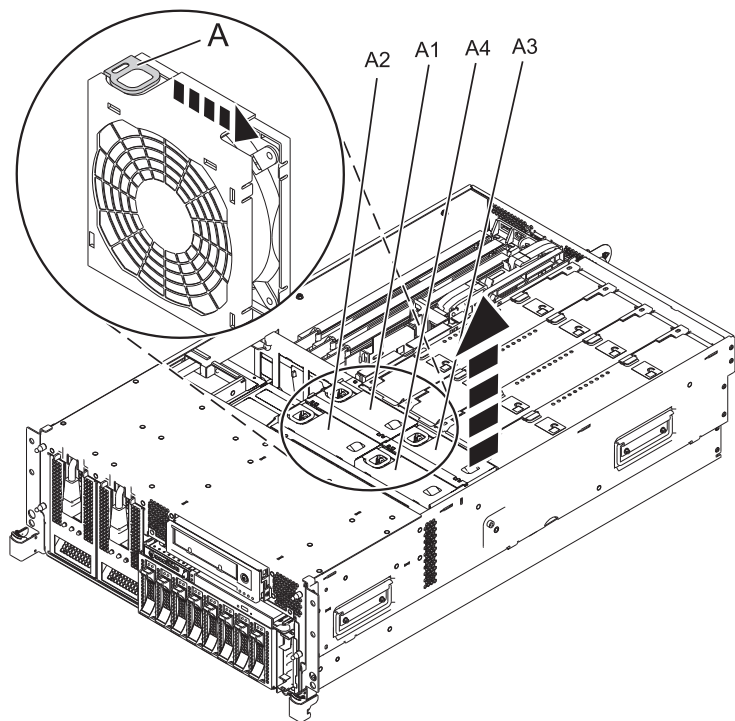


Figure 38. Fan removal

Remove the blue air baffles as shown in the following figure.

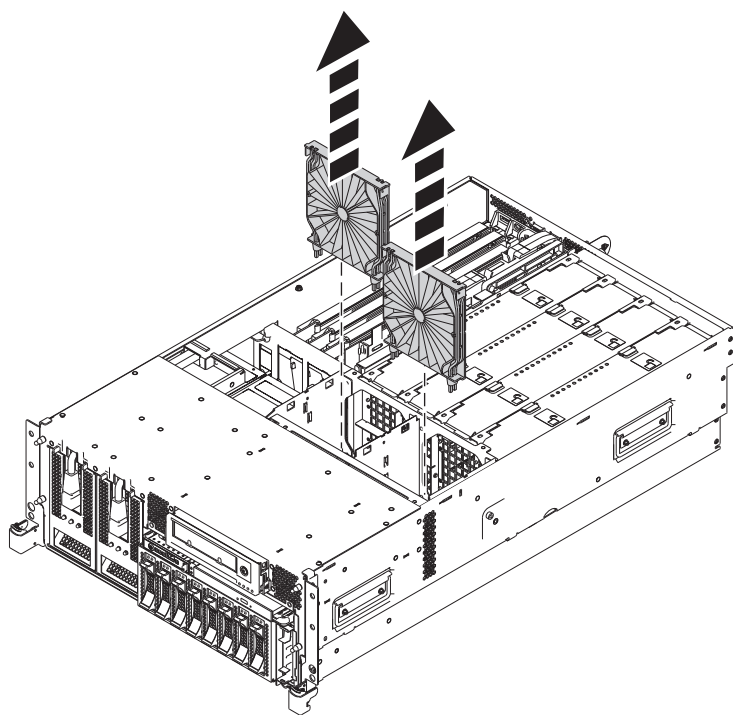


Figure 39. Air baffle removal

Remove the fan cage (B) by unscrewing the thumbscrews (A) and lifting out the fan cage.

**Note:** If the thumbscrews are too tight, you might need a flat-head screwdriver to complete this step. To pull the fan cage out of the system, you might need to unplug the control panel cable to allow more space.

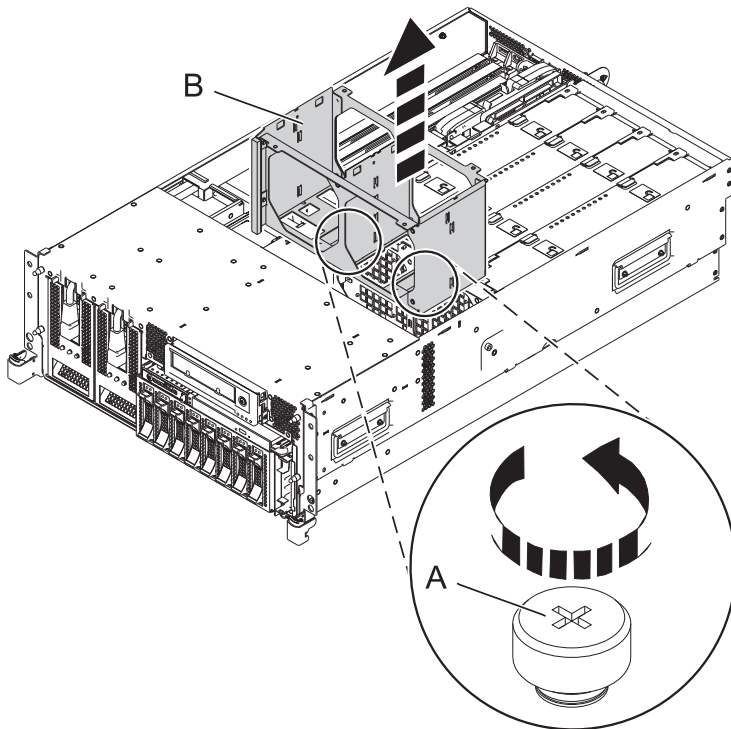
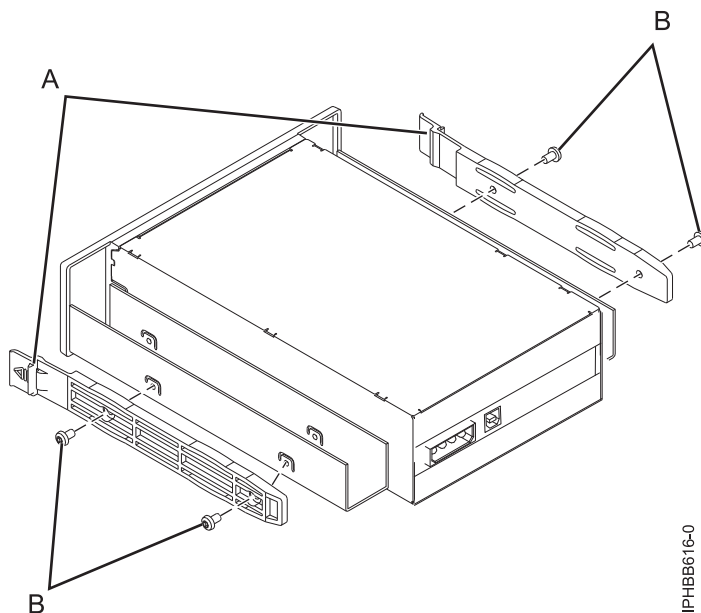


Figure 40. Fan cage removal

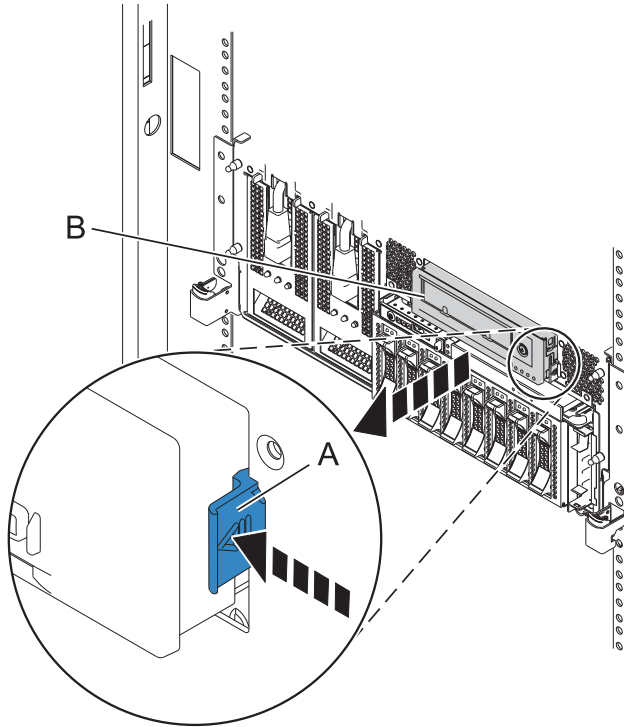
9. Install the rails (A) onto the media device using the two small screws (B) included with your media device. Place the rails on each side of the media device. Screw the rails into the side of the media device using the lower screw hole.



10. Press the media device (A) into the system until you feel the latches (B) lock in place as shown.

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**Note:** You need to attach the media cables (A) and (B) provided at the back of the device before installing the media device.



11. Attach the media-device connections (A) and (B) to the system backplane. The connection for cable (A) on the backplane is already occupied. Remove the existing cable and replace it with cable (A).

**Note:** The USB connection on the front panel is now inoperative.

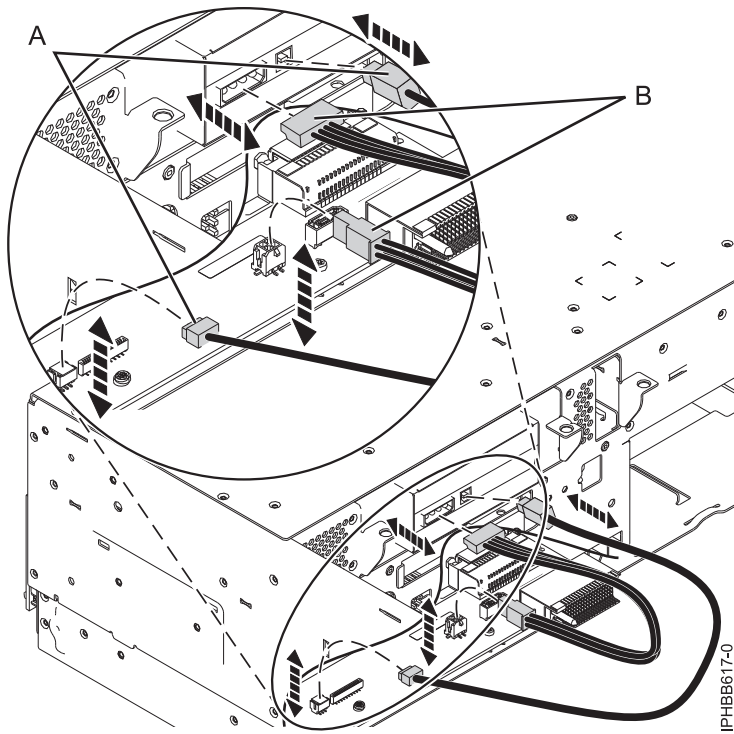
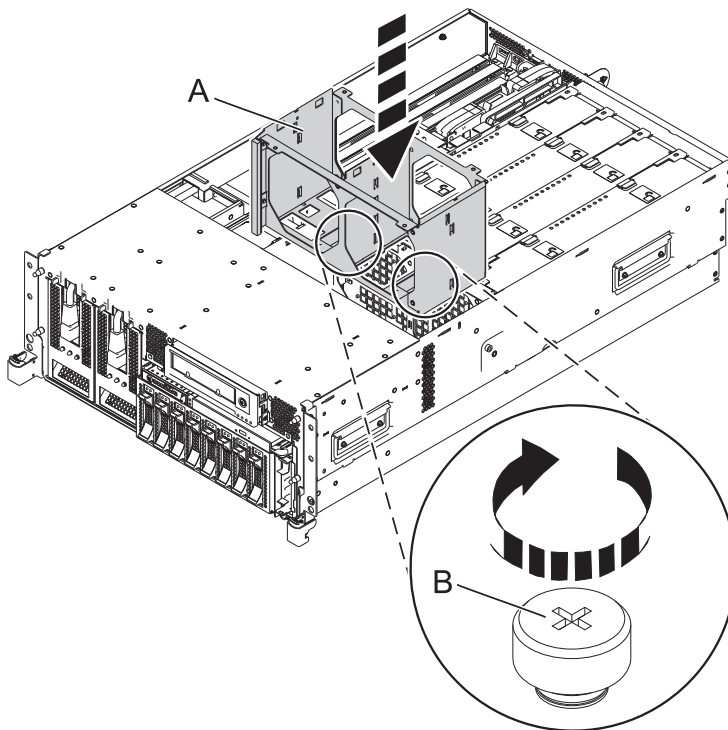
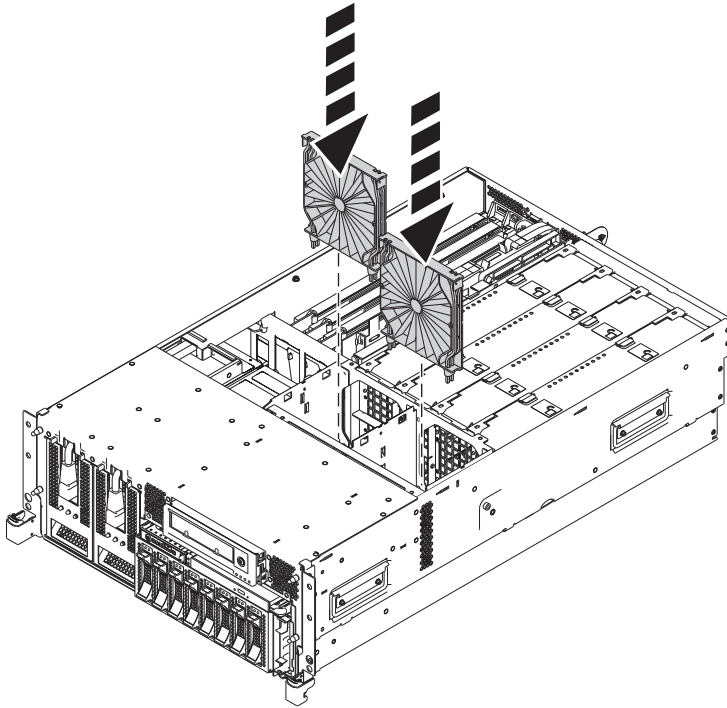


Figure 41. Attaching the media device connections to the system backplane of a 8233-E8B or 8236-E8C system

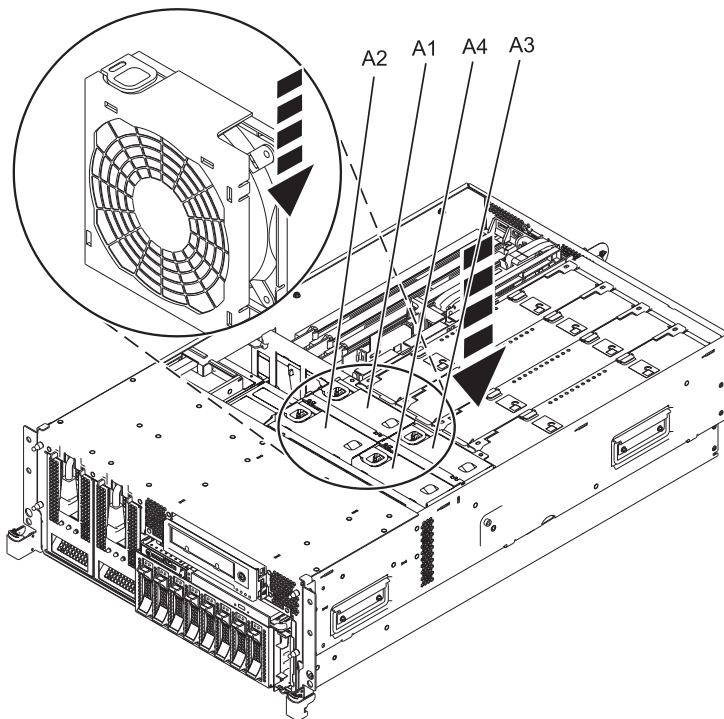
12. Reattach any other cables that you previously disconnected from the backplane.
13. Reinstall the fans into the 8233-E8B or 8236-E8C system.
  - a. Replace the fan cage by inserting it into the system and tightening the thumbscrews **(B)**.



Replace the blue air baffles as shown in the following figure.



Replace the fans by inserting them into the fan cage until they lock into place, as shown in the following figure.



14. Install the service access cover. See *Installing the service access cover on a rack-mounted model* for instructions.
15. Attach the front cover. See *Installing the front cover on the rack-mounted system*.
16. Connect the power cords to the system.
17. Start the system. See *Starting the system or logical partition*.



18. Configure the removable disk drive by performing the following steps:

- a. For the AIX operating system, log in as root user.
- b. At the command line, type `cfgmgr`.
- c. Press Enter.
- d. To verify that the system recognizes the device, run the `lsdev -Cc usbms` command.

**Note:** The Linux operating system automatically configures the drive as a disk drive with a name in the format `sdx`, for example, `sda`, `sdb`, and `sdc`. To verify if the system recognizes the device, enter `lsusb`. To find the device that is associated with the USB disk drive, enter `ls SCSI i`.

19. Verify that the media device is installed and working correctly. See Verifying the installed part.

## **Installing an external USB docking station and removable disk drive with power on**

Use this procedure to service external USB media devices.

Keep in mind the following points when you install the USB external docking station for a removable disk drive:

- A rack shelf is not included with feature code 1104.
- The docking station can be rested on a flat surface in a rack or on a table top next to a rack.
- Ensure that the device is on a flat surface, is right side up, and is not likely to be bumped, dropped, or otherwise damaged or jolted.
- If the docking station is placed by itself on a rack shelf, it has space on the sides of the device. No filler panels are provided with the docking station.
- If the docking station is placed on a rack shelf, ensure that the docking station has sufficient air flow. Also ensure that it does not affect the air flow of the other systems in the rack.
- Do not block the fan on the back of the docking station.
- The external USB disk drive can be installed while the system is powered on and needs to be configured following the installation.

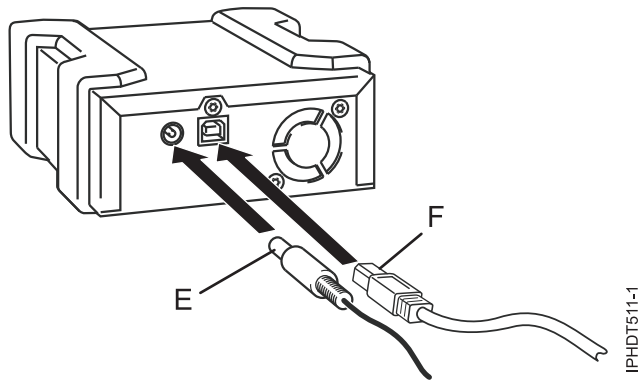
If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to complete the steps for installing a media enclosure. For instructions, see Removing a part using the Systems Director Management Console.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a feature in the server. For information about using the HMC for installing a media enclosure, see Installing a feature using the Hardware Management Console.

If you do not have an HMC or SDMC, install the docking station by completing the following steps:

To install the docking station, complete the following steps:

1. Place the docking station on a flat surface. Use the previous guidelines when selecting a location.
2. Attach one end of the external USB cable (F) to the back of the external docking station.



3. Attach the other end of the external USB cable (F) to an external, integrated USB port or to the USB ports on a four-port USB PCI Express adapter (feature code 2728).
4. Attach the power supply cord (E) to the back of the external docking station and plug it into a power source. In addition to the external power supply cord, there are also universal adapters to be used as needed.
5. After the docking station is powered on, insert the disk drive into the docking station. A green indicator light appears when the disk drive is placed into the dock correctly.
6. Configure the removable disk drive by performing the following steps:
  - a. For the AIX operating system, log in as root user.
  - b. At the command line, type `cfgmgr`.
  - c. Press Enter.
  - d. To verify that the system recognizes the device, run the `lsdev -Cc usbms` command.

**Note:** The Linux operating system automatically configures the drive as a disk drive with a name in the format `sdx`, for example, `sda`, `sdb`, and `sdc`. To verify if the system recognizes the device, enter `lsusb`. To find the device that is associated with the USB disk drive, enter `ls SCSI`.

7. Verify that the media device is installed and working correctly. See [Verifying the installed part](#).

## Memory modules

Use this procedure to service dual inline memory modules (DIMMs).

### Removing memory modules

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing memory modules from the server. For information about using the HMC to remove memory modules, see [Removing a part by using the Hardware Management Console](#).

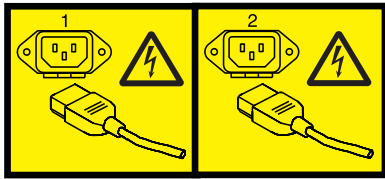
If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the memory module from the server. For instructions, see [Removing a part by using the Systems Director Management Console](#).

If you do not have an HMC or SDMC, complete the following procedure to remove memory modules.

1. Complete the prerequisite tasks described in “Before you begin” on page 115.
2. If you are removing the memory modules for a system upgrade or as part of another procedure, continue to the next step. If you are removing the memory modules because of a system failure, use the service action log to help identify the failing part as described in [Identifying a part](#). Identification light-emitting diodes (LEDs) for failing memory modules are located on the top of the system processor assembly.
3. Stop the system, as described in [Stopping a system or logical partition](#).
4. Disconnect the power source from the system by unplugging the system.

**Note:** This system is equipped with a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

(L003)



or



5. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
6. If you have a rack-mounted system, place it in the service position, as described in Placing a 8233-E8B or 8236-E8C in the service position.
  7. Remove the service access cover, as described in Removing the service access cover from an 8233-E8B or 8236-E8C system.
  8. Locate the memory module that you want to remove by observing the service indicator light-emitting diodes (LEDs).
  9. Remove the system processor assembly and protective cover, as described in Removing the system processor assembly. Skip any steps that you have already completed.
  10. Unlock the memory module cover by pushing the locking tab (A) down, as shown in Figure 42 on page 80. Lift the cover up to access the memory modules.

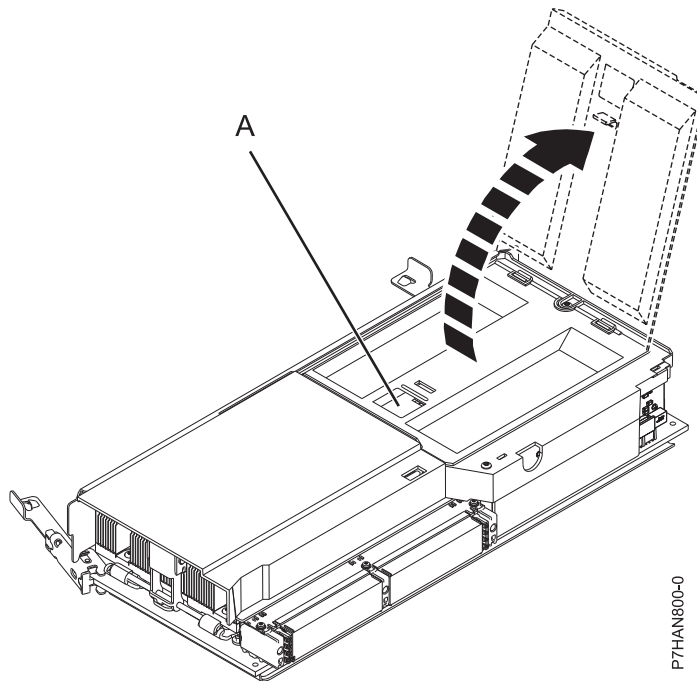


Figure 42. Removing a memory module

11. Unlock the memory module by pushing the locking tabs (**B**) out and down, as shown in Figure 43. Lift the memory module (**C**) out of the connector. The lever action of the tabs forces the memory module out of the connector.

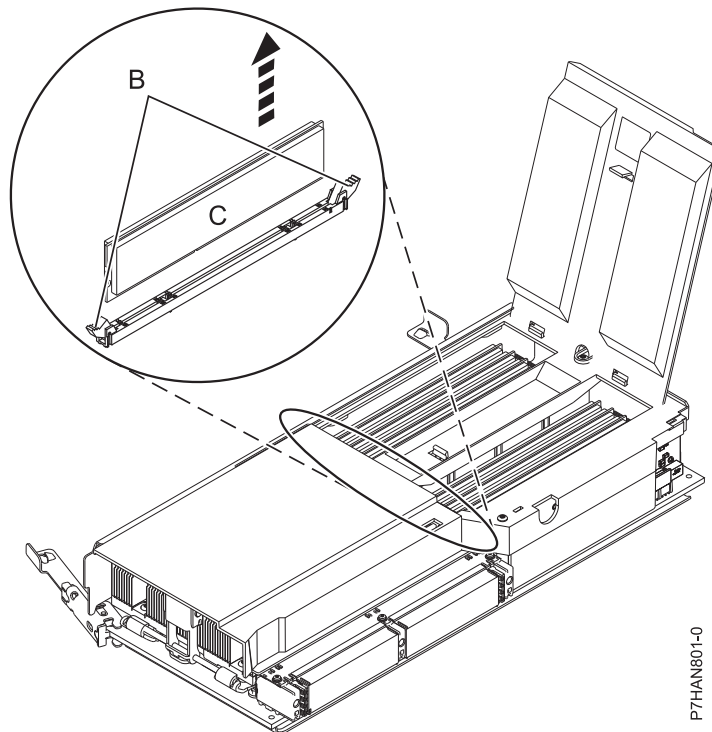


Figure 43. Removing a memory module

Finally, replace the memory module you removed or install new memory modules.

## Replacing memory modules

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see *IBM Prerequisite*. If the required software is not installed, see the following web sites to download it, and then install it before continuing:

- To download firmware and software updates and fixes, see *Fix Central*.
- To download Hardware Management Console (HMC) updates and fixes, see *Hardware Management Console Support and downloads*.

If your system is managed by the HMC, use the HMC to complete the steps for installing a feature in the server. For information about using the HMC to install a feature, see *Installing a feature by using the Hardware Management Console*. If you do not have an HMC, complete this procedure to install memory modules.

If your system is managed by the HMC, use the HMC to complete the steps for replacing the memory modules in the server. For information about using the HMC to replace memory modules, see *Replacing a part by using the Hardware Management Console*.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the memory module in the server. For instructions, see *Replacing a part by using the Systems Director Management Console*.

If you do not have an HMC or SDMC, use the following procedure to replace a memory module.

**Restriction:** Use these instructions only as a part of removing and replacing memory modules that are identical in size, speed, and feature code. If you are installing new memory or upgrading memory, see *Installing 8233-E8B or 8236-E8C memory modules*.

1. Complete the prerequisite tasks described in “Before you begin” on page 115.
2. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
3. If necessary, unlock and lift the memory module cover.
  4. If necessary, remove the new memory module from its antistatic package.
  5. Ensure that the connector locking tabs are pressed out in the unlocked position before installing a new memory module.

**Attention:** Memory modules are keyed to prevent a memory module from being installed incorrectly. Note the location of the key tab within the memory module connector before attempting to install the memory module.
  6. Carefully grasp the memory module along two edges and align the connector.
  7. Insert the memory module firmly into the connector **(A)**, as shown in Figure 44 on page 82.
  8. Secure the memory module with the locking tabs **(B)** located at each end of the memory module connector, as shown in Figure 44 on page 82.

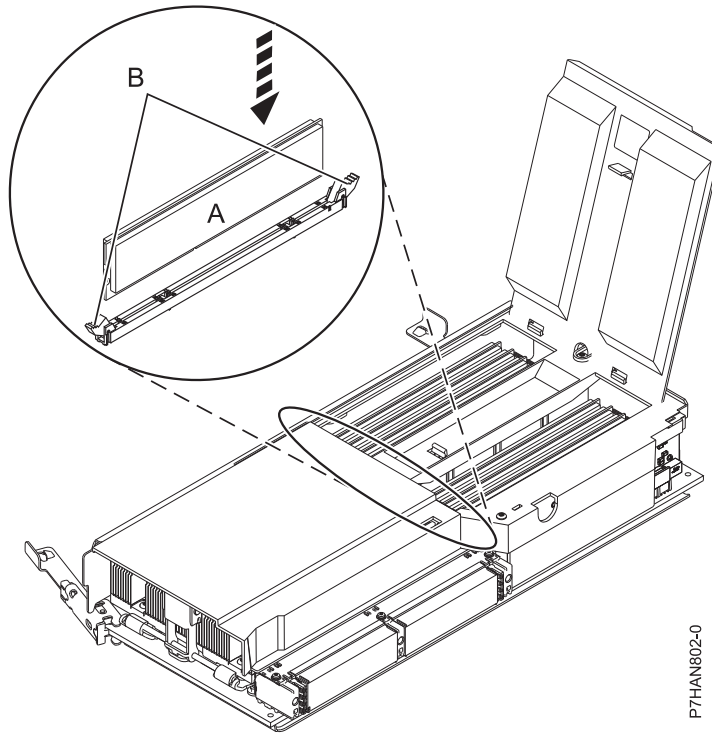


Figure 44. Replacing a memory module

9. Close the memory module cover (C) until it locks in place, as shown in Figure 45.

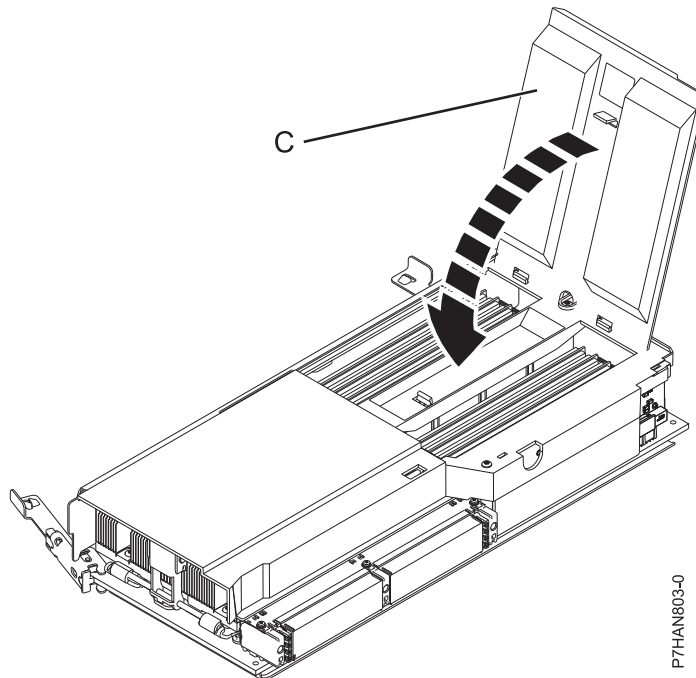


Figure 45. Closing the memory module cover

10. Replace the system processor assembly. See Replacing the system processor assembly for information about replacing the system processor assembly and covers, restoring power, and starting the system. Skip any steps that you have already completed.

11. Verify the installed part, as described in Verifying the installed part.

Continue with any other service procedures you must perform.


## Installing, removing, and replacing PCI adapters

Learn about installing, removing, and replacing Peripheral Component Interconnect (PCI), PCI-X, and PCI Express (PCIe) adapters.

### Model 8233-E8B and 8236-E8C PCI adapters

You can remove, replace, or install PCI adapters in the 8233-E8B and 8236-E8C.

If you are installing a new adapter, you will also need to refer to PCI adapter placement for slot placement information.

**Important:** If you are installing a new feature, ensure that you have the software required to support the new feature and determine whether there are any existing PTF prerequisites to install. To do this, use the IBM Prerequisite website at [http://www-912.ibm.com/e\\_dir/eServerPrereq.nsf](http://www-912.ibm.com/e_dir/eServerPrereq.nsf) .

### Installing a PCI adapter in the 8233-E8B and 8236-E8C server:

You can install a PCI adapter.

*Installing a PCI adapter in the 8233-E8B and 8236-E8C server with the power off:*

You can install a PCI adapter with the system power off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to install a PCI adapter in the server. For instructions, see Installing a feature by using the Systems Director Management Console.

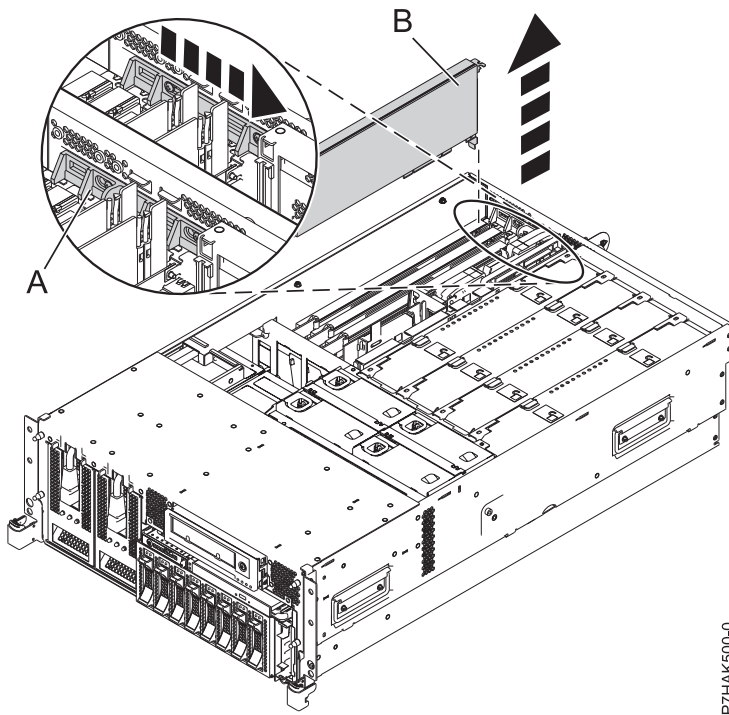
If you are installing a PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller (FC 5739 or 5778, CCIN 571F and 575B), remove the lower, right standoff from between the two sides of the adapter before installing it in the system unit. See Figure 71 on page 129.

If you do not have an HMC or SDMC, complete this procedure to install a PCI adapter with the system power off:

1. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page v and "Handling static-sensitive devices" on page 118.
2. Determine in which slot to place the PCI adapter. For system-specific adapter placement information, see the PCI adapter placement.
3. Perform the prerequisite tasks described in "Before you begin" on page 115.
4. Stop the system or logical partition. See Stop the system or logical partition.
5. Disconnect the power source from the system by unplugging the system.
6. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
7. If necessary, remove the adapter from the antistatic package.

**Attention:** Avoid touching the components and gold connectors on the adapter.

8. Place the adapter, component-side up, on a flat, antistatic surface.
9. Some PCI adapters are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
10. Slide the adapter latch (A) into the open position, as shown in the following figure.

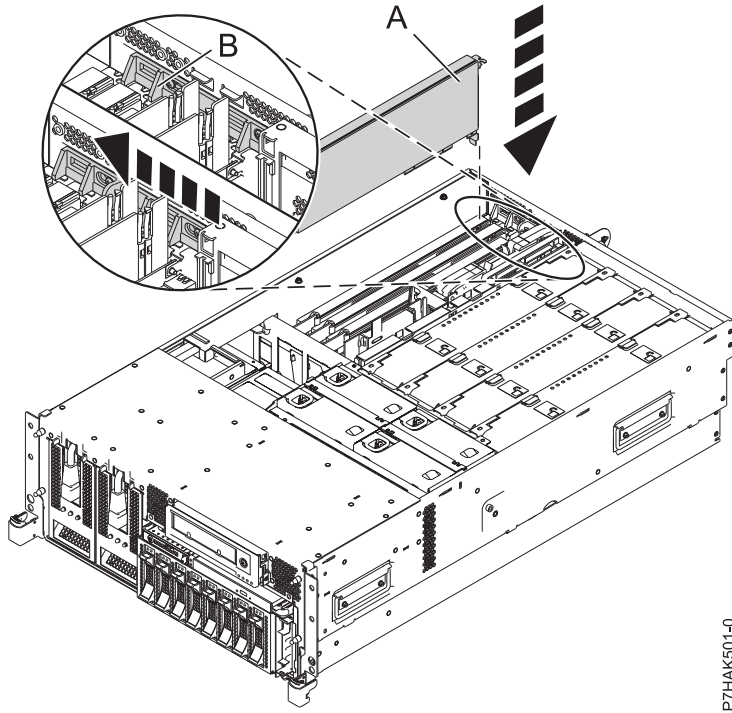


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Figure 46. PCI adapter or filler plate removed from the rack-mounted system unit

11. If necessary, remove the adapter expansion slot filler.
12. Ensure that the slot is empty. If you are installing a double-wide adapter, remove the PCI adapter divider if one is present. See “Removing a PCI adapter divider from the 8233-E8B and 8236-E8C server” on page 109.
13. Carefully grasp the adapter (A) by its top edge, and align the adapter with the expansion slot and its connector on the system backplane. See the following figure.
14. Press the adapter firmly into its connector.
15. Slide the adapter latch (B) back into place as shown in the following figure.





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Figure 47. PCI adapter replaced in the rack-mounted system unit

16. Connect any adapter cables.
17. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
18. Replace or close the service access cover and, if applicable, return the system to the operating position.
19. Reconnect the power source to the system.
20. Start the system or logical partition. Refer to Start the system or logical partition.
21. Verify that the new resource is functional.

*Installing a PCI adapter in the 8233-E8B and 8236-E8C server, with the power on in an AIX environment:*

You can install a PCI adapter with the system power on in an AIX environment.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to install a PCI adapter in the server. For instructions, see *Installing a feature by using the Systems Director Management Console*.

If you are installing a PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller (FC 5739 or 5778, CCIN 571F and 575B), remove the lower, right standoff from between the two sides of the adapter before installing it in the system unit. See Figure 71 on page 129.

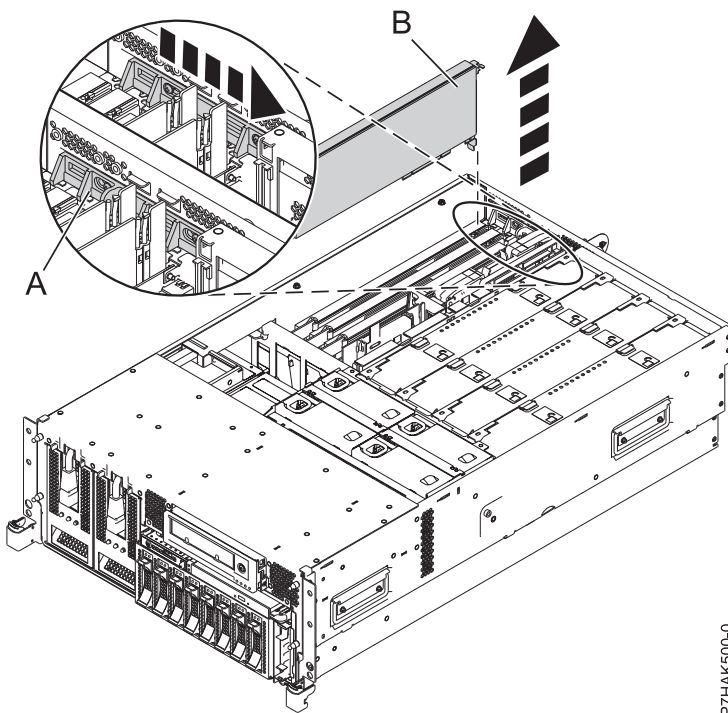
If you do not have an HMC or SDMC, complete the following steps to install a PCI adapter with the system power on in the AIX environment:

1. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page v and "Handling static-sensitive devices" on page 118.

2. Determine in which slot to place the PCI adapter. For system-specific adapter placement information, see the PCI adapter placement.
3. Perform the prerequisite tasks described in “Before you begin” on page 115.
4. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
5. If necessary, remove the adapter expansion slot shield.
6. If necessary, remove the adapter from the antistatic package.

**Attention:** Avoid touching the components and gold connectors on the adapter.

7. Place the adapter, component-side up, on a flat, antistatic surface.
8. Some PCI adapters are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
9. If you are installing a double-wide adapter, remove the PCI adapter divider if one is present. See “Removing a PCI adapter divider from the 8233-E8B and 8236-E8C server” on page 109.
10. Refer to “PCI hot-plug manager access for AIX” on page 122, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.
11. From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter** and press Enter. The Add a Hot-Plug Adapter window displays.
12. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.
13. Slide the adapter latch (**A**) into the open position, as shown in the following figure.

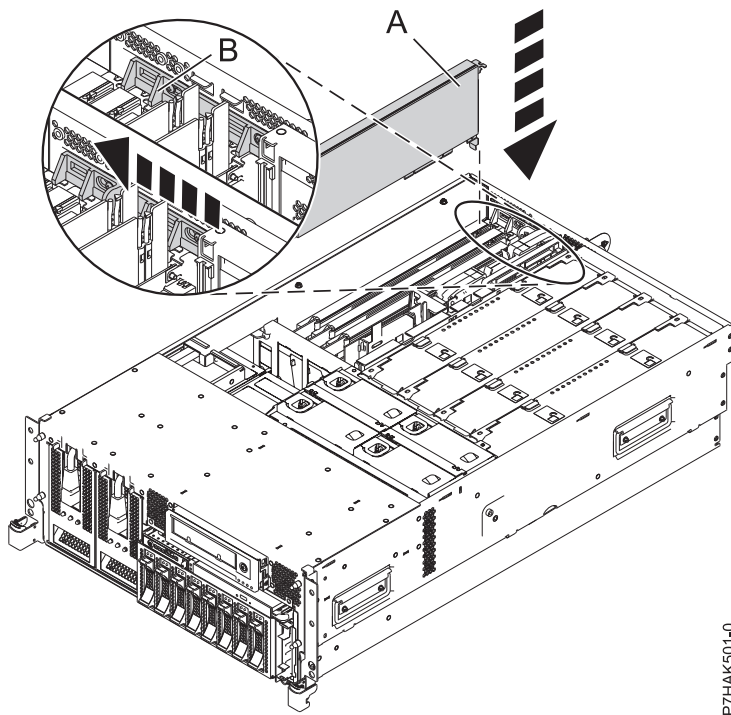


PTHAK500-0

Figure 48. PCI adapter or filler plate removed from the rack-mounted system unit

14. Remove the adapter filler plate if one is present.

15. Follow the instructions on the screen to install the adapter until the LED for the specified PCI slot is set to the Action state. See "Component LEDs" on page 124.
16. When you are instructed to install the adapter in the adapter slot, carefully grasp the adapter by the edges and align the adapter (A) in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full-length adapter, ensure that both ends of the adapter engage the card guides.
17. Press the adapter firmly into its connector.
18. Slide the adapter latch (B) back into place as shown in the following figure.



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Figure 49. PCI adapter replaced in the rack-mounted system unit

19. Connect any adapter cables.
20. Replace or close the service access cover and, if applicable, return the system to the operating position.
21. Run the `cfgmgr` command to configure the adapter.
22. Verify that the new resource is functional. See Verify the installed part.

*Installing a PCI adapter in the 8233-E8B server, with the power on in an IBM i environment:*

You can install a PCI adapter in the i environment.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to install a PCI adapter in the server. For instructions, see Installing a feature by using the Systems Director Management Console.

If you are installing a PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller (FC 5739 or 5778, CCIN 571F and 575B), remove the lower, right standoff from between the two sides of the adapter before installing it in the system unit. See Figure 71 on page 129.

**Important:**

- If you are removing, installing or replacing a PCI-X double-wide, quad-channel Ultra320 SCSI RAID controller, review the Concurrent maintenance procedure in the PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller (FC 5739, 5778, 5781, 5782; CCIN 571F, 575B) topic, before proceeding with the instructions provided here.
- If you are removing, installing or replacing a PCI-X DDR 1.5 GB cache SAS RAID Adapter, review the Concurrent maintenance procedure in the PCI-X DDR 1.5 GB cache SAS RAID Adapter topic, before proceeding with the instructions provided here.
- If you are exchanging a 2766, 2787, 280E, 576B, or 5774 Fibre Channel IOA, the external storage subsystem must be updated to use the worldwide port name of the new 2766, 2787, 280E, 576B, or 5774 IOA. For instructions, see “Updating the worldwide port name for a new 2766, 2787, 280E, 576B, or 5774 IOA.” on page 126.
- If you are replacing a 2748, 2757, 2763, 2767, 2778, 2780, 2782, 5702, 5709, or 570B storage IOA, take note of the following: Depending on the configuration of the system, the storage IOA cache might have been disabled to allow the attachment of OEM storage that emulates a load source drive. If you are replacing a storage IOA that has its cache disabled, configure the replacement IOA the same way as the IOA that you removed. If you remove hardware from the replacement IOA, return that hardware with the failed IOA.

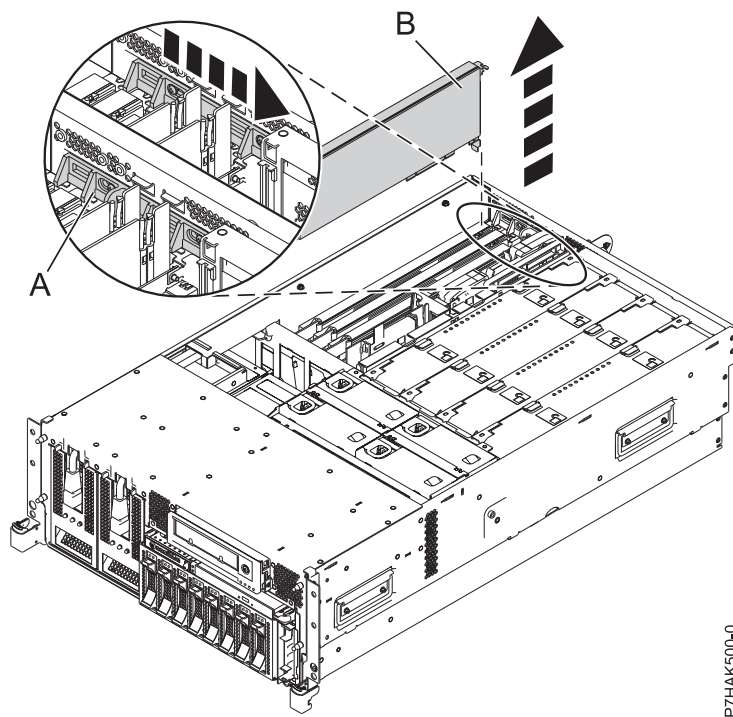
If you do not have an HMC or SDMC, complete the following steps to install a PCI adapter with the system power on in the i environment:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. Determine in which slot to place the PCI adapter. For system-specific adapter placement information, see the PCI adapter placement.
4. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
5. If necessary, remove the adapter expansion slot shield.
6. If necessary, remove the adapter from the antistatic package.

**Attention:** Avoid touching the components and gold connectors on the adapter.

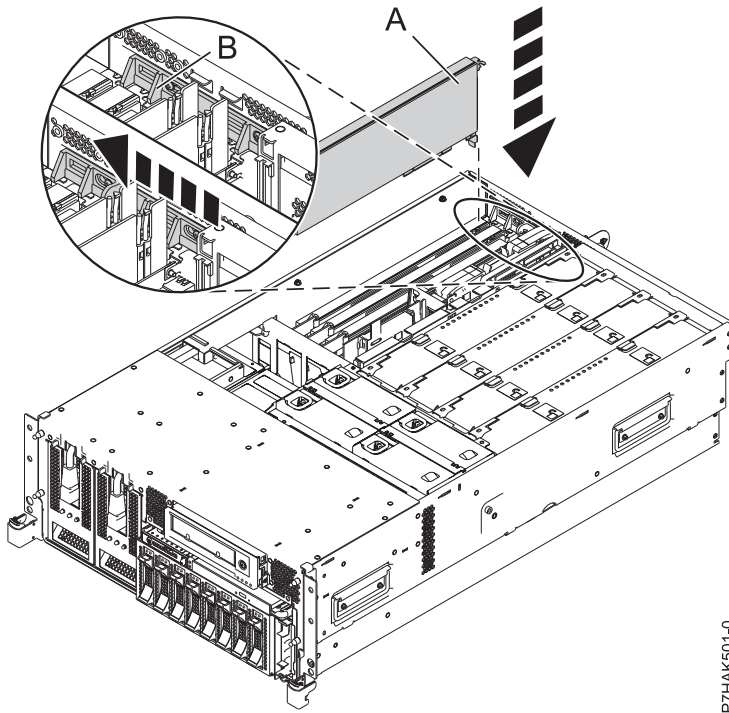
7. Place the adapter, component-side up, on a flat, antistatic surface.
8. Some PCI adapter cards are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.
9. If you are installing a double-wide adapter, remove the PCI adapter divider if one is present. See “Removing a PCI adapter divider from the 8233-E8B and 8236-E8C server” on page 109.
10. Type **strsst** on the command line of the Main menu and then press Enter.
11. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
12. Select **Start a service tool** from the System Service Tools (SST) display and press Enter.
13. Select **Hardware service manager** from the Start a Service Tool display and press Enter.

14. Select **Packaging hardware resources (system, frames, cards)** from the Hardware Service Manager display. Press Enter.
15. Type **9** (Hardware contained within package) in the **System Unit** or **Expansion Unit** field of the unit where you are replacing the card. Press Enter.
16. Select the option to **Include empty positions**.
17. Select **Concurrent Maintenance** on the card position where you want to replace the card and then press Enter.
18. Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) flashes identifying the position you chose. Physically verify that this is the slot where you want to install the adapter.
19. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
20. Slide the adapter latch (**A**) into the open position, as shown in the following figure.



*Figure 50. PCI adapter or filler plate removed from the rack-mounted system unit*

21. Ensure that the slot is empty. Remove the adapter filler plate if one is present.
22. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
23. Press the adapter firmly into its connector.
24. Slide the adapter latch (**B**) back into place as shown in the following figure.



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Figure 51. PCI adapter replaced in the rack-mounted system unit

25. Connect any adapter cables.
26. Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
27. Select **Assign to** on the resource that has an asterisk (\*) on the Work with Controlling Resource display. Press Enter.
28. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message:  
Power on complete
29. Replace or close the service access cover and, if applicable, return the system to the operating position.
30. Verify that the new resource is functional. See Verify the installed part.

*Installing a PCI adapter in the 8233-E8B and 8236-E8C server, with the power on in a Linux environment:*

You can install a PCI adapter with the system power on in the Linux environment.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to install a PCI adapter in the server. For instructions, see *Installing a feature by using the Systems Director Management Console*.

If you are installing a PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller (FC 5739 or 5778, CCIN 571F and 575B), remove the lower, right standoff from between the two sides of the adapter before installing it in the system unit. See Figure 71 on page 129.

If you do not have an HMC or SDMC, complete the following steps to install a PCI adapter with the system power on in the Linux environment:

1. Ensure that the system meets the “Prerequisites for hot-plugging PCI adapters in Linux” on page 125.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. “Verifying that the hot-plug PCI tools are installed for Linux” on page 125.
4. Determine in which slot to place the PCI adapter. For system-specific adapter placement information, see the PCI adapter placement.
5. Perform the prerequisite tasks described in “Before you begin” on page 115.
6. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
7. If necessary, remove the adapter expansion slot shield.
8. If necessary, remove the adapter from the antistatic package.

**Attention:** Avoid touching the components and gold connectors on the adapter.

9. Place the adapter, component-side up, on a flat, antistatic surface.
10. If you are installing a double-wide adapter, remove the PCI adapter divider if one is present. See “Removing a PCI adapter divider from the 8233-E8B and 8236-E8C server” on page 109.
11. Log in to the system console as the root user.
12. Run the lsslot tool to list the hot-plug PCI slots that are available in the server or partition:

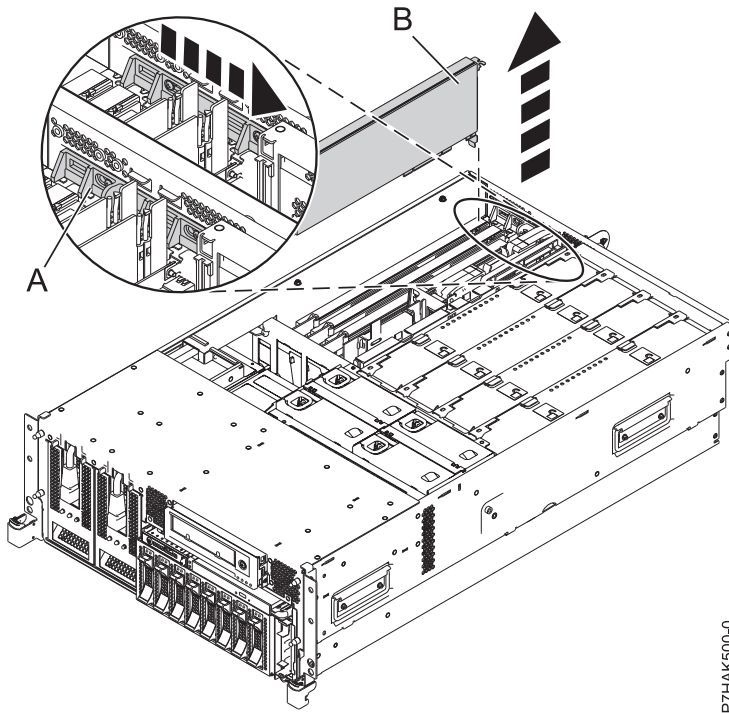
```
lsslot -c pci -a
```

The following is an example of the information displayed by this command:

```
# Slot      Description      Device(s)
U7879.001.DQD014E-P1-C1 PCI-X capable, 64 bit, 133MHz slot Empty
U7879.001.DQD014E-P1-C4 PCI-X capable, 64 bit, 133MHz slot Empty
U7879.001.DQD014E-P1-C5 PCI-X capable, 64 bit, 133MHz slot Empty
```

Select the appropriate empty PCI slot from the ones listed by the command.

13. Slide the adapter latch (**A**) into the open position, as shown in the following figure.



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Figure 52. PCI adapter or filler plate removed from the rack-mounted system unit

14. Ensure that the slot is empty. Remove the adapter filler plate if one is present.
  15. Run the `drslot_chrp_pci` command to enable an adapter to be installed. For example, to install an adapter into PCI slot U7879.001.DQD014E-P1-C3, enter the following command:  

```
drslot_chrp_pci -a -s U7879.001.DQD014E-P1-C3
```

 The following displays:  
 The visual indicator for the specified PCI slot has been set to the identify state. Press Enter to continue or enter x to exit.
  16. Press Enter.  
 The following displays:  
 The visual indicator for the specified PCI slot has been set to the action state. Insert the PCI card into the identified slot, connect any devices to be configured and press Enter to continue. Enter x to exit.
  17. When you are instructed to install the adapter (A) in the adapter slot, carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
  18. Press the adapter firmly into its connector.
- Attention:** When you install an adapter into the system, be sure that it is completely and correctly seated in its connector.
19. Slide the adapter latch (B) back into place as shown in the following figure.



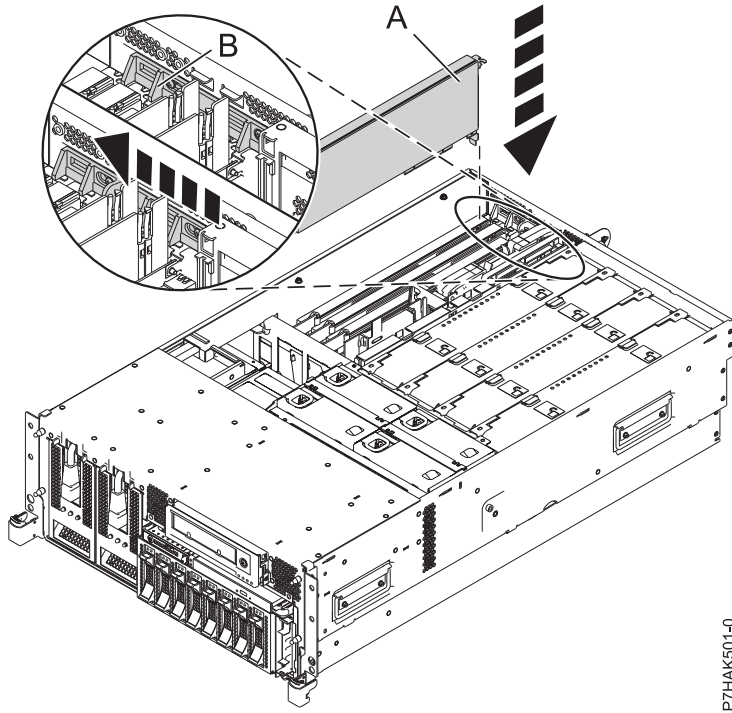


Figure 53. PCI adapter replaced in the rack-mounted system unit

20. Connect any adapter cables.

21. Run the `lsslot` command to verify that the slot is occupied.

For example, enter `lsslot -c pci -s U7879.001.DQD014E-P1-C3`

The following is an example of the information displayed by this command:

```
# Slot      Description      Device(s)
U7879.001.DQD014E-P1-C3 PCI-X capable, 64 bit, 133MHz slot 0001:40:01.0
```

22. If you are servicing a rack-mounted system, route the cables through the cable-management arm.

23. Replace or close the service access cover and, if applicable, return the system to the operating position.

### Removing a PCI adapter from an 8233-E8B and 8236-E8C server:

You can remove a PCI adapter.

#### Important:

- If you are exchanging a 2766, 2787, 280E, 576B, or 5774 Fibre Channel input/output adapter (IOA), the external storage subsystem must be updated to use the worldwide port name of the new 2766, 2787, 280E, 576B, or 5774 IOA. For instructions, see “Updating the worldwide port name for a new 2766, 2787, 280E, 576B, or 5774 IOA.” on page 126.
- If you are replacing a 2748, 2757, 2763, 2767, 2778, 2780, 2782, 5702, 5703, 5709, or 570B storage IOA, take note of the following: Depending on the configuration of the system, the storage IOA might have been altered or the storage IOA cache might have been disabled to allow the attachment of OEM storage that emulates a load source drive. If you are replacing a storage IOA that has its cache disabled, configure the replacement IOA the same way as the IOA that you removed. If you remove hardware from the replacement IOA, return that hardware with the failed IOA.

*Removing a PCI adapter from the 8233-E8B and 8236-E8C server with the power off:*

You can remove a PCI adapter with the system power off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the PCI adapter from the server. For instructions, see *Removing a part by using the Systems Director Management Console*.

If you do not have an HMC or SDMC, complete the following steps to remove a PCI adapter with the system power off:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. If you are removing a failing PCI adapter, see *Identifying a part*. If you are removing the PCI adapter for other reasons, continue to the next step.
4. Stop the system or logical partition.
5. Disconnect the power source from the system by unplugging the system.
6. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
7. Determine which adapter you plan to remove, then label and disconnect all cables attached to that adapter.
8. Record the slot number and location of each adapter being removed.

**Note:** Adapter slots are numbered on the rear of the system.

9. Slide the adapter latch (A) into the open position, as shown in the following figure.

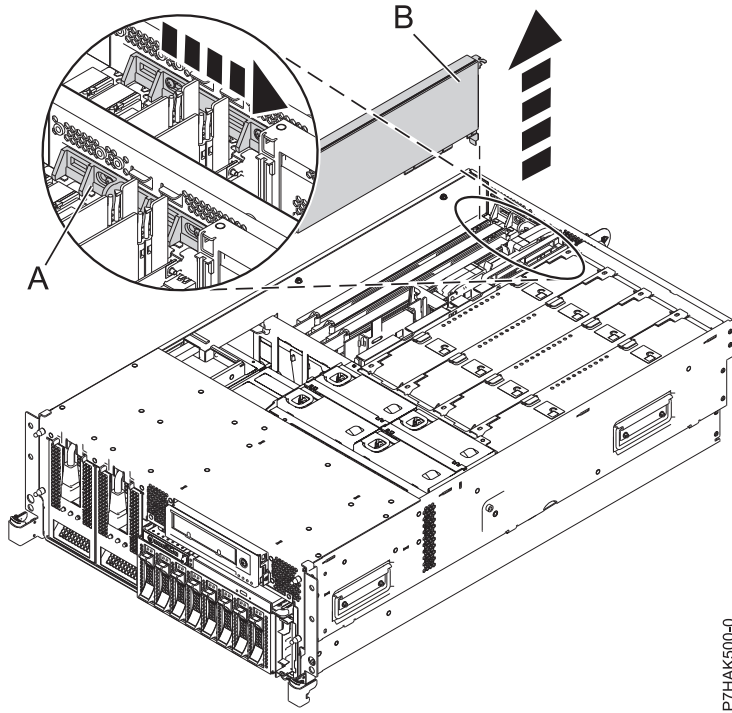


Figure 54. PCI adapter or filler plate removed from the rack-mounted system unit

10. Carefully grasp the PCI adapter (**B**) by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.
11. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
12. If you plan to install another adapter into the vacated slot, go to “Replacing a PCI adapter in the 8233-E8B and 8236-E8C server with the power off” on page 101; otherwise, continue with the next step.
13. Seal the expansion slot using an expansion-slot cover.
14. Replace or close the service access cover and, if applicable, return the system to the operating position.
15. Reconnect the power source to the system.
16. Start the system or logical partition. Refer to Start the system or logical partition.
17. To replace the PCI adapter, see “Replacing a PCI adapter in the 8233-E8B and 8236-E8C server” on page 101.

*Removing a PCI adapter from the 8233-E8B and 8236-E8C server, with the power on in the AIX environment:*

You can remove a PCI adapter with the system power on in the AIX environment.

To remove a failing adapter and replace it with the same adapter, see “Removing and replacing a PCI adapter in the 8233-E8B and 8236-E8C server, with the power on in the AIX environment” on page 103. If the adapter that is removed will be placed into a different slot or system, complete this removal procedure, and then install the adapter as described in “Installing a PCI adapter in the 8233-E8B and 8236-E8C server, with the power on in an AIX environment” on page 85.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing a PCI adapter.

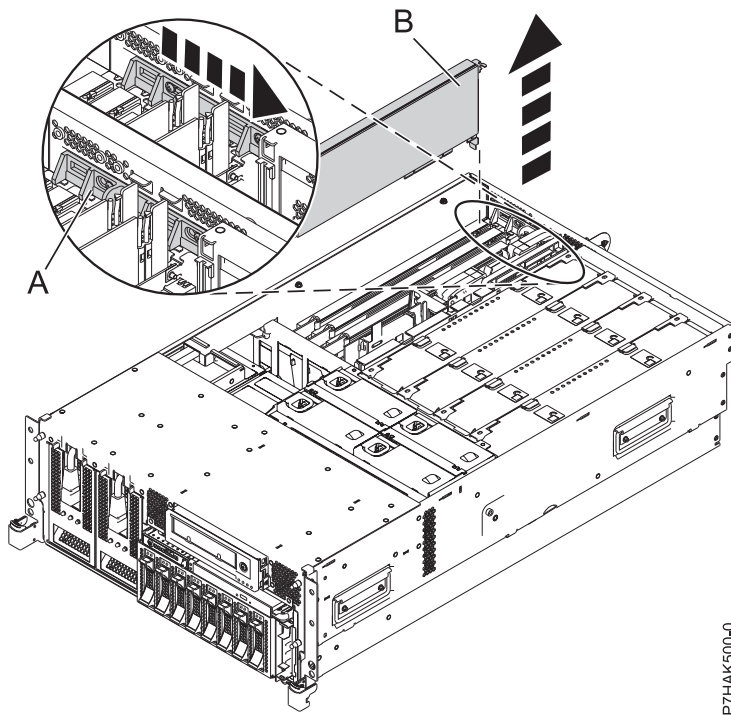
If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the PCI adapter from the server. For instructions, see Removing a part by using the Systems Director Management Console.

**Note:** Procedures performed on a PCI adapter with the system power on in the AIX environment, also known as hot-plug procedures, require the system administrator to take the PCI adapter offline before performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

If you do not have an HMC or SDMC, complete the following steps to remove a PCI adapter with the system power on in the AIX environment:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. If you are removing a failing PCI adapter, see Identifying a failing part. If you are removing the PCI adapter for other reasons, continue to the next step.
4. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
5. Determine which adapters you plan to remove.
6. Record the slot number and location of each adapter being removed. Adapter slots are numbered on the rear of the system unit.
7. Ensure that any processes or applications that might use the adapter are stopped.
8. Follow these steps to place the adapter in the action state using the PCI Hot-Plug Manager:
  - a. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at the AIX command line.
  - b. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays, press Enter.
  - c. At the FUNCTION SELECTION menu, select **Task Selection**, and then press Enter.
  - d. At the Task Selection list, select **PCI Hot Plug Manager**.
  - e. Select **Unconfigure a Device**, and then press Enter.
  - f. Press F4 (or Esc +4) to display the **Device Names** menu.
  - g. Select the adapter you are removing in the **Device Names** menu.
  - h. Use the Tab key to answer NO to **Keep Definition**. Use the Tab key again to answer YES to **Unconfigure Child Devices**, and then press Enter. The ARE YOU SURE window is displayed.
  - i. Press Enter to verify the information. Successful unconfiguration is indicated by the OK message displayed next to the **Command** field at the top of the screen.
  - j. Press F4 (or Esc +4) twice to return to the Hot Plug Manager menu.
  - k. Select **Replace/remove PCI Hot Plug adapter**.
  - l. Select the slot that has the device to be removed from the system.
  - m. Select **Remove**. A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
  - n. Label all cables attached to the adapter you plan to remove.
  - o. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
  - p. Disconnect all cables attached to the adapter you plan to remove.
9. Label, and then disconnect all cables attached to the adapter you plan to remove.

- Slide the adapter latch (A) into the open position, as shown in the following figure.



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Figure 55. PCI adapter or filler plate removed from the rack-mounted system unit

- Carefully grasp the PCI adapter (B) by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.
- If you plan to install another adapter into the vacated slot, go to “Installing a PCI adapter in the 8233-E8B and 8236-E8C server, with the power on in an AIX environment” on page 85; otherwise, continue with the next step.
- Seal the expansion slot using an expansion-slot cover.
- Lower the plastic retainer seat over the PCI adapter faceplate.
- Rotate the locking latch clockwise until it clicks into the locked position.
- Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the OK message displayed next to the Command field at the top of the screen.
- If you have other adapters to remove, press the F3 key to return to the PCI Hot-Plug Manager menu and then return to step 9 on page 96.  
If you do not have other adapters to remove, continue with the next step.
- Press F10 to exit the Hot-Plug Manager.
- Run the `diag -a` command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
- Replace or close the service access cover and, if applicable, return the system to the operating position.
- To replace the PCI adapter, see “Replacing a PCI adapter in the 8233-E8B and 8236-E8C server” on page 101.

*Removing a PCI adapter in the 8233-E8B server, with the power on in the IBM i environment:*

You can remove a PCI adapter with the system power on in the IBM i environment.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the PCI adapter from the server. For instructions, see Removing a part by using the Systems Director Management Console.

**Important:**

- If the adapter is the load source I/O adapter (IOA) or the load source I/O processor (IOP), or any other storage IOA or IOP with critical disk storage attached for the system or partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the adapter is the console IOA or the console IOP for the system or partition, you must perform the maintenance from an IBM i operating system session connected through a different IOA or IOP, or you must power down the partition to perform maintenance.
- If you are removing, installing or replacing a PCI-X double-wide, quad-channel Ultra320 SCSI RAID controller, review the Concurrent maintenance procedure in the PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller (FC 5739, 5778, 5781, 5782; CCIN 571F, 575B) topic, before proceeding with the instructions provided here.
- If you are removing, installing or replacing a PCI-X DDR 1.5 GB cache SAS RAID Adapter, review the Concurrent maintenance procedure in the PCI-X DDR 1.5 GB cache SAS RAID Adapter topic, before proceeding with the instructions provided here.
- If you are exchanging a 2766, 2787, 280E, 576B, or 5774 Fibre Channel IOA, the external storage subsystem must be updated to use the worldwide port name of the new 2766, 2787, 280E, 576B, or 5774 IOA. For instructions, see “Updating the worldwide port name for a new 2766, 2787, 280E, 576B, or 5774 IOA.” on page 126.
- If you are replacing a 2748, 2757, 2763, 2767, 2778, 2780, 2782, 5702, 5709, or 570B storage IOA, take note of the following: Depending on the configuration of the system, the storage IOA cache might have been disabled to allow the attachment of OEM storage that emulates a load source drive. If you are replacing a storage IOA that has its cache disabled, configure the replacement IOA the same way as the IOA that you removed. If you remove hardware from the replacement IOA, return that hardware with the failed IOA.

If you do not have an HMC or SDMC, complete the following steps to remove a PCI adapter with the system power on in the IBM i environment:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. If you are removing a failing PCI adapter, see Identifying a failing part. If you are removing the PCI adapter for other reasons, continue to the next step.
4. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
5. Type **strsst** on the command line of the Main Menu and press Enter.
6. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
7. Select **Start a service tool** from the System Service Tools (SST) display. Press Enter.
8. Select **Hardware service manager** from the Start a Service Tool display and press Enter.

9. Select **Packaging hardware resources (system, frames, cards)** from the Hardware Service Manager display. Press Enter.
10. Type **9** (Hardware contained within package) in the **System Unit** or **Expansion Unit** field of the unit where you are removing the card, and then press Enter.
11. Select the option to **Include empty positions**.
12. Select **Concurrent Maintenance** on the card position where you want to remove the card and then press Enter.
13. Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) blinks identifying the position you chose. Physically verify that this is the slot where you want to remove the adapter.
14. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
15. Select the option to **Power off domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
16. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message:  
Power off complete
17. Label and then disconnect all cables attached to the adapter you plan to remove.
18. Record the slot number and location of each adapter being removed.

**Note:** Adapter slots are numbered on the rear of the system.

19. Slide the adapter latch (**A**) into the open position, as shown in the following figure.

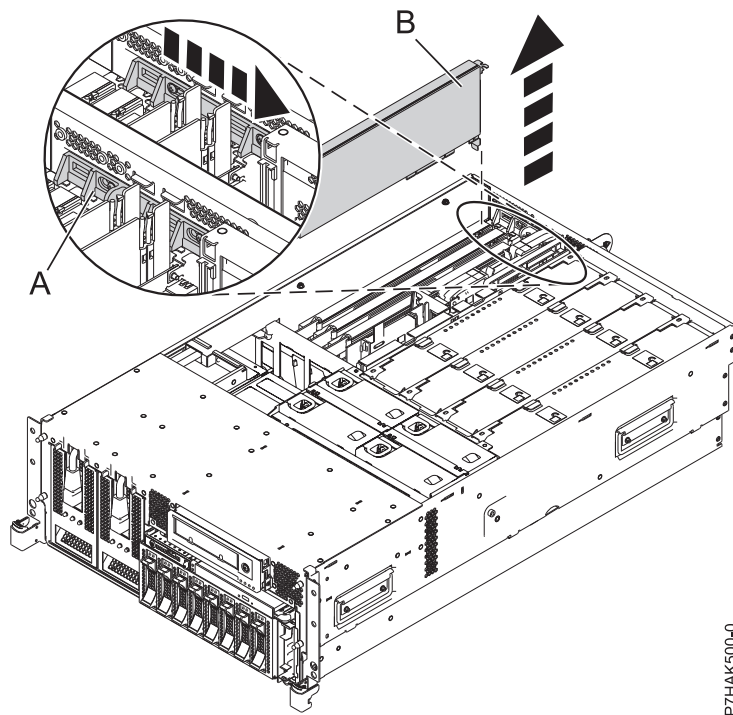


Figure 56. PCI adapter or filler plate removed from the rack-mounted system unit

20. Carefully grasp the PCI adapter (**B**) by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.
21. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
22. If you plan to install another adapter into the vacated slot, go to “Installing a PCI adapter in the 8233-E8B server, with the power on in an IBM i environment” on page 87; otherwise, continue with the next step.

23. Seal the expansion slot using an expansion-slot cover.
24. Replace or close the service access cover and, if applicable, return the system to the operating position.
25. To replace the PCI adapter, see “Replacing a PCI adapter in the 8233-E8B and 8236-E8C server” on page 101.

*Removing a PCI adapter from the 8233-E8B and 8236-E8C server, with the power on in the Linux environment:*

You can remove a PCI adapter with the system power on in the Linux environment.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the PCI adapter from the server. For instructions, see Removing a part by using the Systems Director Management Console.

If you do not have an HMC or SDMC, complete the following steps to remove a PCI adapter with the system power on in the Linux environment:

1. Ensure that the system meets the “Prerequisites for hot-plugging PCI adapters in Linux” on page 125.
2. “Verifying that the hot-plug PCI tools are installed for Linux” on page 125.
3. Perform the prerequisite tasks described in “Before you begin” on page 115.
4. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
5. If you are removing a failing PCI adapter, see Identifying a failing part. If you are removing the PCI adapter for other reasons, continue to the next step.
6. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
7. Determine which adapter you plan to remove, then label and disconnect all cables attached to that adapter.
8. Record the slot number and location of each adapter being removed.

**Note:** Adapter slots are numbered on the rear of the system.

9. Label, and then disconnect all cables attached to the adapter you plan to remove.

**Note:** Before performing a PCI hot-plug removal of storage devices, ensure that the file systems on those devices are unmounted.

10. Run the `drslot_chrp_pci` command to enable an adapter to be removed:  
For example, to remove the PCI adapter in slot U7879.001.DQD014E-P1-C3, run this command:  

```
drslot_chrp_pci -r -s U7879.001.DQD014E-P1-C3
```

  
Follow the instructions on the display to complete the task.
11. Slide the adapter latch (A) into the open position, as shown in the following figure.



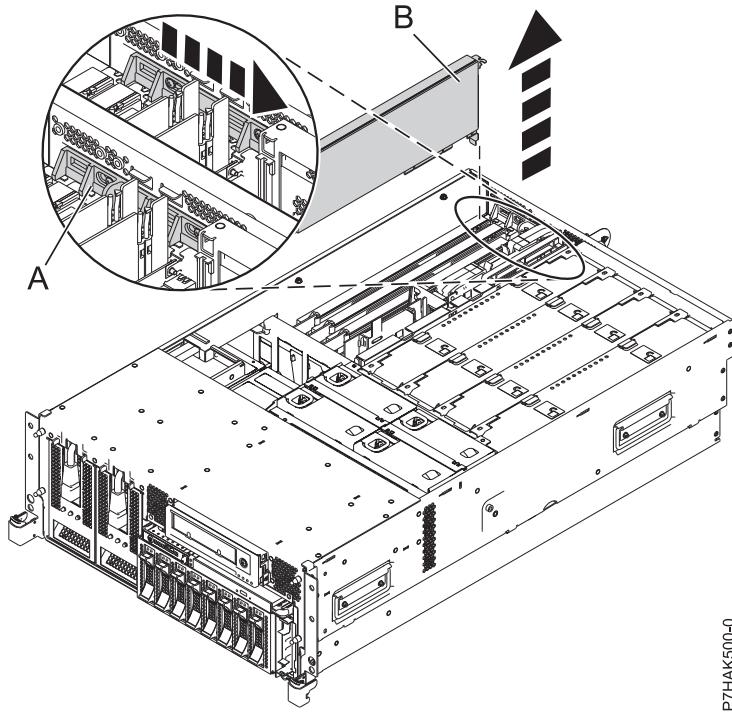


Figure 57. PCI adapter or filler plate removed from the rack-mounted system unit

12. Carefully grasp the PCI adapter (B) by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.
13. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.
14. If you plan to install another adapter into the vacated slot, go to “Replacing a PCI adapter in the 8233-E8B and 8236-E8C server with the power on in the Linux environment” on page 108; otherwise, continue with the next step.
15. Seal the expansion slot using an expansion-slot cover.
16. Replace or close the service access cover and, if applicable, return the system to the operating position.
17. Reconnect the power source to the system.
18. Start the system or logical partition. Refer to Start the system or logical partition.
19. To replace the PCI adapter, see “Replacing a PCI adapter in the 8233-E8B and 8236-E8C server.”

#### Replacing a PCI adapter in the 8233-E8B and 8236-E8C server:

You can replace a PCI adapter.

*Replacing a PCI adapter in the 8233-E8B and 8236-E8C server with the power off:*

You can replace a PCI adapter with the system power off.

You must have already completed the procedure “Removing a PCI adapter from the 8233-E8B and 8236-E8C server with the power off” on page 93 in order to have the slot powered off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the PCI adapter in the server. For instructions, see Replacing a part by using the Systems Director Management Console.

If you do not have an HMC or SDMC, complete the following steps to replace a PCI adapter with the system power off:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. If necessary, remove the adapter from the antistatic package.

**Attention:** Avoid touching the components and gold connectors on the adapter.

4. Place the adapter, component-side up, on a flat, static-protective surface.
5. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
6. Press the adapter **(A)** firmly into its connector.

**Attention:** When you install an adapter into the system, be sure that it is completely and correctly seated in its connector.

7. Slide the adapter latch **(B)** back into place as shown in the following figure.

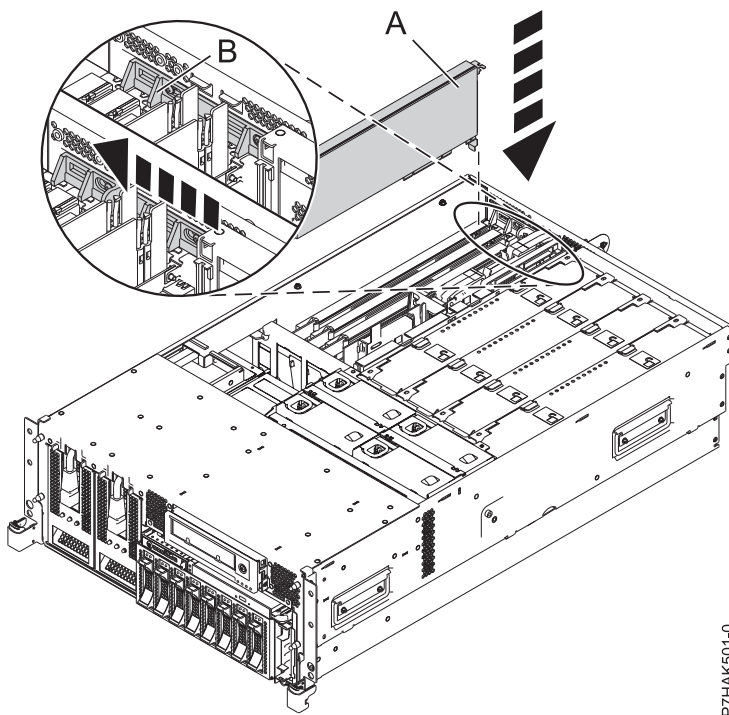


Figure 58. PCI adapter replaced in the rack-mounted system unit

8. Connect the adapter cables.
9. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
10. Replace or close the service access cover and, if applicable, return the system to the operating position.
11. Reconnect the power source to the system.
12. Start the system or logical partition. Refer to Start the system or logical partition.

13. Verify that the new resource is functional. See Verify the installed part.

*Removing and replacing a PCI adapter in the 8233-E8B and 8236-E8C server, with the power on in the AIX environment:*

You can replace a PCI adapter with the system power on in the AIX environment.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the PCI adapter in the server. For instructions, see Replacing a part by using the Systems Director Management Console.

Read the following notes to determine if this is the correct procedure for the task to be performed.

**Notes:**

- Use this procedure if you intend to remove a failing PCI adapter and replace it with the same type of adapter.
- If you plan to remove a failing adapter and leave the slot empty, see “Removing a PCI adapter from the 8233-E8B and 8236-E8C server, with the power on in the AIX environment” on page 95.
- This procedure should not be used to remove an existing adapter and install a different type of adapter. To install a different adapter, remove the existing adapter as described in “Removing a PCI adapter from the 8233-E8B and 8236-E8C server, with the power on in the AIX environment” on page 95, then install the new adapter as described in “Installing a PCI adapter in the 8233-E8B and 8236-E8C server, with the power on in an AIX environment” on page 85.
- Procedures performed on a PCI adapter with the system power on in AIX, also known as hot-plug procedures, require the system administrator to take the PCI adapter offline before performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

If you do not have an HMC or SDMC, complete the following steps to replace a PCI adapter with the system power on in the AIX environment:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. If you are removing a failing PCI adapter, see Identifying a failing part. If you are removing the PCI adapter for other reasons, continue to the next step.
4. If you are installing, removing, or replacing a PCI adapter in a rack-mounted system, follow these steps to remove the service access cover.
  - a. Open the front rack door.
  - b. Place the system unit in the service position.
  - c. Remove or open the service access cover.
5. Determine which adapters you plan to remove.
6. Record the slot number and location of each adapter being removed.

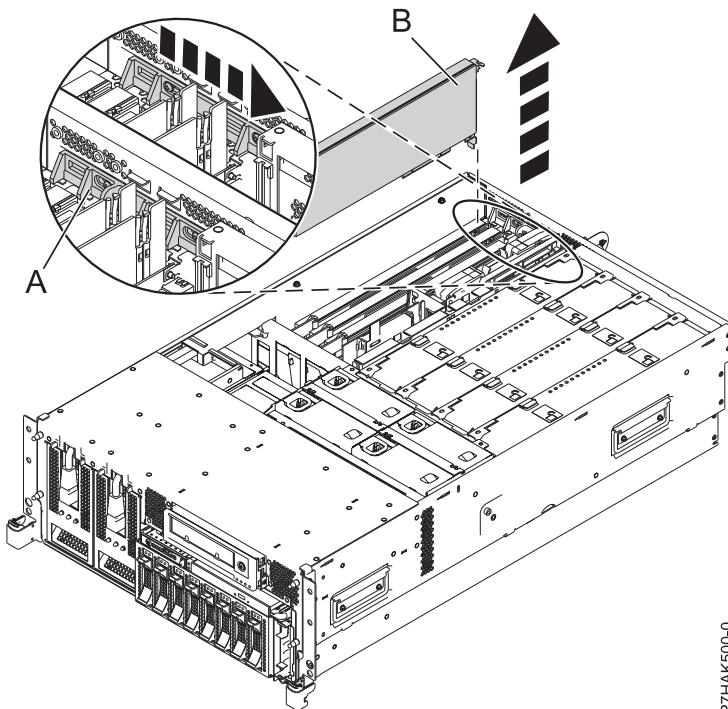
**Note:** Adapter slots are numbered on the rear of the system unit.

7. Ensure that any processes or applications that might use the adapter are stopped.
8. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at AIX command line.
9. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays, press Enter.

10. At the FUNCTION SELECTION menu, select **Task Selection**, then press enter.
11. At the Task Selection list, select **PCI Hot Plug Manager**.
12. Select **Unconfigure a Device**, then press Enter.
13. Press F4 (or Esc +4) to display the **Device Names** menu.
14. Select the adapter you are removing in the **Device Names** menu.
15. Use the Tab key to answer YES to **Keep Definition**. Use the Tab key again to answer YES to **Unconfigure Child Devices**, then press Enter.
16. The **ARE YOU SURE** screen displays. Press Enter to verify the information. Successful unconfiguration is indicated by the OK message displayed next to the Command field at the top of the screen.
17. Press F3 (or Esc +3) twice to return to the **Hot Plug Manager** menu.
18. Select **Replace/remove PCI Hot Plug adapter**.
19. Select the slot that has the device to be removed from the system.
20. Select **Replace**.

**Note:** A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.

21. Press Enter. This places the adapter in the action state, meaning that it is ready to be removed from the system.
22. Label, and then disconnect all cables attached to the adapter you plan to remove.
23. Slide the adapter latch (A) into the open position, as shown in the following figure.



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Figure 59. PCI adapter or filler plate removed from the rack-mounted system unit

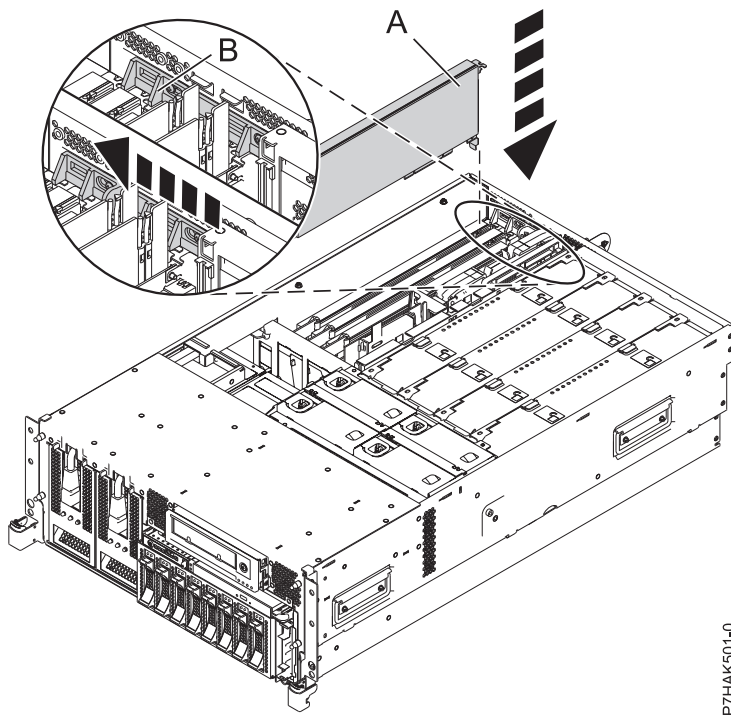
24. Carefully grasp the PCI adapter (B) by its top edge or upper corners, and remove it from the system. Store the adapter in a safe place.
25. If necessary, remove the replacement adapter from the antistatic package.

**Attention:** Avoid touching the components and gold connectors on the adapter.

26. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
27. Press the adapter (**A**) firmly into its connector. See the following figure.

**Attention:** When you install an adapter into the system, be sure that it is completely and correctly seated in its connector.

28. Slide the adapter latch (**B**) back into place as shown in the following figure.



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Figure 60. PCI adapter replaced in the rack-mounted system unit

29. Connect the adapter cables.
30. Press enter and continue to follow the instructions in the system diagnostics until you receive a message that the replacement is successful. Successful replacement is indicated by the OK message displayed next to the **Command** field at the top of the menu.
31. Press the F3 (or Esc+3) key to return to the **PCI Hot-Plug Manager** menu.
32. Press the F3 (or Esc+3) key to return to the **TASK** selection list.
33. Select **Log Repair Action**.
34. Select the resource just replaced, press Enter, press Commit (F7 or ESC 7), then press Enter.
35. Press F3 (or Esc+3) to return to **TASK Selection List**.
36. Select **Hot Plug Task**, press enter.
37. Select **PCI Hot Plug Manager**, then select **Configure a defined device**, then press Enter.
38. Select the device just replaced from the list, then press Enter. The device is now configured.
39. Press the F10 key to exit the diagnostic program.

**Note:** If you are running the stand-alone diagnostics, do not exit the program completely.

40. Verify the PCI adapter by using the following instructions:
  - a. Did you replace the adapter with the system power on?

- Yes - Go to the next step.
  - No - Load the diagnostic program by doing the following:
    - If AIX is available, boot AIX, log in as root or CELOGIN, then enter the **diag** command.
    - If AIX is not available, boot the stand-alone diagnostics
  - b. Type the **diag** command if you are not already displaying the diagnostic menus
  - c. Select **Advance Diagnostic Routines**, then select **Problem Determination**.
  - d. Select the name of the resource just replaced from the menu. If the resource just replaced is not shown, choose the resource associated with it. Press Enter, then press **Commit** ((F7 or Esc+7)).
  - e. Did the Problem Determination identify any problems?
    - No: Continue to the next step.
    - Yes: A problem is identified
      - If you are a customer, record the error information, then contact your service provider.
      - If you are an authorized service provider, return to map 210-5.
41. Press the F10 key to exit the diagnostic program.
  42. Replace or close the service access cover and, if applicable, return the system to the operating position.
  43. Verify that the new resource is functional. See Verify the installed part.

*Replacing a PCI adapter in the 8233-E8B server, with the power on in the IBM i environment:*

You can replace a PCI adapter with the system power on in the IBM i environment.

**Attention:** You must have already completed the procedure “Removing a PCI adapter in the 8233-E8B server, with the power on in the IBM i environment” on page 97 in order to have the slot powered off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for replacing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the PCI adapter in the server. For instructions, see Replacing a part by using the Systems Director Management Console.

**Important:**

- If the adapter is the load source I/O adapter (IOA) or the load source I/O processor (IOP), or any other storage IOA or IOP with critical disk storage attached for the system or partition, follow the on-screen instructions when you use HSM to power down the IOP or IOA. Instructions to use functions 68 and 69 on the control panel will be included.
- If the adapter is the console IOA or the console IOP for the system or partition, you must perform the maintenance from an IBM i operating system session connected through a different IOA or IOP, or you must power down the partition to perform maintenance.
- If you are removing, installing or replacing a PCI-X double-wide, quad-channel Ultra320 SCSI RAID controller, review the Concurrent maintenance procedure in the PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller (FC 5739, 5778, 5781, 5782; CCIN 571F, 575B) topic, before proceeding with the instructions provided here.
- If you are removing, installing or replacing a PCI-X DDR 1.5 GB cache SAS RAID Adapter, review the Concurrent maintenance procedure in the PCI-X DDR 1.5 GB cache SAS RAID Adapter topic, before proceeding with the instructions provided here.
- If you are exchanging a 2766, 2787, 280E, 576B, or 5774 Fibre Channel IOA, the external storage subsystem must be updated to use the worldwide port name of the new 2766, 2787, 280E, 576B, or 5774 IOA. For instructions, see “Updating the worldwide port name for a new 2766, 2787, 280E, 576B, or 5774 IOA.” on page 126.

- If you are replacing a 2748, 2757, 2763, 2767, 2778, 2780, 2782, 5702, 5709, or 570B storage IOA, take note of the following: Depending on the configuration of the system, the storage IOA cache might have been disabled to allow the attachment of OEM storage that emulates a load source drive. If you are replacing a storage IOA that has its cache disabled, configure the replacement IOA the same way as the IOA that you removed. If you remove hardware from the replacement IOA, return that hardware with the failed IOA.

If you do not have an HMC or SDMC, complete the following steps to replace a PCI adapter with the system power on in the IBM i environment:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. If necessary, remove the adapter from the antistatic package.

**Attention:** Avoid touching the components and gold connectors on the adapter.

4. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
5. Press the adapter **(A)** firmly into its connector.

**Attention:** When you install an adapter into the system, be sure that it is completely and correctly seated in its connector.

6. Slide the adapter latch **(B)** back into place as shown in the following figure.

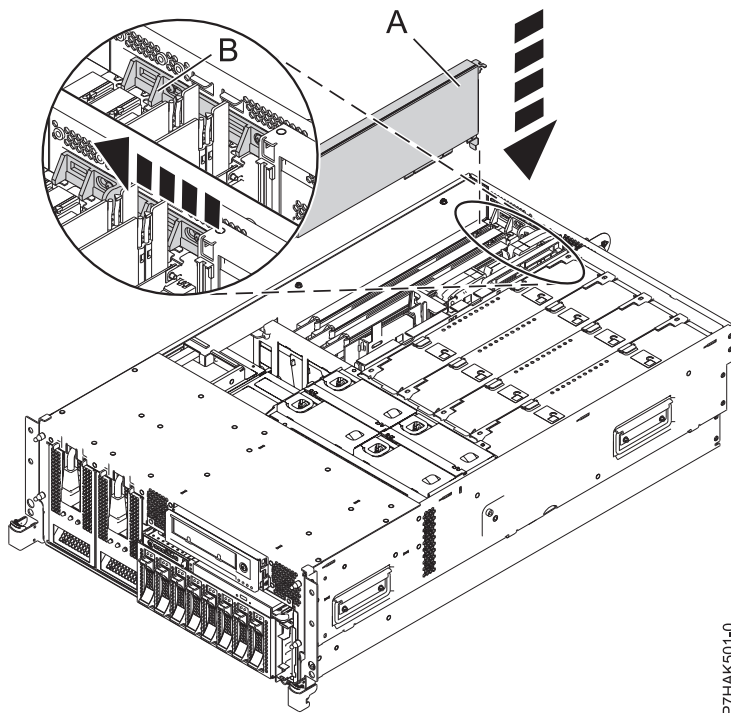


Figure 61. PCI adapter replaced in the rack-mounted system unit

7. Connect the adapter cables.
8. Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
9. Select **Assign to** on the resource that has an asterisk (\*) on the Work with Controlling Resource display. Press Enter.

10. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message:  
Power on complete
11. Replace or close the service access cover and, if applicable, return the system to the operating position.
12. Verify that the new resource is functional. See Verify the installed part.

*Replacing a PCI adapter in the 8233-E8B and 8236-E8C server with the power on in the Linux environment:*

You can replace a PCI adapter with the system power on in the Linux environment.

You must have already completed the procedure “Removing a PCI adapter from the 8233-E8B and 8236-E8C server, with the power on in the Linux environment” on page 100.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for installing a PCI adapter.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the PCI adapter in the server. For instructions, see Replacing a part by using the Systems Director Management Console.

If you do not have an HMC or SDMC, complete the following steps to replace a PCI adapter with the system power on in the Linux environment:

1. Perform the prerequisite tasks described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. If necessary, remove the adapter from the antistatic package.

**Attention:** Avoid touching the components and gold connectors on the adapter.

4. Place the adapter, component-side up, on a flat, static-protective surface.
5. Run the `drs1ot_chrp_pci` command to enable an adapter to be replaced:

For example, to replace the PCI adapter in slot U7879.001.DQD014E-P1-C3 run this command:

```
drs1ot_chrp_pci -R -s U7879.001.DQD014E-P1-C3
```

Follow the instructions on the display to complete the task.

6. Press the adapter firmly into its connector.

**Attention:** When you install an adapter into the system, be sure that it is completely and correctly seated in its connector.

7. Carefully grasp the adapter by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
8. Press the adapter **(A)** firmly into its connector.

**Attention:** When you install an adapter into the system, be sure that it is completely and correctly seated in its connector.

9. Slide the adapter latch **(B)** back into place as shown in the following figure.



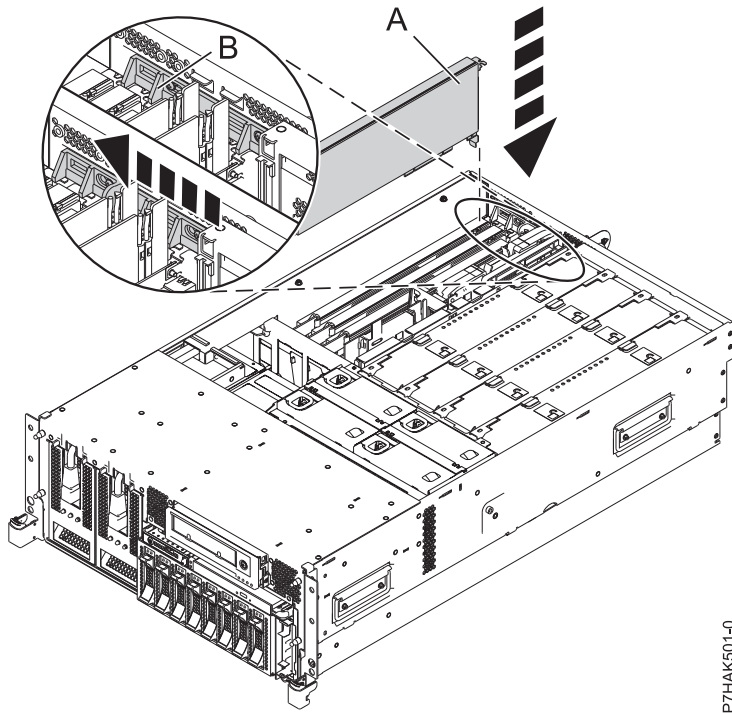


Figure 62. PCI adapter replaced in the rack-mounted system unit

10. Connect the adapter cables.
11. Run the `lsslot` command to verify that the slot is occupied.  
 For example, Enter `lsslot -c pci -s U7879.001.DQD014E-P1-C3`  
 The following is an example of the information displayed by this command:
 

# Slot	Description	Device(s)
U7879.001.DQD014E-P1-C3	PCI-X capable, 64 bit, 133MHz slot	0001:40:01.0
12. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
13. Replace or close the service access cover and, if applicable, return the system to the operating position.
14. Verify that the new resource is functional. See Verify the installed part.

### Model 8233-E8B and 8236-E8C PCI adapter dividers

You might need to remove, replace, or install PCI adapter dividers. Use the procedures in this section to perform these tasks.

#### Removing a PCI adapter divider from the 8233-E8B and 8236-E8C server:

You can remove a PCI adapter divider.

The following procedure describes the removal of PCI adapter dividers with the system power off. This procedure can be done with the system power on by omitting the steps related to powering off the system.

To remove a divider, do the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 115.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page v and “Handling static-sensitive devices” on page 118.
3. Stop the system or logical partition. See Stop the system or logical partition.

4. Disconnect the power source from the system by unplugging the system.
5. Remove the unit's cover if you are installing or removing a PCI adapter divider.
6. Slide the adapter latch (A) into the open position, as shown in the following figure.

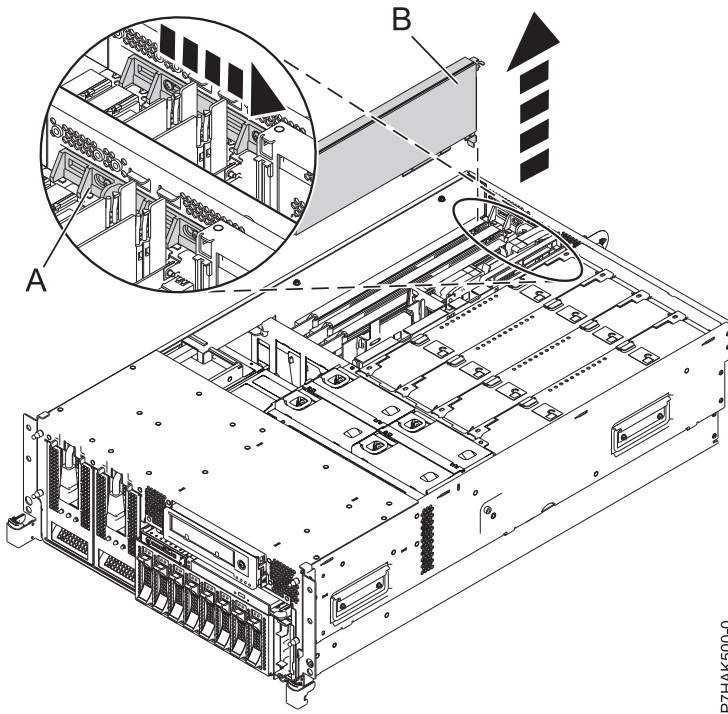


Figure 63. PCI adapter or filler plate removed from the rack-mounted system unit

7. Flex the front edge (A) of the PCI adapter divider out of the bracket and toward the rest of the divider.
8. Pull the back edge of the divider away from the retention notches (B).

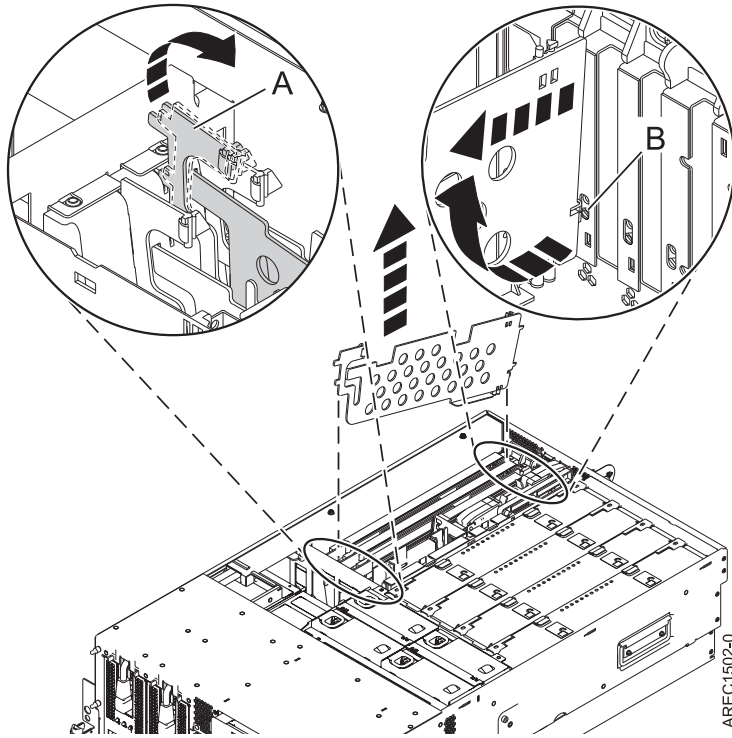


Figure 64. PCI-adapter divider removed from the system unit

9. If you are removing the PCI adapter divider as part of another procedure, return to that procedure now. To replace the divider, see "Installing a PCI adapter divider in the 8233-E8B and 8236-E8C server" on page 112. To close up the system, continue to the next step.
10. Slide the adapter latch (**B**) back into place as shown in the following figure.

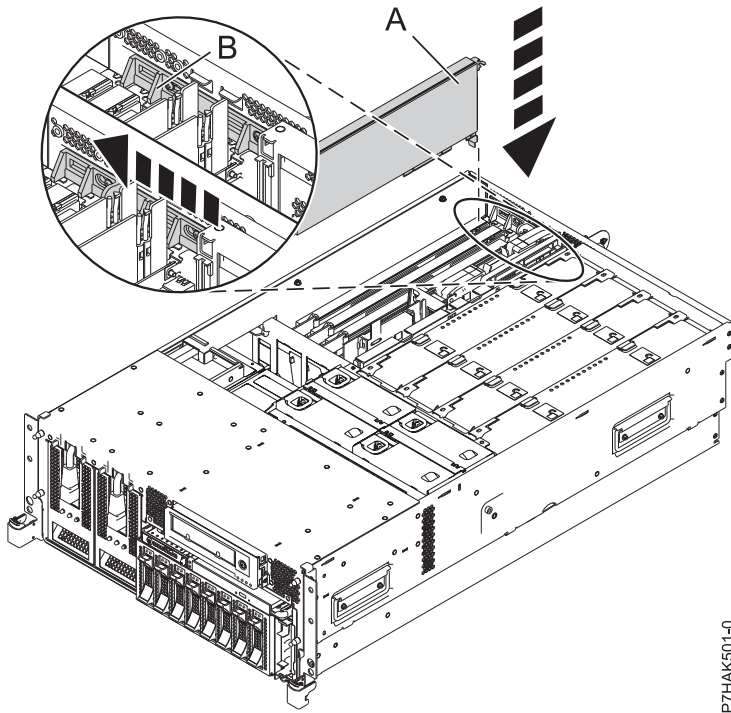


Figure 65. PCI adapter replaced in the rack-mounted system unit

11. Replace or close the service access cover and, if applicable, return the system to the operating position.
12. Reconnect the power source to the system.
13. Start the system or logical partition. Refer to Start the system or logical partition.

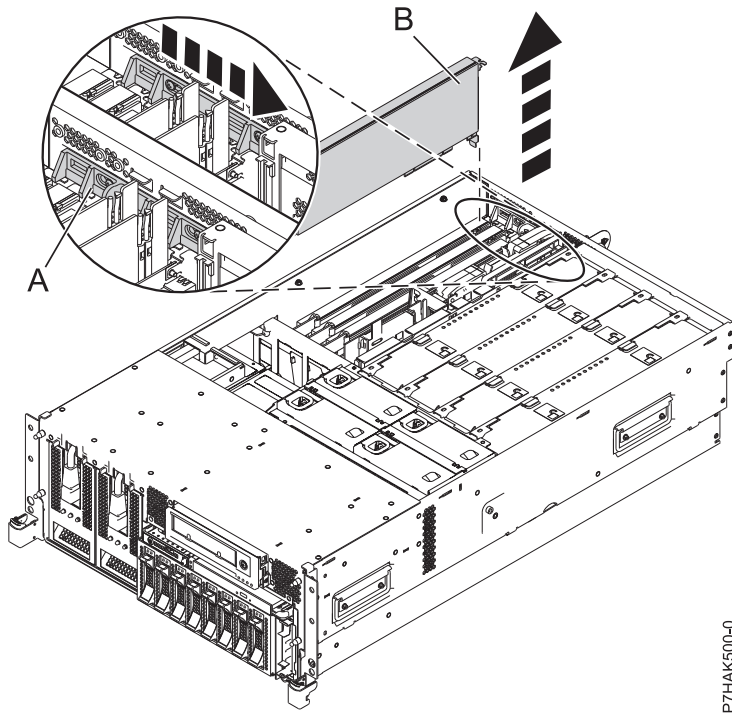
**Installing a PCI adapter divider in the 8233-E8B and 8236-E8C server:**

You can install a PCI adapter divider.

The following procedure describes the installation of a PCI adapter divider with the system power off. This procedure can be done with the system power on by omitting the steps related to powering on the system.

To install a divider, do the following steps:

1. Locate the PCI adapter divider slot that you want to use. To access the divider slots, see the first 6 steps in “Removing a PCI adapter divider from the 8233-E8B and 8236-E8C server” on page 109.
2. Slide the adapter latch (A) into the open position, as shown in the following figure.



P7HAK500-0

Figure 66. PCI adapter or filler plate removed from the rack-mounted system unit

3. Carefully grasp the PCI adapter divider by its top edge and align the back edge of the divider with the retention notches (**A**).
4. Insert the front edge of the divider (**B**) into the slots and then press the divider into place.

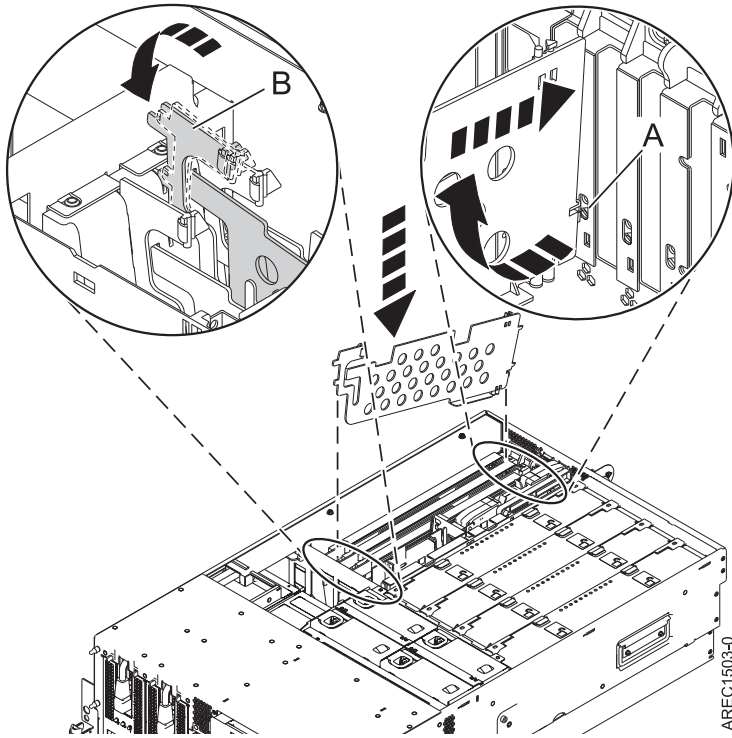


Figure 67. PCI-adapter divider replaced in the system unit

5. Slide the adapter latch (**B**) back into place as shown in the following figure.

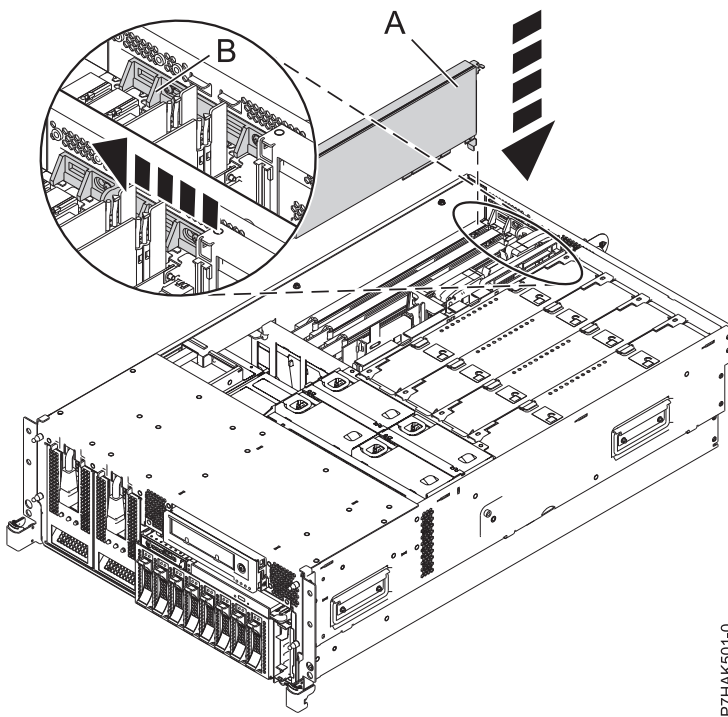


Figure 68. PCI adapter replaced in the rack-mounted system unit

6. Replace or close the service access cover and, if applicable, return the system to the operating position.
7. Reconnect the power source to the system.
8. Start the system or logical partition. Refer to Start the system or logical partition.

## Related procedures for installing and removing PCI adapters

These procedures are related to installing and removing PCI adapters.

### Before you begin:

Observe these precautions when you are installing, removing, or replacing features and parts.

These precautions are intended to create a safe environment to service your system and do not provide steps for servicing your system. The installation, removal and replacement procedures provide the step-by-step processes required to service your system.

### DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

#### To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

#### To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

### DANGER

Observe the following precautions when working on or around your IT rack system:

- Heavy equipment—personal injury or equipment damage might result if mishandled.
- Always lower the leveling pads on the rack cabinet.
- Always install stabilizer brackets on the rack cabinet.
- To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.
- Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.



- Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
- Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.
- An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.

#### CAUTION

- Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.
- Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.
- Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.
- *(For sliding drawers.)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.
- *(For fixed drawers.)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.

(R001)

Before you begin a replacement or installation procedure, perform these tasks:

1. If you are installing a new feature, ensure that you have the software required to support the new feature.  
To do this, go to the following Web site: IBM Prerequisite
2. If you are performing an installation or replacement procedure that might put your data at risk, ensure, wherever possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).
3. Review the installation or replacement procedure for the feature or part.
4. Note the significance of color on your system.



Blue or terra-cotta on a part of the hardware indicates a touch point where you can grip the hardware to remove it from or install it in the system, open or close a latch, and so on. Terra-cotta might also indicate that the part can be removed and replaced with the system or logical partition power on.

5. Ensure that you have access to a medium flat-blade screwdriver, a Phillips screwdriver, and a pair of scissors.
6. If parts are incorrect, missing, or visibly damaged, do the following:
  - If you are replacing a part, contact the provider of your parts or next level of support.
  - If you are installing a feature, contact one of the following service organizations:
    - The provider of your parts or next level of support.
    - In the United States, the IBM Rochester Manufacturing Automated Information Line (R-MAIL) at 1-800-300-8751.

In countries and regions outside of the United States, use the following Web site to locate your service and support telephone numbers:

<http://www.ibm.com/planetwide>

7. If you encounter difficulties during the installation, contact your service provider, your IBM reseller, or your next level of support.
8. If you are installing new hardware in a logical partition, you need to understand and plan for the implications of partitioning your system. For information, see Logical Partitioning.

#### **Avoiding electric shock:**

Learn about precautions you should take to avoid electric shock when working on our around a computer system.

## DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- Connect power to this unit only with the IBM provided power cord. Do not use the IBM provided power cord for any other product.
- Do not open or service any power supply assembly.
- Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.
- The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.
- Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.
- Connect any equipment that will be attached to this product to properly wired outlets.
- When possible, use one hand only to connect or disconnect signal cables.
- Never turn on any equipment when there is evidence of fire, water, or structural damage.
- Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.
- Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.

To Disconnect:

1. Turn off everything (unless instructed otherwise).
2. Remove the power cords from the outlets.
3. Remove the signal cables from the connectors.
4. Remove all cables from the devices

To Connect:

1. Turn off everything (unless instructed otherwise).
2. Attach all cables to the devices.
3. Attach the signal cables to the connectors.
4. Attach the power cords to the outlets.
5. Turn on the devices.

(D005)

### Handling static-sensitive devices:

Learn about precautions you should take to prevent damage to electronic components from static electricity discharge.

Electronic boards, adapters, media drives, and disk drives are sensitive to static electricity discharge. These devices are wrapped in antistatic bags to prevent this damage. Take the following precautions to prevent damage to these devices from static electricity discharge.

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
- When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system.

- With the device still in its antistatic bag, touch it to the metal frame of the system.
- Grasp cards and boards by the edges. Avoid touching the components and gold connectors on the adapter.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system at the same time.
- Handle the devices carefully to prevent permanent damage.


### Installing or replacing a PCI adapter with the system power on in Virtual I/O Server:

You can install or replace a PCI adapter in the Virtual I/O Server logical partition or in the Integrated Virtualization Manager management partition.

The Virtual I/O Server includes a PCI Hot Plug Manager that is similar to the PCI Hot Plug Manager in the AIX operating system. The PCI Hot Plug Manager allows you to hot plug PCI adapters into the server and then activate them for the logical partition without having to reboot the system. Use the PCI Hot Plug Manager for adding, identifying, or replacing PCI adapters in the system that are currently assigned to the Virtual I/O Server.

*Getting started:*

#### Prerequisites:

- If you are installing a new adapter, an empty system slot must be assigned to the Virtual I/O Server logical partition. This task can be done through dynamic logical partitioning (DLPAR) operations.
  - If you are using a Hardware Management Console (HMC), you must also update the logical partition profile of the Virtual I/O Server so that the new adapter is configured to the Virtual I/O Server after you restart the system.
  - If you are using the Integrated Virtualization Manager, an empty slot is probably already assigned to the Virtual I/O Server logical partition because all slots are assigned to the Virtual I/O Server by default. You only need to assign an empty slot to the Virtual I/O Server logical partition if you previously assigned all empty slots to other logical partitions.
- If you are installing a new adapter, ensure that you have the software required to support the new adapter and determine whether there are any existing PTF prerequisites to install. To do this, use the IBM Prerequisite website at [http://www-912.ibm.com/e\\_dir/eServerPrereq.nsf](http://www-912.ibm.com/e_dir/eServerPrereq.nsf) 
- If you need help determining the PCI slot in which to place a PCI adapter, see the PCI adapter placement.

Follow these steps to access the Virtual I/O Server, PCI Hot Plug Manager:

1. If you are using the Integrated Virtualization Manager, connect to the command-line interface.
2. Use the **diagmenu** command to open the Virtual I/O Server diagnostic menu. The menus are similar to the AIX diagnostic menus.
3. Select **Task Selection**, then press Enter.
4. At the Task Selection list, select **PCI Hot Plug Manager**.

*Installing a PCI adapter:*

To install a PCI adapter with the system power on in Virtual I/O Server, do the following steps:

1. From the PCI Hot Plug Manager, select **Add a PCI Hot Plug Adapter**, then press Enter. The Add a Hot-Plug Adapter window is displayed.
2. Select the appropriate empty PCI slot from those listed, and press Enter. A fast-blinking amber LED located at the back of the server near the adapter indicates that the slot has been identified.
3. Follow the instructions on the screen to install the adapter until the LED for the specified PCI slot is set to the Action state.

- a. Set the adapter LED to the action state so that the indicator light for the adapter slot flashes
  - b. Physically install the adapter
  - c. Finish the adapter installation task in **diagmenu**.
4. Run the **cfgdev** command to configure the device for the Virtual I/O Server.

If you are installing a PCI, Fibre Channel adapter, it is now ready to be attached to a SAN and have LUNs assigned to the Virtual I/O Server for virtualization.

*Replacing a PCI adapter:*

**Prerequisite:** Before you can remove or replace a storage adapter, you must unconfigure that adapter. See “Unconfiguring storage adapters” for instructions.

To replace a PCI adapter with the system power on in Virtual I/O Server, do the following steps:

1. From the PCI Hot Plug Manager, select **Unconfigure a Device**, then press Enter.
2. Press F4 (or Esc +4) to display the **Device Names** menu.
3. Select the adapter you are removing in the **Device Names** menu.
4. In the **Keep Definition** field, use the Tab key to answer Yes. In the **Unconfigure Child Devices** field, use the Tab key again to answer YES, then press Enter.
5. Press Enter to verify the information on the **ARE YOU SURE** screen. Successful unconfiguration is indicated by the OK message displayed next to the Command field at the top of the screen.
6. Press F4 (or Esc +4) twice to return to the Hot Plug Manager.
7. Select **replace/remove PCI Hot Plug adapter**.
8. Select the slot that has the device to be removed from the system.
9. Select **replace**. A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
10. Press Enter which places the adapter in the action state, meaning it is ready to be removed from the system.

*Unconfiguring storage adapters:*

Before you can remove or replace a storage adapter, you must unconfigure that adapter. Storage adapters are generally parent devices to media devices, such as disk drives or tape drives. Removing the parent requires that all attached child devices either be removed or placed in the define state.

Unconfiguring a storage adapter involves the following tasks:

- Closing all applications that are using the adapter you are removing, replacing, or moving
- Unmounting file systems
- Ensuring that all devices connected to the adapter are identified and stopped
- Listing all slots that are currently in use or a slot that is occupied by a specific adapter
- Identifying the adapter's slot location
- Making parent and child devices unavailable
- Making the adapter unavailable

If the adapter supports physical volumes that are in use by a client logical partition, then You can perform steps on the client logical partition before unconfiguring the storage adapter. For instructions, see “Preparing the client logical partitions” on page 121. For example, the adapter might be in use because the physical volume was used to create a virtual target device, or it might be part of a volume group used to create a virtual target device.

Follow these steps to unconfigure SCSI, SSA, and Fibre Channel storage adapters:

1. Connect to the Virtual I/O Server command-line interface.
2. Use the `oem_setup_env` command to close all applications that are using the adapter you are unconfiguring.
3. Type `lsslot-c pci` to list all the hot plug slots in the system unit and display their characteristics.
4. Type `lsdev -C` to list the current state of all the devices in the system unit.
5. Type `umount` to unmount previously mounted file systems, directories, or files using this adapter.
6. Type `rmdev -l adapter -R` to make the adapter unavailable.

**Attention:** Do not use the `-d` flag with the `rmdev` command for hot plug operations because this action removes your configuration.

*Preparing the client logical partitions:*

If the virtual target devices of the client logical partitions are not available, the client logical partitions can fail or they might be unable to perform I/O operations for a particular application. If you use the HMC to manage the system, you might have redundant Virtual I/O Server logical partitions, which allow for Virtual I/O Server maintenance and avoid downtime for client logical partitions. If you are replacing an adapter on the Virtual I/O Server and your client logical partition is dependent on one or more of the physical volumes accessed by that adapter, then You can take action on the client before you unconfigure the adapter.

The virtual target devices must be in the define state before the Virtual I/O Server adapter can be replaced. Do not remove the virtual devices permanently.

To prepare the client logical partitions so that you can unconfigure an adapter, complete the following steps depending on your situation.

*Table 1. Situations and steps for preparing the client logical partitions*

Situation	Steps
You have redundant hardware on the Virtual I/O Server for the adapter.	No action is required on the client logical partition.
HMC-managed systems only: You have redundant Virtual I/O Server logical partitions that, in conjunction with virtual client adapters, provide multiple paths to the physical volume on the client logical partition.	No action is required on the client logical partition. However, path errors might be logged on the client logical partition.
HMC-managed systems only: You have redundant Virtual I/O Server logical partitions that, in conjunction with virtual client adapters, provide multiple physical volumes that are used to mirror a volume group.	See the procedures for your client operating system. For example, for AIX, see Replacing a disk on the Virtual I/O Server in the IBM System p® Advanced POWER® Virtualization Best Practices Redpaper. The procedure for Linux is similar to this procedure for AIX.
You do not have redundant Virtual I/O Server logical partitions.	Shut down the client logical partition.  For instructions, see the following topics about shutting down logical partitions: <ul style="list-style-type: none"> <li>• For systems that are managed by the HMC, see “Shutting down AIX logical partitions using the HMC”, “Shutting down IBM i logical partitions using the HMC”, and “Shutting down Linux logical partitions using the HMC” in the Logical partitioning.<sup>1</sup></li> <li>• For systems that are managed by the Integrated Virtualization Manager, see “Shutting down logical partitions” on page 122.</li> </ul>

<sup>1</sup>The Logical partitioning can be found on the Hardware Information website at

[http://publib.boulder.ibm.com/infocenter/systems/scope/hw/topic/p7hdx/power\\_systems.htm](http://publib.boulder.ibm.com/infocenter/systems/scope/hw/topic/p7hdx/power_systems.htm) 

## Shutting down logical partitions:

You can use the Integrated Virtualization Manager to shut down the logical partitions or to shut down the entire managed system.

Use any role other than View Only to perform this task.

The Integrated Virtualization Manager provides the following types of shutdown options for logical partitions:

- Operating System (recommended)
- Delayed
- Immediate

The recommended shutdown method is to use the client operating systems shutdown command. Use the immediate shutdown method only as a last resort because using this method causes an abnormal shutdown which might result in data loss.

If you choose the Delayed shutdown method, then be aware of the following considerations:

- Shutting down the logical partitions is equivalent to pressing and holding the white control-panel power button on a server that is not partitioned.
- Use this procedure only if you cannot successfully shut down the logical partitions through operating system commands. When you use this procedure to shut down the selected logical partitions, the logical partitions wait a predetermined amount of time to shut down. This allows the logical partitions time to end jobs and write data to disks. If the logical partition is unable to shut down within the predetermined amount of time, it ends abnormally, and the next restart might take a long time.

If you plan to shut down the entire managed system, shut down each client logical partition, then shut down the Virtual I/O Server management partition.

To shut down a logical partition, complete the following steps in the Integrated Virtualization Manager:

1. In the navigation area, select **View/Modify Partitions** under **Partition Management**. The View/Modify Partitions page is displayed.
2. Select the logical partition that you want to shut down.
3. From the Tasks menu, click **Shutdown**. The Shutdown Partitions page is displayed.
4. Select the shutdown type.
5. Optional: Select **Restart after shutdown completes** if you want the logical partition to start immediately after it shuts down.
6. Click **OK** to shut down the partition. The View/Modify Partitions page is displayed, and the logical partition state has a value of shutdown.

## PCI hot-plug manager access for AIX:

You might need to service PCI adapters with the system power on in AIX. Use the procedures in this section to perform this task.

The instructions for servicing PCI adapters with the system power on in AIX refer you to these procedures when it is appropriate to perform them.

**Note:** For an adapter to be serviced with the system power on, both the adapter and the system unit must support hot-plug procedures. To identify adapters that are hot-pluggable in the system you are servicing, refer to the following placement information: PCI adapter placement.

*Accessing hot-plug management functions:*

You can use PCI Hot Plug Manager to service PCI adapters with the system power on in AIX. Use the procedures in this section to perform this task.

**Note:** Procedures performed on a PCI adapter with the system power on in AIX, also known as hot-plug procedures, require the system administrator to take the PCI adapter offline prior to performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

To access the hot-plug menus, do the following:

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **Devices**.
4. Select **PCI Hot Plug Manager** and press Enter.
5. The PCI Hot-Plug Manager menu displays. Return to the procedure that directed you here. The following section describes the menu options.

*PCI hot-plug manager menu:*

You can use PCI Hot Plug Manager to service PCI adapters with the system power on in AIX. The following options are available from the PCI Hot Plug Manager menu.

**Note:** For information about the PCI slot LED states, see “Component LEDs” on page 124.

### List PCI hot-plug slots

Provides a descriptive list of all slots that support PCI hot-plug capability. If the listing for a slot indicates it holds an “Unknown” device, select the **Install/configure Devices added after IPL** to configure the adapter in that slot.

### Add a PCI hot-plug adapter

Allows the user to add a new PCI hot-plug-capable adapter to the slot with the system turned on. You will be asked to identify the PCI slot that you have selected prior to the actual operation. The selected PCI slot will go into the Action state and finally into the On state.

**Note:** The system will indicate the slot holds an “Unknown” device until you perform the **Install/configure devices added after IPL** option to configure the adapter.

### Replace/remove a PCI hot-plug adapter

Allows the user to remove an existing adapter, or replace an existing adapter with an identical one. For this option to work, the adapter must be in the Defined state (see the “Unconfigure a Device” option).

You will be asked to identify the PCI slot prior to the actual operation. The selected PCI slot will go into the Action state.

### Identify a PCI hot-plug slot

Allows the user to identify a PCI slot. The selected PCI slot will go into the Identify state. See “Component LEDs” on page 124.

### Unconfigure a device

Allows the user to put an existing PCI adapter into the Defined state if the device is no longer in use.

This step must be completed successfully before starting any removal or replacement operation. If this step fails, the customer must take action to release the device.

### **Configure a defined device**

Allows a new PCI adapter to be configured into the system if software support is already available for the adapter. The selected PCI slot will go into the On state.

### **Install/configure devices added after IPL**

The system attempts to configure any new devices and tries to find and install any required software from a user-selected source.

The add, remove, and replace functions return information to the user indicating whether the operation was successful. If additional instructions are provided on the screen, complete the recommended actions. If the instructions do not resolve the problem, do the following:

- If the adapter is listed as Unknown, perform the **Install/configure devices Added After IPL** option to configure the adapter.
- If you receive a warning indicating that needed device packages are not installed, the system administrator must install the specified packages before you can configure or diagnose the adapter.
- If you receive a failure message indicating a hardware error, the problem might be either the adapter or the PCI slot. Isolate the problem by retrying the operation in a different PCI slot, or trying a different adapter in the slot. If you determine that you have failing hardware, call your service representative.
- *Do not* use **Install/configure devices added after IPL** if your system is set up to run HACMP™ clustering. Consult with your system administrator or software support to determine the correct method to configure the replacement device.

#### *Component LEDs:*

Individual LEDs are located on or near the failing components. Use the information in this section to interpret the LEDs.

The LEDs are located either on the component itself or on the carrier of the component (for example, memory card, fan, memory module, or processor). LEDs are either green or amber.

Green LEDs indicate either of the following:

- Electrical power is present.
- Activity is occurring on a link. (The system could be sending or receiving information.)

Amber LEDs indicate a fault or identify condition. If your system or one of the components on your system has an amber LED turned on or blinking, identify the problem and take the appropriate action to restore the system to normal.

#### *Resetting the LEDs in AIX:*

Individual LEDs are located on or near the failing components. You can use this procedure to reset the LEDs after you have completed a repair action.

After the repair action is completed, do the following:

1. Log in as root user.
2. At the command line, type `diag`.
3. Select **Task Selection**.
4. Select **Log Repair Action**.



5. Select the device that was repaired.
6. Press F10 to exit diagnostics.

If the Attention LED remains on after you have completed the repair action and reset the LEDs, call for service support.

### **Prerequisites for hot-plugging PCI adapters in Linux:**

In the course of installing, removing, or replacing a PCI adapter with the system powered on in a Linux operating system, you might need to complete some prerequisite tasks. Use the information in this section to identify those prerequisites.

The Linux system administrator needs to take the PCI adapter offline prior to removing, replacing, or installing a PCI adapter with the system power on (hot-plugging). Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

Before hot-plugging adapters for storage devices, ensure that the file systems on those devices are unmounted. After hot-plugging adapters for storage devices, ensure that the file systems on those devices are remounted.

Before hot-plugging an adapter, ensure that the server or partition is at the correct level of the Linux operating system (Linux 2.6 or later).

Install the POWER Linux Service Aids. These service aids enable system serviceability, as well to improve system management.

If you are using a Linux on POWER distribution with Linux kernel version 2.6 or later, you can install the Service Aids that gives you access to more capabilities, which can help you diagnose problems on your system.

This software is available at the Service and productivity tools for Linux on POWER Web site (<http://www14.software.ibm.com/webapp/set2/sas/f/lopdiags/home.html>).

### **Verifying that the hot-plug PCI tools are installed for Linux:**

In the course of installing, removing, or replacing a PCI adapter with the system power on in Linux operating system you might need use the hot-plug PCI tools. Use the procedure in this section to verify that you have the hot-plug PCI tools installed.

1. Enter the following command to verify that the hot-plug PCI tools are installed:

```
rpm -aq | grep rpa-pci-hotplug
```

If the command does not list any rpa-pci-hotplug packages, the PCI Hot Plug tools are not installed.

2. Enter the following command to ensure that the rpaphp driver is loaded:

```
ls -l /sys/bus/pci/slots/
```

The directory should contain data. If the directory is empty, the driver is not loaded or the system does not contain hot-plug PCI slots. The following is an example of the information displayed by this command:

```
drwxr-xr-x 15 root root 0 Feb 16 23:31 .
drwxr-xr-x  5 root root 0 Feb 16 23:31 ..
drwxr-xr-x  2 root root 0 Feb 16 23:31 0000:00:02.0
drwxr-xr-x  2 root root 0 Feb 16 23:31 0000:00:02.2
drwxr-xr-x  2 root root 0 Feb 16 23:31 0000:00:02.4
drwxr-xr-x  2 root root 0 Feb 16 23:31 0001:00:02.0
drwxr-xr-x  2 root root 0 Feb 16 23:31 0001:00:02.2
drwxr-xr-x  2 root root 0 Feb 16 23:31 0001:00:02.4
```

```
drwxr-xr-x 2 root root 0 Feb 16 23:31 0001:00:02.6
drwxr-xr-x 2 root root 0 Feb 16 23:31 0002:00:02.0
drwxr-xr-x 2 root root 0 Feb 16 23:31 0002:00:02.2
drwxr-xr-x 2 root root 0 Feb 16 23:31 0002:00:02.4
drwxr-xr-x 2 root root 0 Feb 16 23:31 0002:00:02.6
```

If the directory does not exist, run the following command to mount the filesystem:

```
mount -t sysfs sysfs /sys
```

3. Ensure the following tools are available in the `/usr/sbin` directory.
  - `lsslot`
  - `drslot_chrp_pci`
4. Return to the procedure that sent you here.

### **Updating the worldwide port name for a new 2766, 2787, 280E, 576B, or 5774 IOA.:**

If you have exchanged a 2766, 2787, 280E, 576B, or 5774 Fibre Channel Input/Output Adapter (IOA), the IBM external storage subsystem must be updated to use the worldwide port name (WWPN) of the new 2766, 2787, 280E, 576B, or 5774 IOA. Any SAN hardware using WWPN zoning might also need updating.

For instructions on how to update the external storage subsystem or SAN hardware configurations, see the documentation for those systems.

The WWPN for the Fibre Channel IOA can be found using the Hardware Service Manager in SST or DST. Display detail on the 2766, 2787, 280E, 576B, or 5774 IOA Logical Hardware Resource information, and use the port worldwide name field.

The 16-digit WWPN can also be determined by appending the digits "1000" to the beginning of the 12-digit IEEE address found on the tailstock label of the Fibre Channel IOA.

### **PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller (FC 5739, 5778, 5781, 5782; CCIN 571F, 575B):**

Learn about the features, specifications, and installation notes for the PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller.

The PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller is a high-performance SCSI adapter combined with an auxiliary-write cache adapter to form a double-wide, adapter pair. The two adapters are screwed together. This topic contains the following sections:

- "Features"
- "Specifications" on page 127
- "Placement information" on page 128
- "Logical partitioning" on page 128
- "Placing the adapter in a double-wide cassette" on page 128
- "Installing the cassette containing the adapter in a system" on page 128
- "Placing the double-wide adapter in a system that does not use cassettes" on page 129
- "Power LED" on page 129
- "Concurrent maintenance procedure" on page 129

#### **Features**

- 3 external U320 SCSI ports
- 1 internal U320 SCSI port dedicated to connecting the controller to the auxiliary-write cache adapter
- Up to 36 Direct Access Storage Devices (DASD) can be externally attached per adapter
- 320 MB data rate per SCSI bus

- Supports low voltage differential (LVD) disk devices only
- Supports RAID 5 and 6 (3–18 drive sets)
- 390 MB/1.5 GB compressed write cache
- 415 MB/1.6 GB compressed read cache
- PCI-X DDR support (storage adapter side)
- IOP or IOPless (5739 requires an IOP. 5778 does not.)

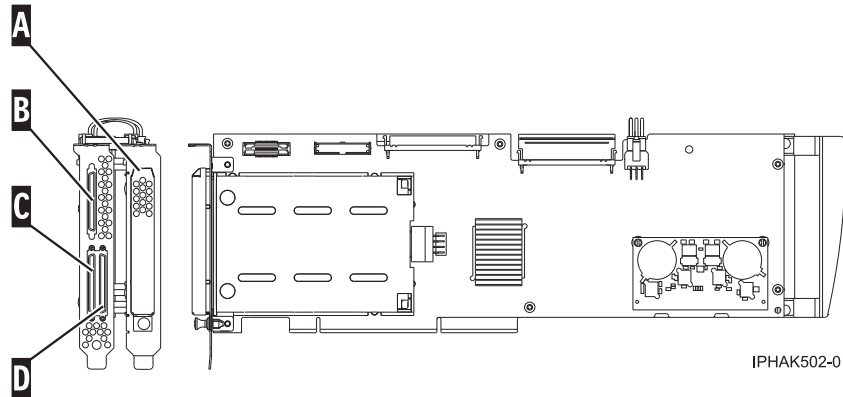


Figure 69. Adapter

- (A) Battery cover
- (B) SCSI port 2
- (C) SCSI port 0
- (D) SCSI port 1

### Specifications

Item	Description
Adapter FRU number	42R6578
Cache battery FRU number	42R3965
Unit description	<ul style="list-style-type: none"> <li>• 64 bit, 133 MHz, 3.3 V</li> <li>• PCI-X 2.0 compliant</li> <li>• Double-wide adapter, requires 2, adjacent, long slots. The SCSI controller side of the adapter pair requires a 64-bit slot. (The controller side is the side with the external SCSI connectors.)</li> <li>• The auxiliary-write cache adapter contains a dual, concurrently maintainable, cache-battery pack, which maintains cache memory on both adapters in the event of an abnormal termination.</li> </ul>
Operating system or partition requirements	<ul style="list-style-type: none"> <li>• IBM i V5R3, V5R3M5, and V5R4 with PTFs.</li> <li>• AIX 5L™ Version 5.2 with the 5200-10 Technology Level, or later</li> <li>• AIX 5L Version 5.3 with the 5300-06 Technology Level, or later</li> <li>• Red Hat Enterprise Linux version 4 U4, or later</li> <li>• SUSE Linux Enterprise Server 10, or later</li> </ul> <p>Check the IBM Prerequisite Web page for further details and updates. You can find a link to that Web page at the end of this topic.</p>

Item	Description
Maximum number	See Placement information.

### Placement information

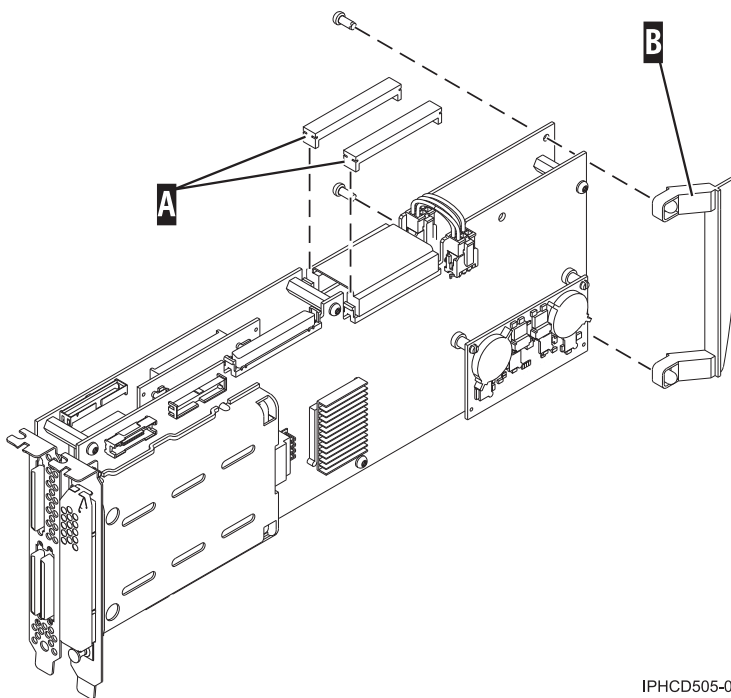
For placement information for this adapters, see PCI adapter placement.

### Logical partitioning

When used in a logical partition (LPAR) environment, this double-wide adapter must have both slots of the adapter assigned to the same logical partition. When implementing dynamic logical partitioning (DLPAR), both slots of the adapter must be managed together.

### Placing the adapter in a double-wide cassette

To place this double-wide adapter in a double-wide cassette, first remove the adapter handle (B), and the two plastic covers from the SCSI jumper cable (A), as shown in the following figure. (The two plastic covers are only found on adapters made before August 2008.) Then follow the general procedures to place a double-wide adapter in a double-wide cassette. See Placing an adapter in the PCI adapter double-wide cassette.



IPHCD505-0

Figure 70. Preparing the adapter for placement in a cassette

### Installing the cassette containing the adapter in a system

To install the cassette containing the adapter into a system unit or expansion unit, following the procedures in Model 5796 expansion units, PCI adapters and cassettes.

## Placing the double-wide adapter in a system that does not use cassettes

If you are installing the double-wide adapter in the internal PCI slots, remove the lower, right standoff shown in Figure 71.

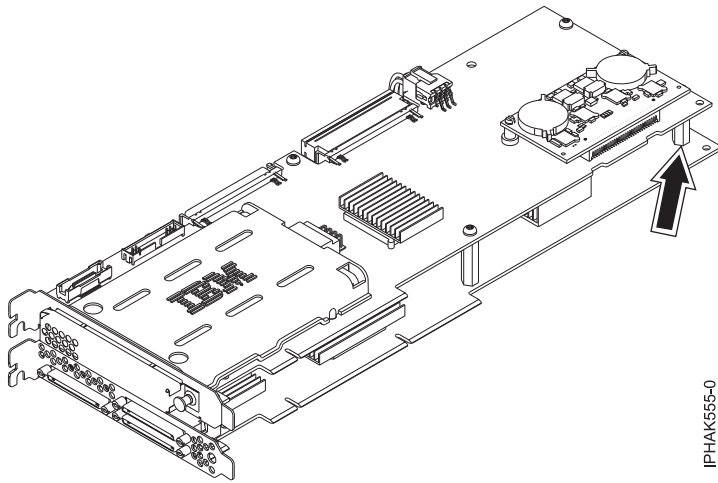


Figure 71. Removing the standoff

### Power LED

For a double-wide adapter, there is only one power LED visible for both slots.

### Concurrent maintenance procedure

Concurrent maintenance of this double-wide adapter is not supported through the Hardware Management Console (HMC). Concurrent maintenance must be done from the Hardware Service Manager (HSM) of the system or owning partition. The HSM automatically powers off and on both PCI slots when either slot is selected. In AIX or Linux, you must manually power off and on each slot separately.

#### Important:

- Both PCI slots must be powered off when installing or removing this adapter with the system power on.
- If this adapter is the load source IOA, or under the load source IOP, or any other storage IOA/IOP with critical DASD attached for the system, have a qualified service provider perform the concurrent maintenance procedure. At step 12 on page 130, the HSM directs you to use control panel functions 68 and 69 to power off the domain.

The following steps are a general concurrent maintenance procedure for installing, removing, or replacing an adapter in IBM i operating system. If you were sent here by another procedure, additional specific instructions for removing and replacing a PCI adapter can be found in that procedure.

1. Start an IBM i session for the system or partition containing the adapter and sign on to the system or partition.
2. Type **strsst** on the command line of the Main menu and then press Enter.
3. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display and press Enter.
4. Select **Start a service tool** from the System Service Tools (SST) display and press Enter.
5. Select **Hardware service manager** from the Start a Service Tools display and press Enter.

6. Select **Logical hardware resources (system, frames, cards)** from the Hardware Service Manager display and press Enter.
7. Select **System bus resources** and press Enter. The display changes to the Logical Hardware Resources on System Bus display.
8. Page down and locate the **IOP** that controls the IOA to be serviced.  
If you are installing a new IOPless adapter in an empty slot, the IOP is not shown.
9. Enter 9 in the Opt field for the **IOP** to be serviced.
10. Locate the **Storage IOA** resource for the adapter to be serviced and enter 8 in the Opt field for that resource.
11. Enter 3 for **Concurrent maintenance** in the Opt field for the **Storage IOA** resource to be serviced. The display changes to the Hardware Resource Concurrent Maintenance display.
12. Press F9 to power off the domain.  
In some cases the card slots are already powered off if empty.
13. Press Enter to start power off. The display changes to the Hardware Resource Concurrent Maintenance Status display, which shows the status of the power off.  
When the power off is complete, the display returns to the Hardware Resource Concurrent Maintenance display. The display shows that the **Power Status** is off for **Storage IOA**. Leave this display on the HSM while you install, remove, or replace the adapter.
14. Check the slot power LED state for the slot in which the adapter resides to verify that the adapter is powered off.  
For a double-wide adapter, there is only one power LED visible for both slots.
15. Install, remove, or replace the adapter. See Model 5796 expansion units, PCI adapters and cassettes. Links to procedures for other systems can be found at [Installing PCI adapters](#).
16. After the replacement is complete, return to the Hardware Resource Concurrent Maintenance display on the HSM.
17. If you were previously instructed to use operator panel function 69 to power on the adapter, do so now. Then go to step [Installing PCI adapters](#), otherwise continue with next step.
18. Enter F10 to power the adapter on.
19. Press Enter to begin power on.
20. If the Work with Controlling Resource display appears, enter 7 in the Opt field for the **IOP** to assign the IOA to.  
The Hardware Resource Concurrent Maintenance Status display shows the status of the power on.
21. When the power on is complete, the display returns to the Hardware Resource Concurrent Maintenance display. The display shows that the **Power Status** is on for the **Storage IOA**.
22. Check the LED status to verify that the adapter is powered on.  
For a double-wide adapter, there is only one power LED visible for both slots.
23. Return to the procedure that sent you here.

#### **PCI-X DDR 1.5 GB cache SAS RAID Adapter (FC 5904 and 5908; CCIN 572F and 575C):**

Learn about the specifications and operating system requirements for the 5904 and 5908 adapter.

#### **Overview**

The PCI-X DDR 1.5 GB cache SAS RAID Adapter is a SAS disk controller with a maximum of 1.5 GB compressed write cache and a maximum 1.6 GB compressed read cache. Auxiliary write cache and concurrent battery maintenance are provided. The controller is implemented using two physical adapters that are securely connected to form a double-wide adapter. The double-wide adapter requires two adjacent Peripheral Component Interconnect-X (PCI-X) slots. The auxiliary write cache side of the

double-wide adapter contains a dual, concurrently maintainable cache battery pack which maintains cache memory on both adapters in the event of an abnormal termination.

When used in a logical partition (LPAR) environment, this double-wide adapter must have both slots of the adapter assigned to the same logical partition. When implementing dynamic LPAR (DLPAR), both slots of the adapter must be managed together.

Feature 5904 and 5908 are all feature codes representing the same PCI-X DDR 1.5 GB cache SAS RAID Adapter. Different feature codes indicate if a blind swap cassette is used and its type:

- Feature 5904 indicates no blind swap cassette. The feature is used in enclosures that do not use blind swap cassettes.
- Feature 5908 indicates a gen-3 blind swap cassette. This feature is used in the 5790 and 5796.

572F is the CCIN number on the RAID adapter side of the double-wide adapter pair. 575C is the CCIN number on the write-cache adapter.

The adapter provides RAID 0, RAID 5, RAID 6, and RAID 10 for the AIX and Linux operating systems. Under the IBM i operating system, mirroring and data spreading are provided by the operating system, and RAID 5 and RAID 6 are provided by the adapter.<sup>1</sup>

The adapter provides three mini-SAS 4x connectors for the attachment of SAS drives located in 5886 EXP 12S Expansion Drawers. The adapter supports a maximum of five 5886 EXP 12S Expansion Drawers.<sup>1</sup> With proper cabling and configuration, multiple wide ports are used to provide redundant paths to each dual port SAS drive. The adapter manages SAS path redundancy and path switching should a SAS failure occur.

This adapter supports the multi-initiator and high availability configurations. With the optional pairing of adapter sets, an even higher level of protection is provided by using a dual controller I/O configuration<sup>1</sup> to protect against the failure of an entire adapter set. In such a high availability I/O configuration, SAS X cables are used to attach 5886 EXP 12S Expansion Drawers, and the fourth (top) mini-SAS connector on each card set is used to directly connect the card sets by using a SAS AA cable. See Serial attached SCSI cable planning for more information.

**Important:** See the SAS RAID controller for AIX or SAS RAID controller for Linux topics for more information and important considerations for multi-initiator and high availability configurations. See also PCI-X DDR 1.5 GB cache SAS RAID Adapter (FC 5904 and 5908; CCIN 572F and 575C).

The following figure shows the adapter.

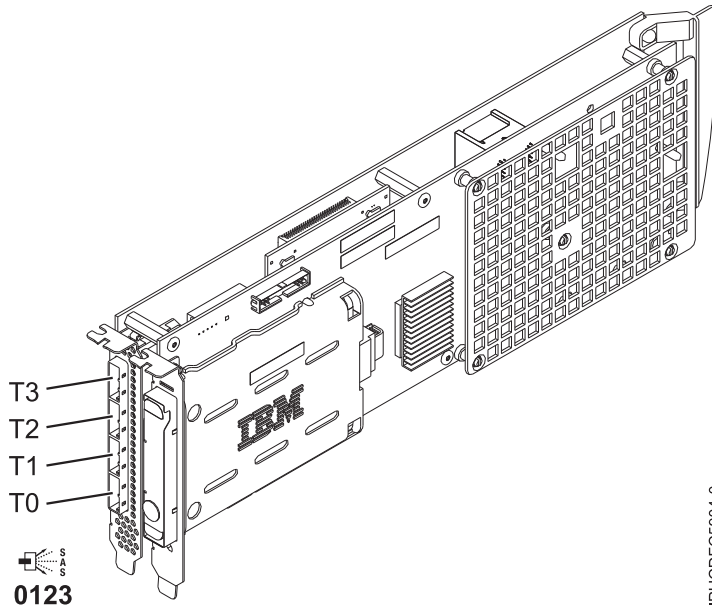


Figure 72. PCI-X DDR 1.5GB cache SAS RAID Adapter

**Note:** Port T3 does not support any device attachment. T3 is only used in dual controller I/O configurations for adapter to adapter communication.

### Specifications

#### Item Description

##### Adapter FRU number

44V8622 (Adapter only) (Designed to comply with RoHS requirement.)

44V7627 (Adapter in a gen-2.5 blind swap cassette)

##### Battery FRU number

42R3965 or 74Y5665 (Designed to comply with RoHS requirement.)

##### I/O bus architecture

PCI-X

##### Slot requirement

Two, long, adjacent PCI-X slots.

##### Cables

SAS device attachment requires specific cables that are provided with the subsystem or device features being attached. Special cabling is required for multi-initiator and high availability configurations. See Serial attached SCSI cable planning.

##### Voltage

3.3V

##### Form factor

Long

##### Maximum number

See PCI adapter placement.

##### Attributes

- SAS speed: 3 Gbps
- SAS, SAS Serial SCSI Protocol (SSP) and Serial Management Protocol (SMP) supported
- Single controller supported with SAS y cables (3692, 3693, 3694)
- Dual controller supported with SAS x cables (3661, 3662, 3663) and SAS AA cable (3681, 3682)
- Single controller supports mirrored write cache data with auxiliary cache
- Dual controller supports mirrored-write cache data and mirrored-RAID parity footprints between card sets



- Solid-state drives (SSDs) supported
- Removable media devices are not supported

### Operating system or partition requirements


This adapter is supported for the following operating systems:

- AIX:
  - AIX 5L Version 5.3 with the 5300-07 Technology Level and Service Pack 8, or later
  - AIX 5L Version 5.3 with the 5300-08 Technology Level and Service Pack 6, or later
  - AIX 5L Version 5.3 with the 5300-09 Technology Level and Service Pack 2, or later
  - AIX 5L Version 5.3 with the 5300-10 Technology Level, or later
  - AIX 6.1 and Service Pack 8, or later
  - AIX Version 6.1 with the 6100-01 Technology Level and Service Pack 4, or later
  - AIX Version 6.1 with the 6100-02 Technology Level and Service Pack 3, or later
  - AIX Version 6.1 with the 6100-03 Technology Level, or later
- Linux:
  - Red Hat Enterprise Linux version 4, with update 7, or later
  - Red Hat Enterprise Linux version 5, with update 2, or later
  - SUSE Linux Enterprise Server 10, with service pack 2, or later
- IBM i
  - IBM i V5R4M5 and Resave F, or later
  - IBM i 6.1 and Resave F, or later
  - IBM i 6.1.1 and Resave A, or later, is required for Dual Storage IOA support.

This adapter requires the following drivers:

- AIX: devices.pci.1410bd02 device driver package
- Linux:
  - iprutils version 2.4.1 and ipr driver version 2.0.11.6 (or later) for RHEL4 kernels
  - iprutils version 2.4.1 and ipr driver version 2.2.0.2 (or later) for RHEL5 kernels
  - iprutils version 2.4.1 and ipr driver version 2.2.0.2 (or later) for SLES10 kernels

If you are installing a new feature, ensure that you have the software required to support the new feature and that you determine if there are any existing prerequisites for this feature and attaching devices. To check for the prerequisites, use the IBM Prerequisite website at

[http://www-912.ibm.com/e\\_dir/eServerPrereq.nsf](http://www-912.ibm.com/e_dir/eServerPrereq.nsf)  .

### Concurrent maintenance procedure

Concurrent maintenance of this double-wide adapter is not supported through the Hardware Management Console (HMC). Concurrent maintenance must be done from within the partition operating system. In IBM i, the Hardware Service Manager (HSM) of the system or owning partition automatically turns off the power or turns on the power to both PCI slots when either slot is selected. In AIX or Linux, you must manually turn off the power and turn on the power to each slot separately.

#### Important:

- Both PCI slots must be powered off when installing or removing this adapter with the system power turned on.
- If this adapter is the load source IOA, or any other storage IOA with critical DASD attached for the system, this concurrent maintenance procedure should be done by a qualified service provider.

## Power supply

Learn about removing and replacing a power supply in a server. Learn about removing and replacing a power supply, fan, or input power distribution assembly in a 5802 or a 5877 expansion unit.

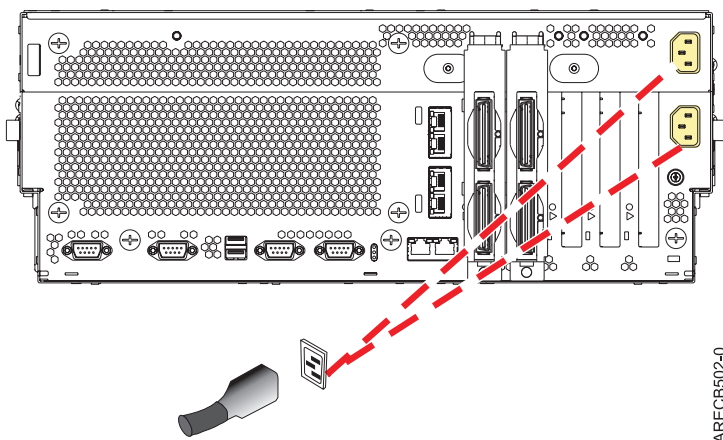
### Removing the power supply with the system power off

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove a power supply. For instructions, see [Removing a part by using the Hardware Management Console](#).

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove a power supply from the server. For instructions, see [Removing a part by using the Systems Director Management Console](#).

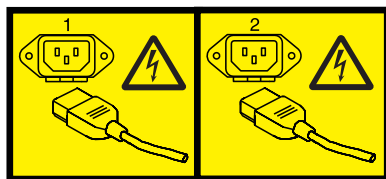
If your system is not managed by an HMC or SDMC, complete the following steps to remove a power supply from a system while the system power is turned off:

1. Perform the prerequisite tasks, as described in [Before you begin](#).
2. Identify the failing part, as described in [Identifying a failing part](#).
3. If the system is running, stop the system as described in [Stopping the system or logical partition](#).
4. Disconnect the power source from the system by unplugging the system, as described in [Disconnecting the power cords](#).



**Note:** Before continuing with this procedure, ensure that all power sources to the system have been disconnected.

(L003)



or



5. Open the front rack door.
6. Remove the front cover, as described in Removing the front cover from an 8233-E8B or 8236-E8C system.
7. Disconnect the power cable (A) from the front of the power supply as shown in Figure 73.

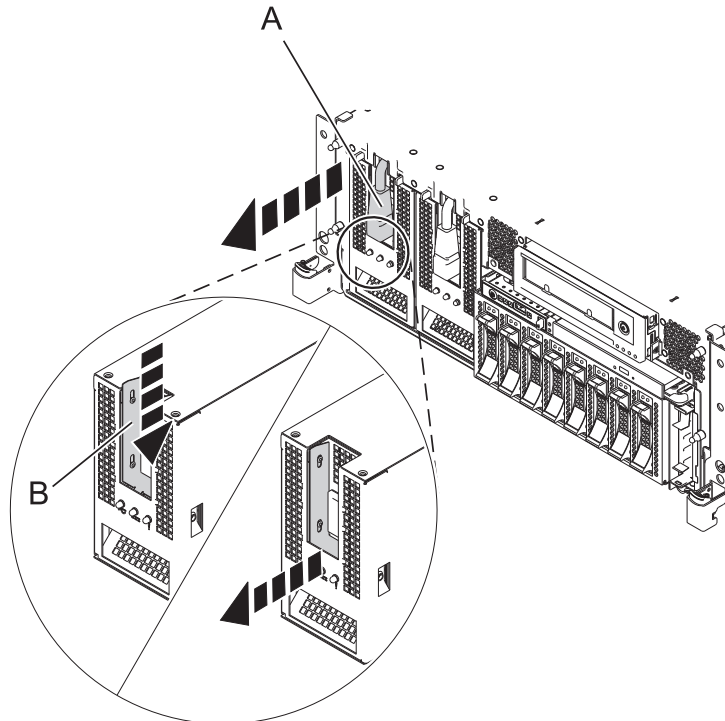


Figure 73. Removing the power supply from a rack-mounted model

8. Press the locking lever (B) down into the open position.
9. Pull the power supply out of the system.

If you want to replace the power supply that you removed, see Replacing the 8233-E8B or 8236-E8C power supply with the power turned off.

## Removing the power supply with the system power on

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove a power supply. For instructions, see Removing a part by using the Hardware Management Console.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove a power supply from a server. For instructions, see Removing a part by using the Systems Director Management Console.

If your system is not managed by an HMC or SDMC, complete the following steps to remove a power supply from a system while the system power is turned on:

1. Perform the prerequisite tasks, as described in Before you begin.
2. Open the front rack door.
3. Remove the front cover, as described in Removing the front cover from an 8233-E8B or 8236-E8C system.
4. Identify the failing part, as described in Identifying a failing part.
5. Disconnect the power cable (A) from the front of the power supply as shown in Figure 74 on page 137.
6. Attach the wrist strap.

### **Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
7. Press down on the locking latch (B) as shown in Figure 74 on page 137. Using the locking handle, pull the power supply out of the system.

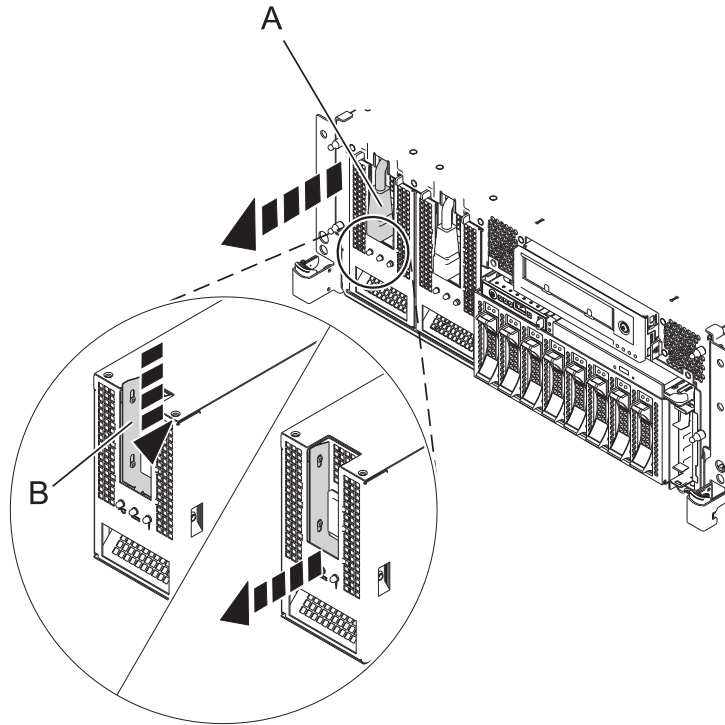


Figure 74. Removing the power supply

If you need to replace the power supply that you removed, see Replacing the 8233-E8B or 8236-E8C power supply with the power turned on.

### Replacing the power supply with the system power off

If your system is managed by the Hardware Management Console (HMC), use the HMC to replace a power supply. For instructions, see Exchanging a part by using the Hardware Management Console.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace a power supply in the server. For instructions, see Replacing a part by using the Systems Director Management Console.

If your system is not managed by an HMC or SDMC, complete the following steps to replace a power supply in a system while the system power is turned off:

1. To remove the power supply, see Removing the 8233-E8B or 8236-E8C power supply with the power turned off.
2. Open the rear rack door.
3. Push the power supply into the system until the latch (A) locks in place as shown in Figure 75 on page 138.

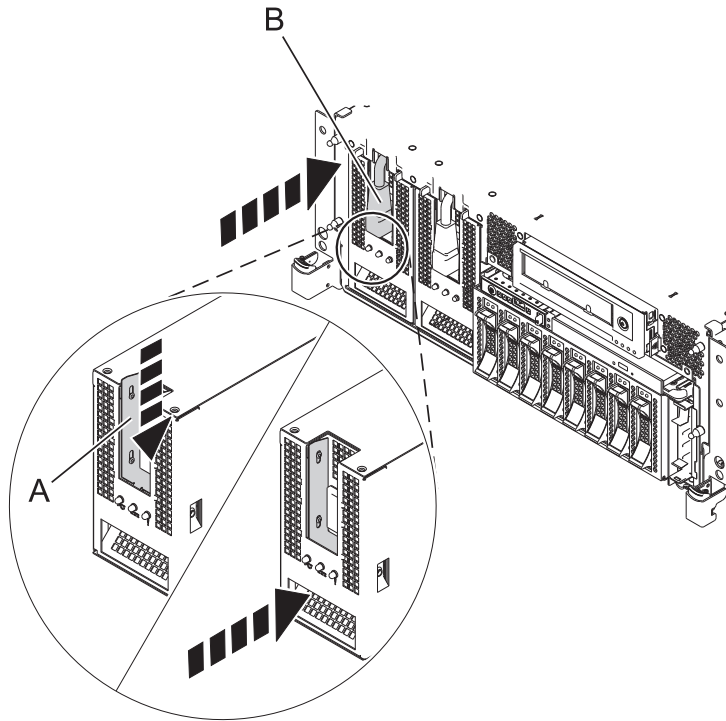
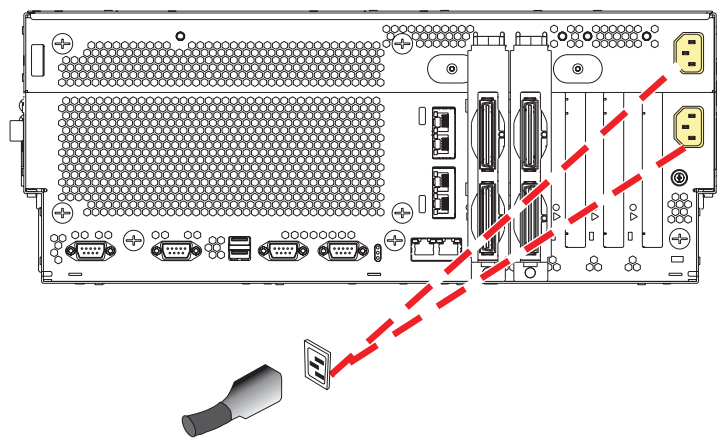


Figure 75. Replacing a power supply

4. Reconnect the power cable (B) to the front of the power supply, as shown in Figure 75.
5. Reconnect the power cable to the back of the system.



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6. Start the system, as described in Starting the system or logical partition.
7. Note the state of the light-emitting diodes (LEDs) on the power supply. For more information, see Power supply LEDs . If the LEDs indicate the power supply is operating normal, that is both of the green LEDs are on solid (not flashing), continue to the next step. If not, remove the power supply from the system and repeat the procedure. If, after repeating the procedure, the power supply is not operating normally, contact your service provider.
8. Replace the front cover, as described in Installing the front cover on an 8233-E8B or 8236-E8C system.
9. Close the rear rack door.

## Replacing the power supply with the system power on

If your system is managed by the Hardware Management Console (HMC), use the HMC to replace a power supply. For instructions, see *Exchanging a part by using the Hardware Management Console*.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace a power supply in the server. For instructions, see *Replacing a part by using the Systems Director Management Console*.

If your system is not managed by an HMC or SDMC, complete the following steps to replace a power supply in a system while the system power is turned on.

**Important:** You must have a functioning power supply in the system to use the following steps.

1. If you are replacing a redundant power supply because of a failure, remove the failing power supply. For instructions, see *Removing the 8233-E8B or 8236-E8C power supply with the power turned on*.
2. Perform the prerequisite tasks, as described in *Before you begin*.
3. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
4. Push the power supply into place until the locking latch (A) snaps into place as shown in Figure 76 on page 140.

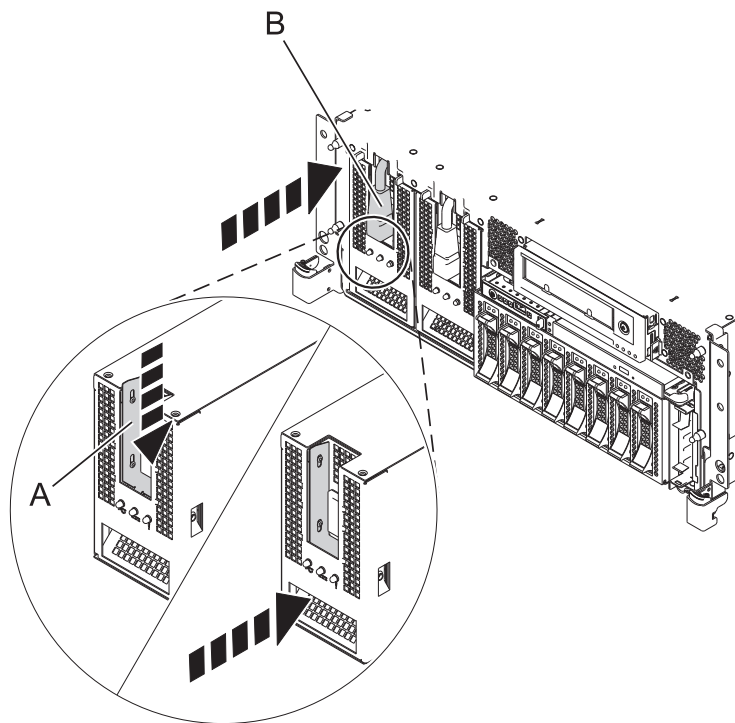


Figure 76. Replacing a power supply

5. Reconnect the power cable (B) to the front of the power supply.
6. Replace the front cover, as described in Installing the front cover on an 8233-E8B or 8236-E8C system.
7. Close the front rack door.

## RAID enablement card

Use this procedure to service the RAID enablement card.

### Preparing the system

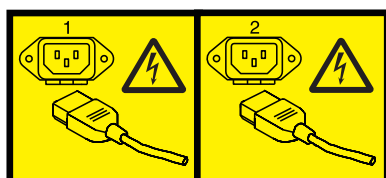
To prepare the system for the removal of a RAID enablement card, perform the following steps:

1. Perform prerequisite tasks as described in “Before you begin” on page 115.
2. Identify the auxiliary cache card that you need to remove. For instructions, see Identifying a part.
3. Stop the system. For instructions, see Stopping a system or logical partition.
4. Disconnect the power source from the system by unplugging the system.

**Attention:** You must disconnect the power source from the system by disconnecting all power cords to prevent system damage during this procedure.

**Note:** This system might be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been completely disconnected.

(L003)





or



5. If you have a rack-mounted system, place it in the service position. See Placing a 8233-E8B or 8236-E8C in the service position.
6. Remove the access cover. See Removing the service access cover from an 8233-E8B or 8236-E8C system.
7. Attach the wrist strap

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
- When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.

## Removing the RAID enablement card

To remove a RAID enablement card, perform the following steps:

1. Locate the RAID enablement card you want to remove.
2. Press the tab **(B)** and slide the card out of the system as shown in the following figures. The RAID enablement card is attached to a metal plate **(A)**. You will slide the metal plate out of the system to remove the RAID enablement card.

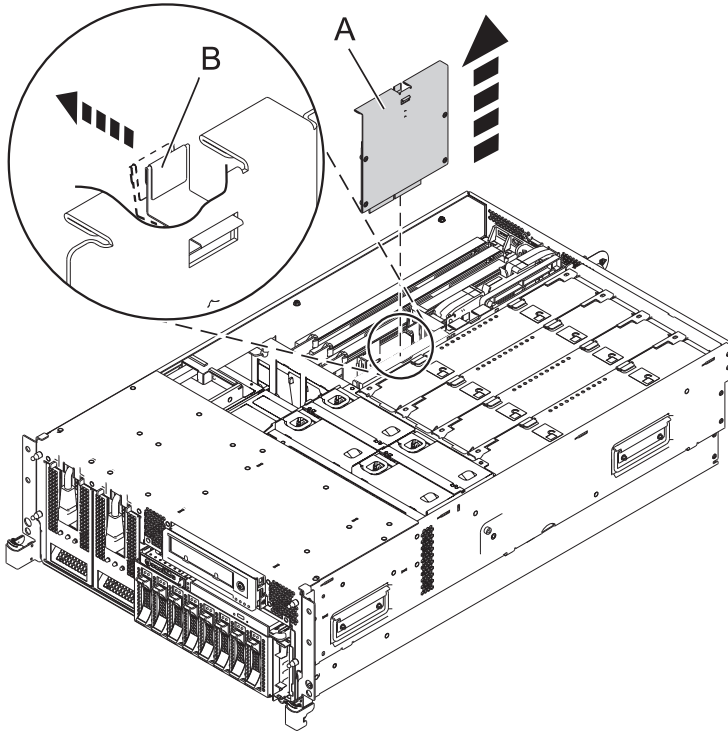


Figure 77. RAID enablement card removal from a rack-mounted system unit

3. Replace the RAID enablement card. For instructions, see Replacing the model 8233-E8B Redundant Array of Independent Disks enablement card.

### Replacing the Redundant Array of Independent Disks enablement card

You must have already completed the procedure Removing the model 8233-E8B Redundant Array of Independent Disks enablement card.

To replace a RAID enablement card, complete the following steps:

1. Locate the slot for the RAID enablement card

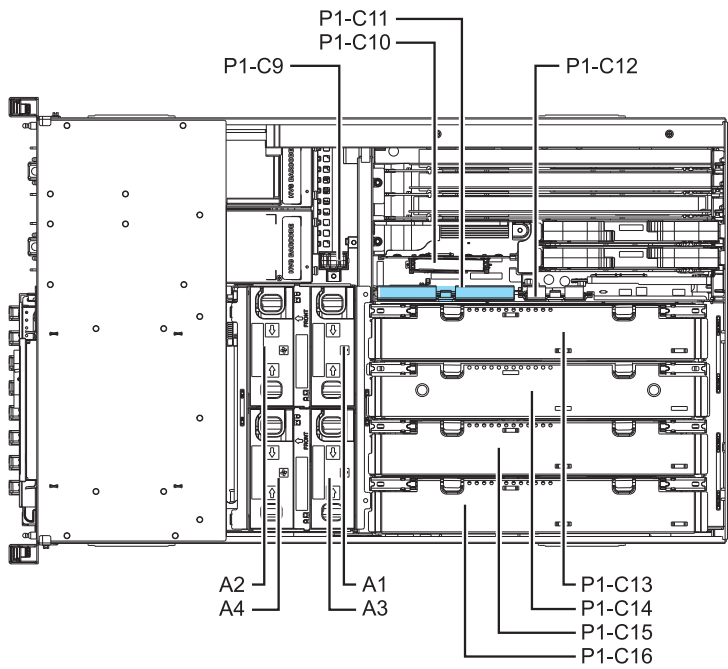


Figure 78. Slot location for the RAID enablement card installation

2. Align the RAID enablement card with the slot in the system.
3. Slide the RAID enablement card fully into the system until the tab (A) locks into place.

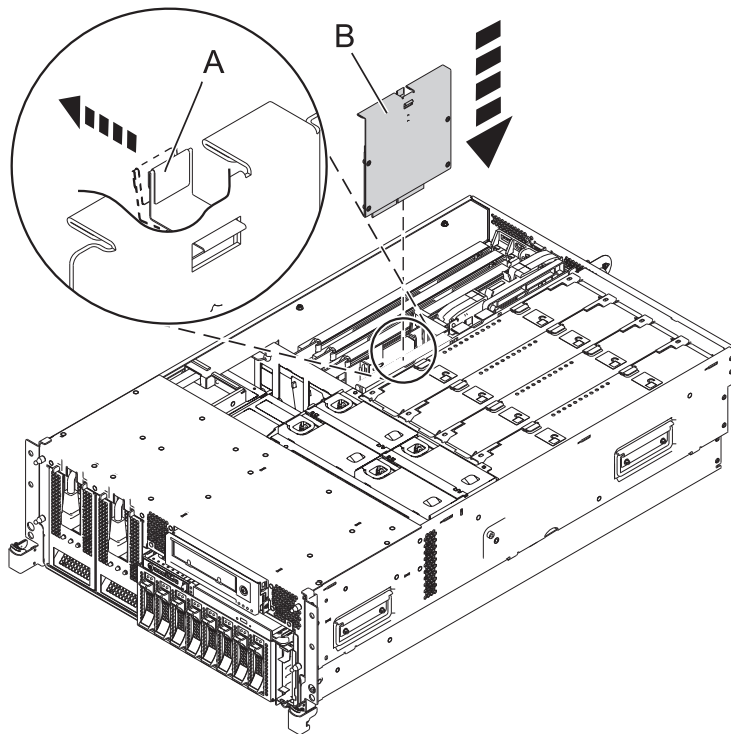


Figure 79. RAID enablement card replacement in a rack-mounted system unit

4. Replace the service access cover. See *Installing the service access cover on an 8233-E8B or 8236-E8C system*
5. Place the system in the operating position. See *Placing the 8233-E8B or 8236-E8C in the operating position*.
6. Start the system. For instructions, see *Starting the system or logical partition*.
7. If you replaced the RAID enablement card as part of another procedure, return to that procedure now. If you replaced the RAID enablement card because it was not operational, verify that the new resource is functional. For instructions, see *Verifying the installed part*.

## System backplane

Use this procedure to service the system backplane.

**Note:** Before you begin this procedure, make sure that you have authority to log in as an authorized service provider. The different authority levels are described at *ASMI authority levels*.

## Removing the system backplane

### 1. Access the ASMI

The Advanced System Management Interface (ASMI) is the interface to the service processor that is required to perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power. The ASMI might also be referred to as the service processor menus.

To access the ASMI, see *Accessing the Advanced System Management Interface*.

When you have accessed the ASMI, continue with the next step.

---

### 2. Check and record the server firmware and service processor settings

1. Check and record the admin user ID's password.
  2. Check and record the server firmware level prior to replacing this field replaceable unit (FRU). You might need to update the system to the latest server firmware code level after you replace this FRU.
  3. Check the service processor settings that you previously set using Advanced System Management (ASM). This can be done by using a management console or a PC to access ASM. You need to reset these service processor settings after you replace this FRU or the default settings will be used.
  4. Record any service processor settings you might have set by using operating system commands:
    - System Name setting
    - System Power Control settings
    - System Service Aids settings
    - System Configuration settings
    - Network Services settings
    - Performance Option settings
    - Login Profile settings
    - Boot List settings
    - Host Ethernet Adapter settings
- 

### 3. Power off the unit

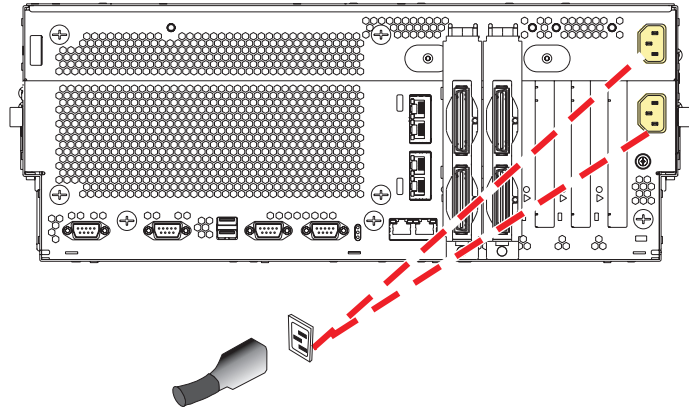
If the unit that contains the backplane is powered on, power it off now.

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### 4. Disconnect the power cords

To disconnect the power cords, complete the following steps:

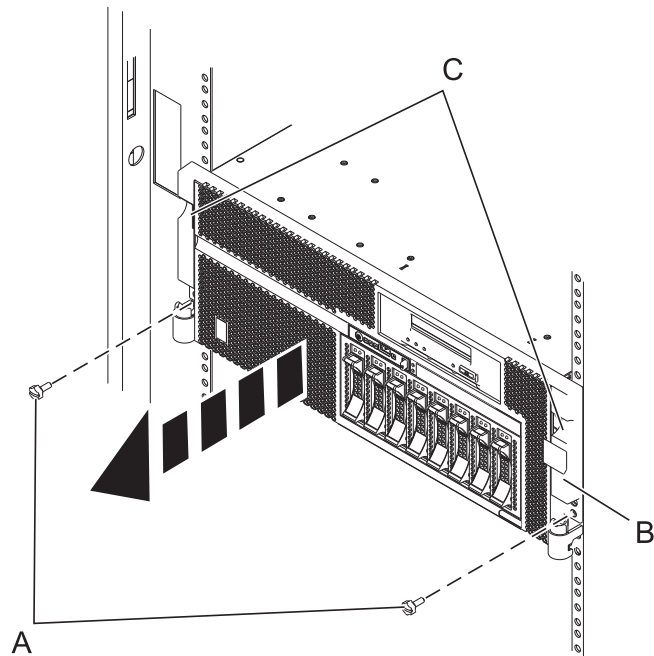
1. Open the rear rack door.
2. Disconnect all power cords from the unit you are servicing.



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#### 5. Remove the front cover

1. Open the front rack door.
2. Remove the two thumbscrews (A) that secure the front cover to the system unit.
3. Push the cover release latches (C) in the direction of the arrow to release the cover from the system unit.
4. Pull the cover out and away from the system unit.



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#### 6. Disconnect the external cables

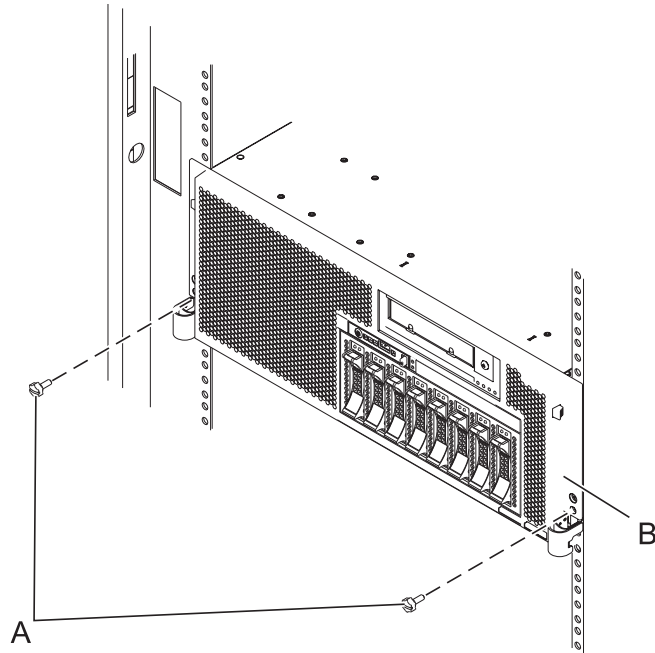
Label and disconnect the external cables connected to the FRU you are servicing.

---

#### 7. Place the unit into the service position

**Attention:** When placing the model rack into the service position, it is essential that all stability plates are firmly in position to prevent the rack from toppling. Ensure that only one system unit is in the service position at a time.

Remove two screws (A) securing the system unit (B) to the rack.

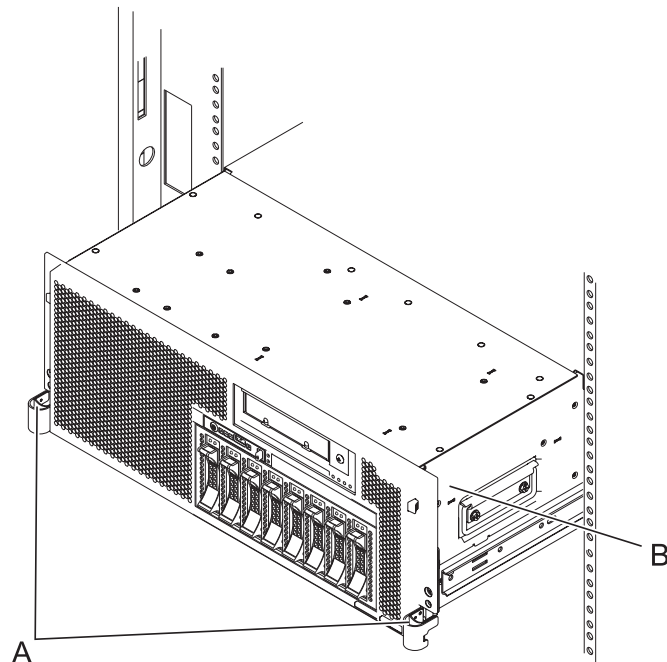


## 8. Place the unit into the service position (continued)

**Notes:**

1. Ensure that the cables at the rear of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.

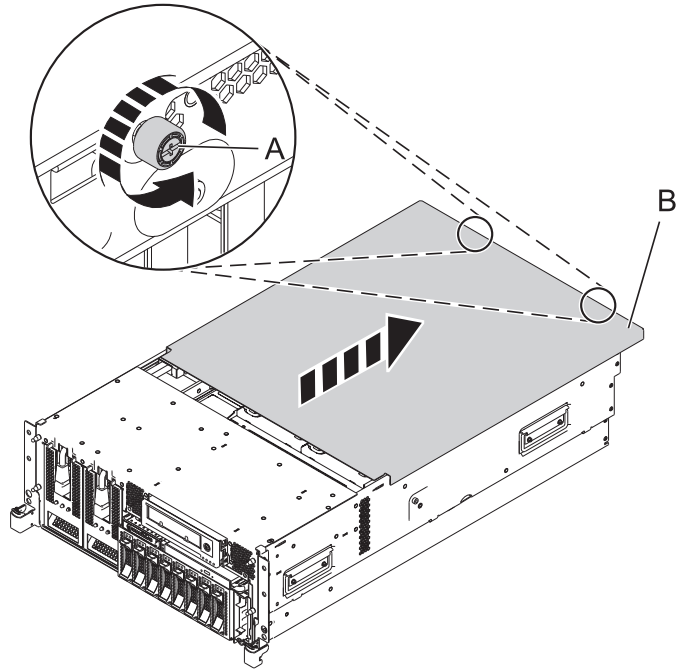
While holding the system-unit release latches (A) down on both the left and right sides, pull the system unit (B) out from the rack until the rails are fully extended and locked.



## 9. Remove the service access cover

1. Loosen the two thumbscrews (A) located at the rear of the cover.
2. Slide the cover (B) toward the rear of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

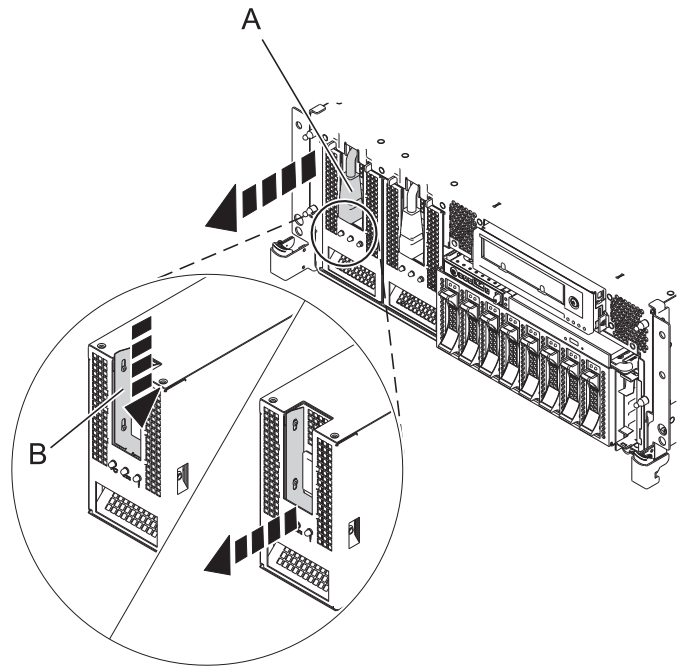
**Attention:** For proper cooling and airflow, replace the cover before turning on the system. Operating the system without the cover for more than 30 minutes could damage the system components.



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## 10. Remove both power supplies

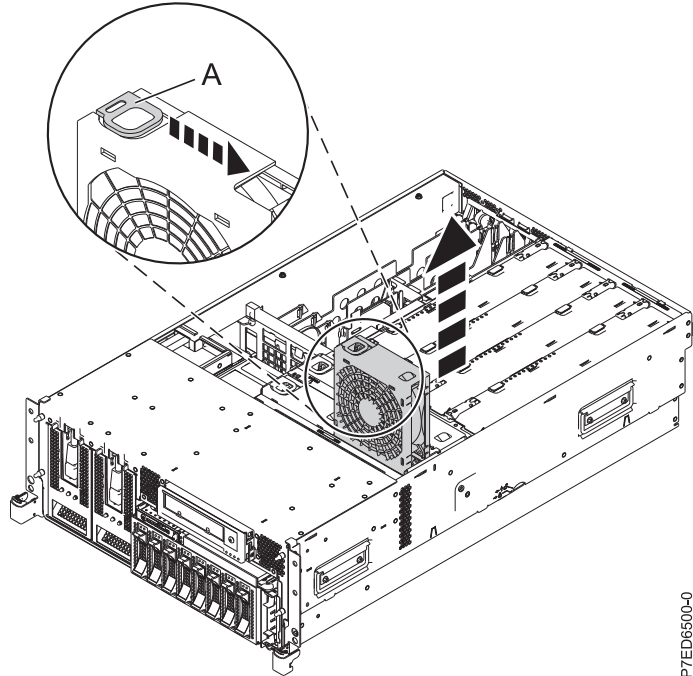
1. Disconnect the power cable (A) from the power supply you are removing.
2. While pushing the lever (B) down, pull the power supply straight out of the system.
3. Repeat these steps to remove the other power supply.



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## 11. Remove the front fan

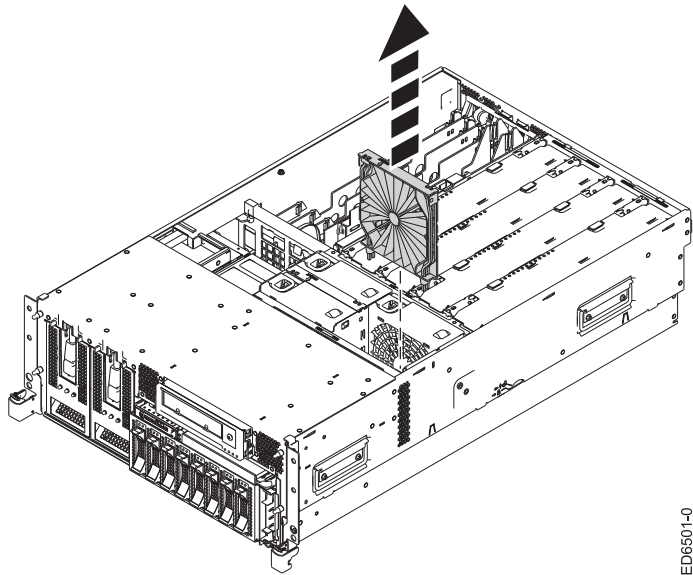
1. While squeezing the latch (A) on the front right fan, grasp the fan firmly and pull the fan out of the fan cage.
2. Repeat these steps until all system fans are removed from the fan cage.



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## 12. Remove the air baffle

Grasp the right side air baffle and pull it out of the fan cage.

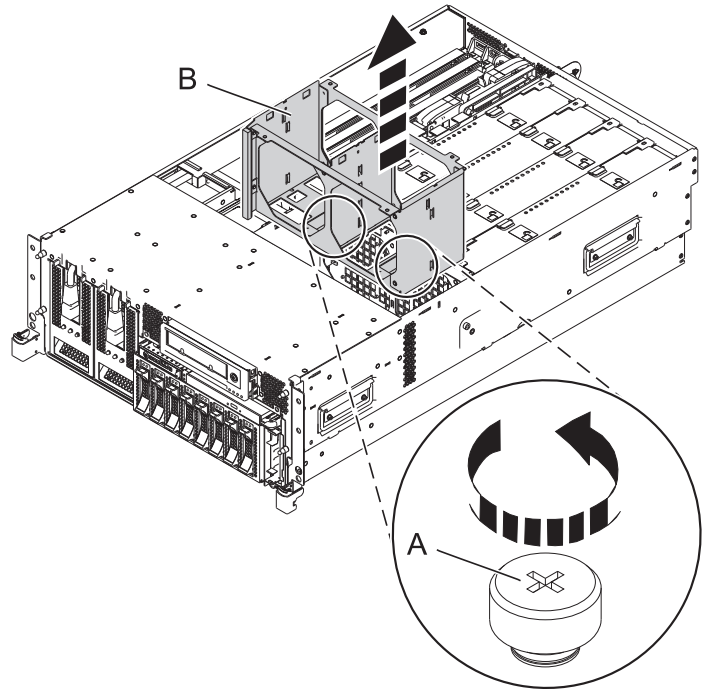


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## 13. Remove the fan cage



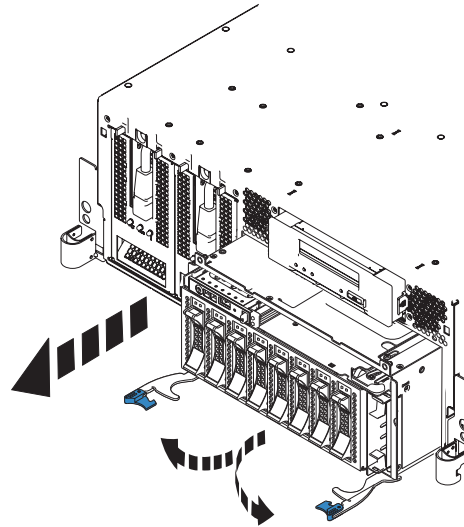
1. Loosen the two retaining thumbscrews (A) that secure the fan cage to the system board.
2. Lift the fan cage (B) up and out of the enclosure.



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#### 14. Remove the disk unit cage

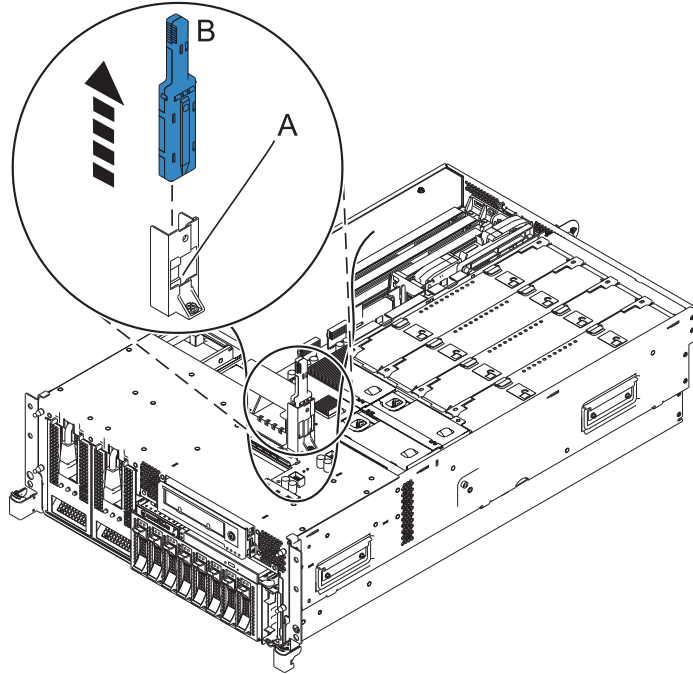
1. Disconnect the cables from the rear of the disk unit backplane.
2. Rotate the handles outward in the direction shown to release the disk unit cage.
3. Slide the disk unit cage out of the system unit.



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#### 15. Remove the vital product data (VPD) card

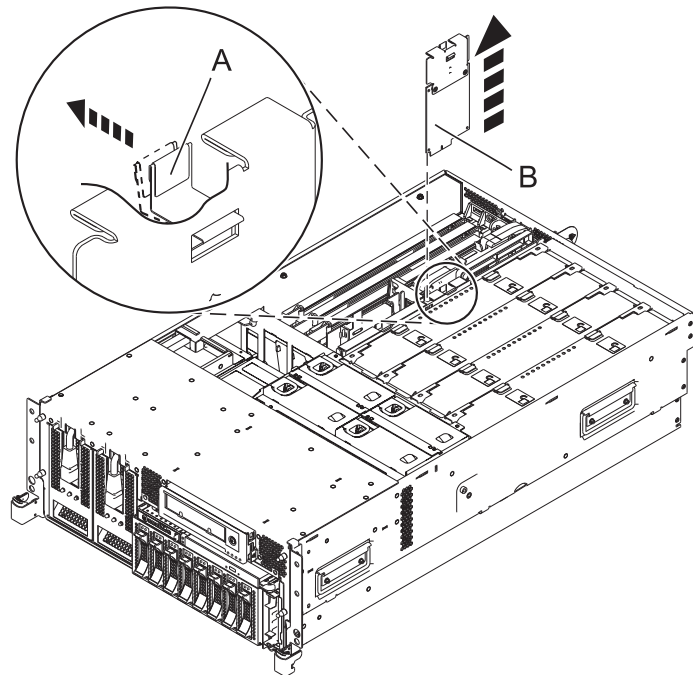
Remove the VPD card (B) from the VPD card guide (A) on the planar by pulling the blue handle.



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#### 16. Remove the thermal power management device (TPMD) card, if present

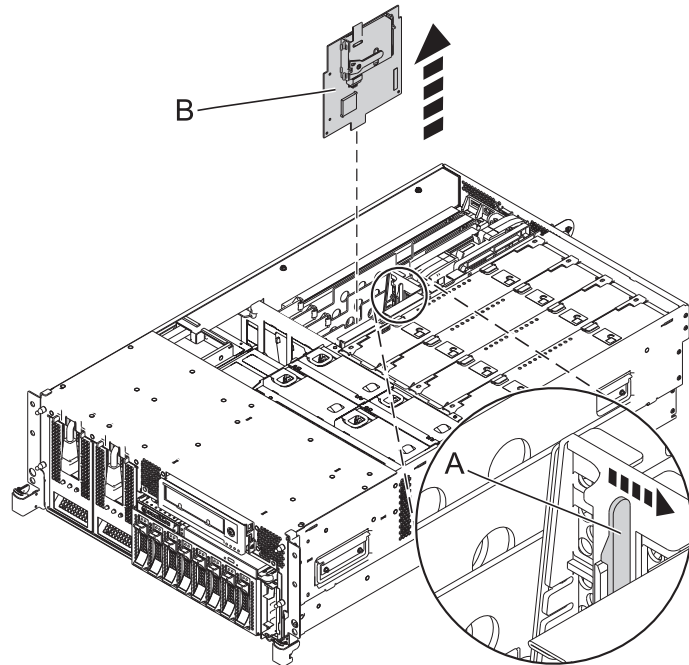
1. Push the tab (A) in the direction shown to release the card (B).
2. Gently pull the card straight out of its slot on the system backplane.



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#### 17. Remove the daughter RAID card, if present

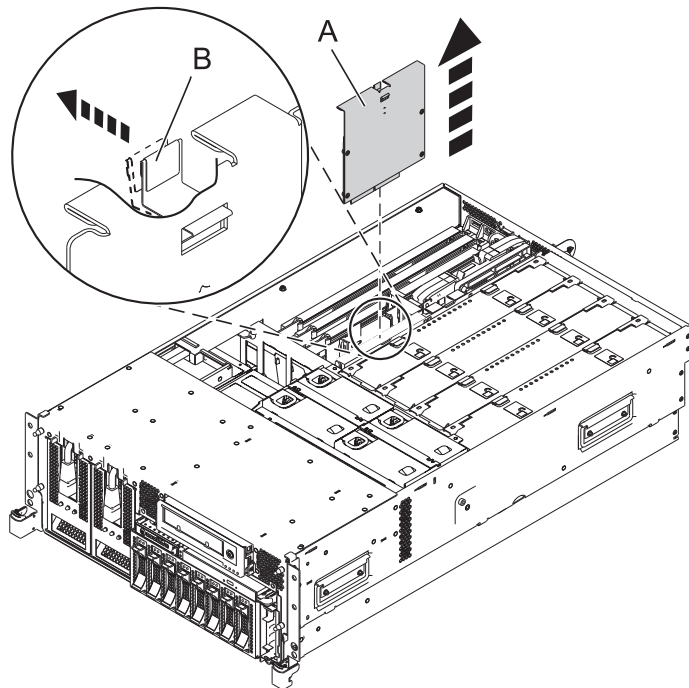
1. Push the latch (A) in the direction shown to release the card.
2. Gently pull the card (B) straight out of the enclosure.



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#### 18. Remove the base RAID card, if present

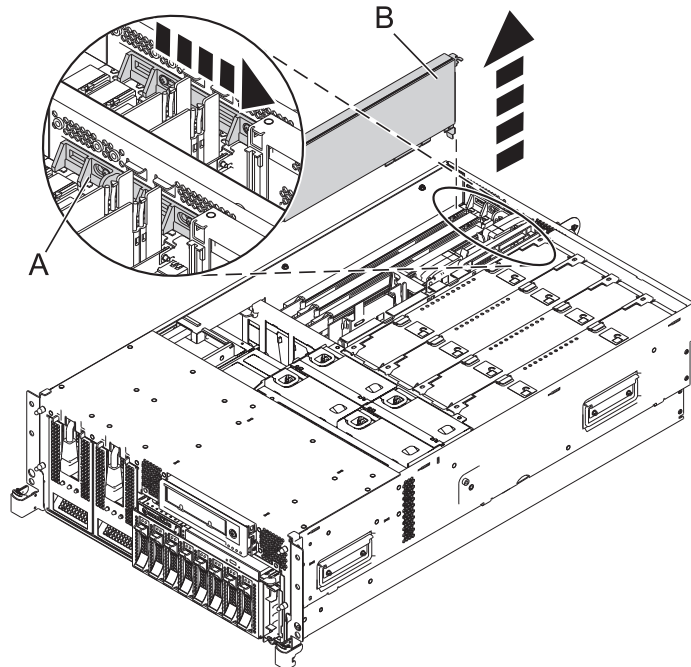
1. Push the tab (B) in the direction shown to release the card.
2. Gently pull the card (A) straight out of the enclosure.



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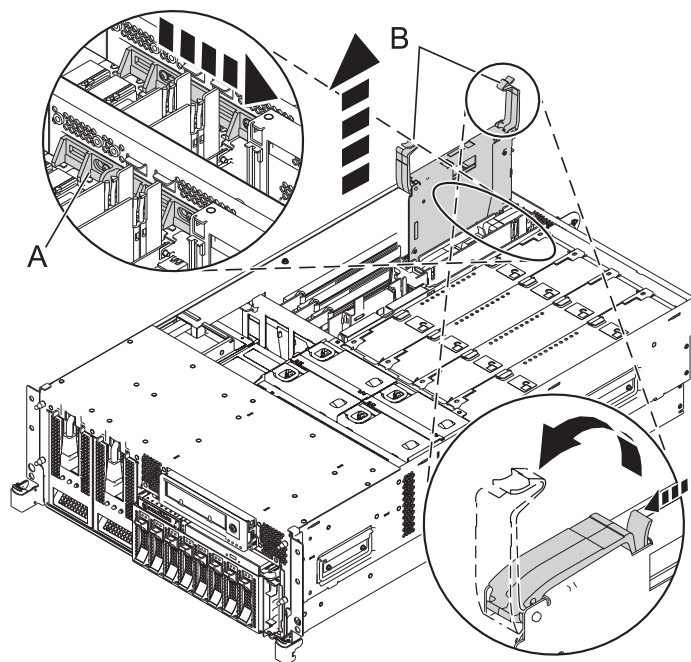
#### 19. Remove all PCI adapters

1. Record the slot number and location of each adapter being removed.
2. Slide the adapter latch (A) in the direction shown to release the adapter (B).
3. Carefully grasp the PCI adapter by its top edge or upper corners, and pull the adapter straight out of its connector on the system backplane.
4. Store the adapter in a safe place.
5. Repeat these steps until all the PCI adapters are removed.



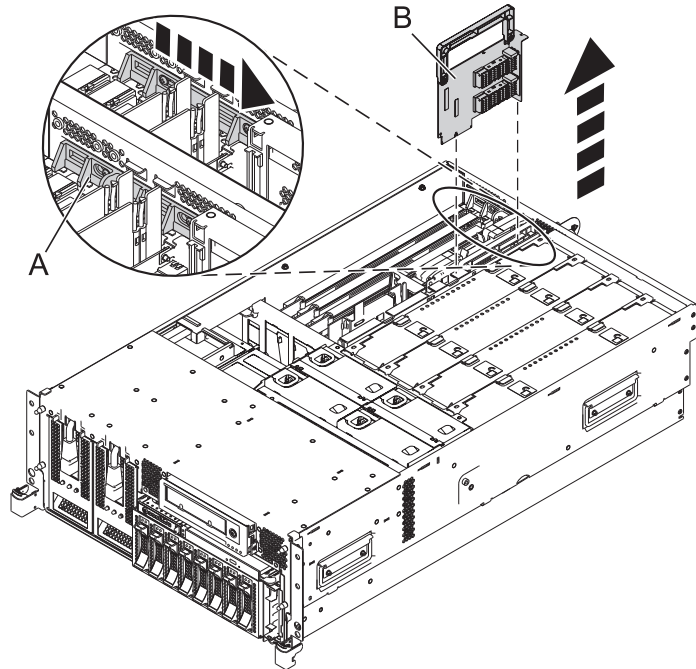
## 20. Remove the GX adapter, if present

1. Slide the adapter latch (A) in the direction shown to release the adapter.
2. Squeeze the latches (B) to release them from the adapter and rotate them in the direction shown.
3. Gently pull the adapter straight out of the system.
4. Repeat these steps to remove a second GX adapter, if present.



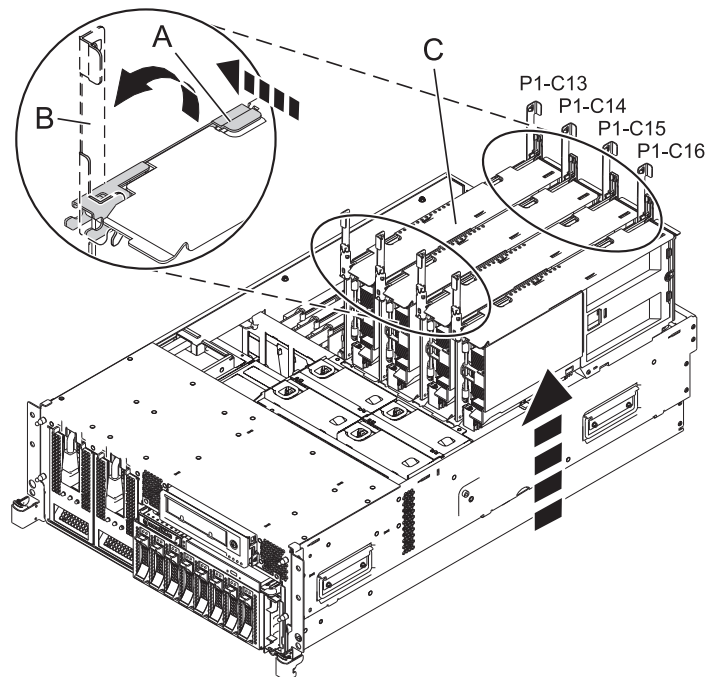
## 21. Remove the Ethernet card

1. Slide the adapter latch (A) in the direction shown to release the Ethernet card (B).
2. Carefully grasp the Ethernet card by its top edge or upper corners, and pull the card straight out of its connector on the system backplane.



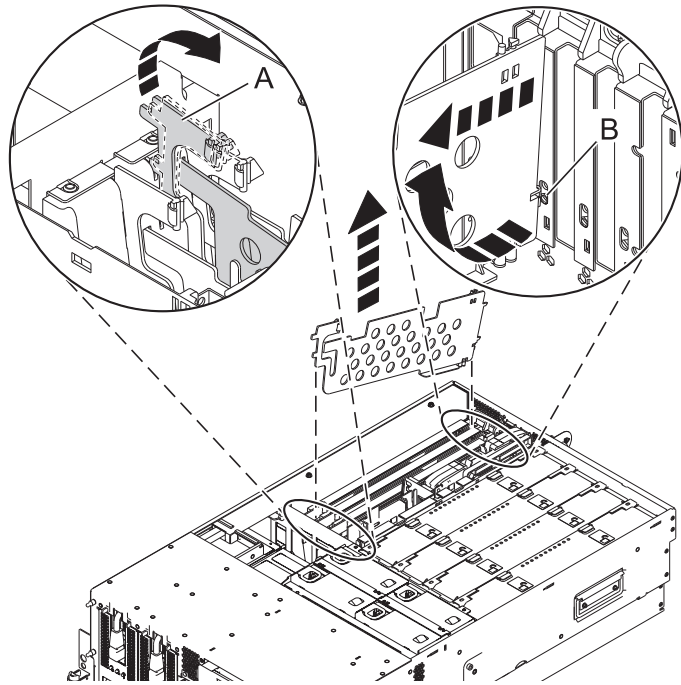
## 22. Remove the system processor assemblies and fillers

1. Move the top of the system processor assembly handles (A) in the direction shown to release the handles.
2. Rotate the system processor assembly handles to the open position (B).
3. Pull the system processor assembly (C) out by the handles.
4. Place the system processor assembly on an electrostatic discharge (ESD) surface.
5. Repeat these steps to remove all of the system processor assemblies and fillers from the enclosure.



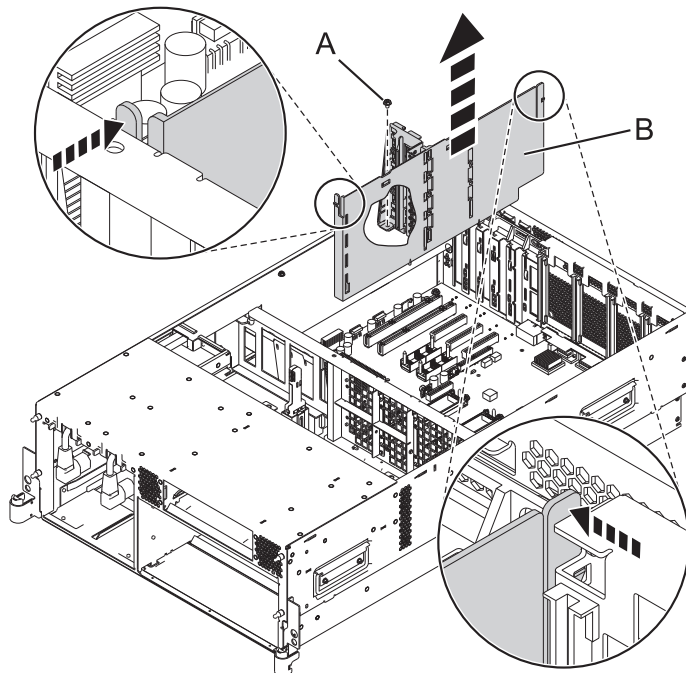
## 23. Remove the PCI adapter dividers

1. Flex the front edge (**A**) of the PCI adapter divider out of the bracket and toward the rest of the divider.
2. Pull the back edge of the divider away from the retention notches (**B**) in the system chassis.
3. Repeat these steps for the other PCI adapter dividers that need to be removed.



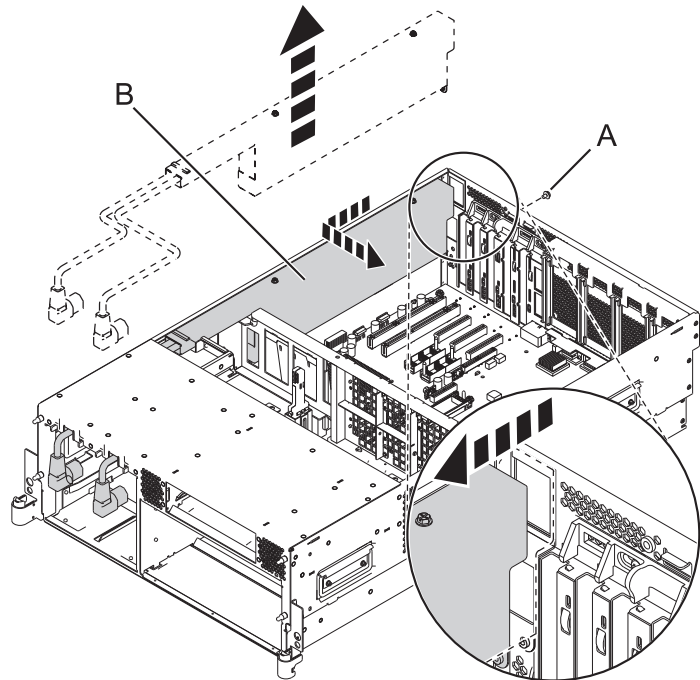
#### 24. Remove the middle system divider

1. Remove the screw (**A**) to unfasten the middle system divider from the system backplane.
2. Grasp the middle system divider (**B**) and lift it out of the system.



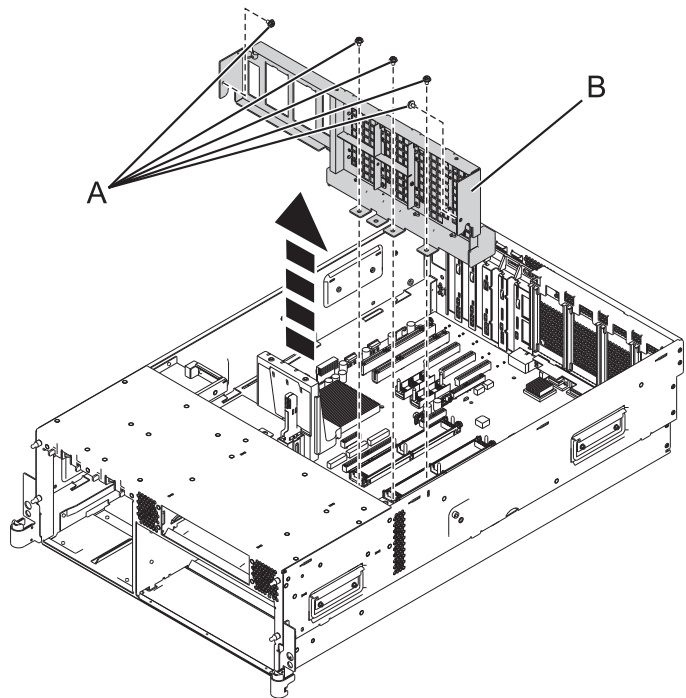
#### 25. Remove the line cord assembly

1. Remove the screw (A) located on the back of the system chassis.
2. Pull down the *terra cota* cable retainers that hold the power supply cables.
3. Slide the line cord assembly (B) toward the front of the system to unlock it.
4. Grasp the line cord assembly and pull it out of the system.



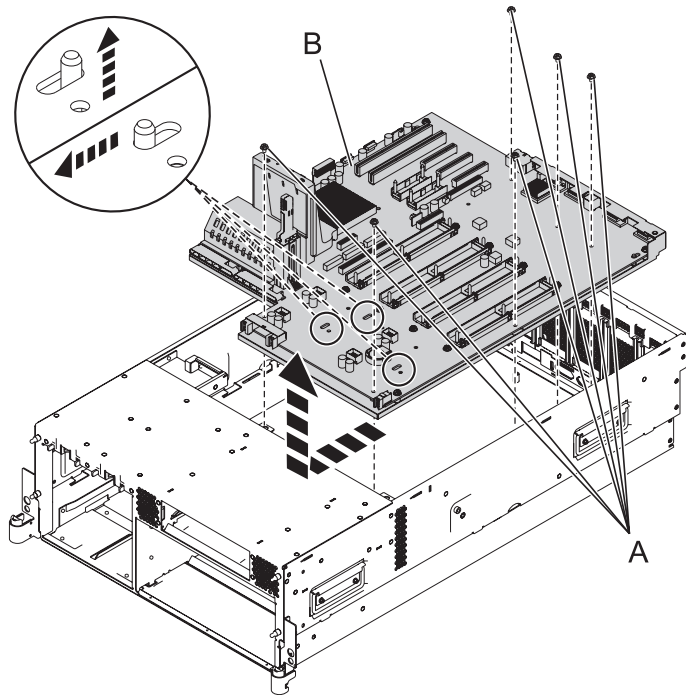
## 26. Remove the front processor support

1. Remove the five screws (A) to unfasten the front processor support.
2. Grasp the front processor support (B) and lift it out of the system.



## 27. Remove the system backplane

1. Label and disconnect all Ethernet cables that are present.
2. Remove the six screws (A) as shown in the illustration.
3. Push the system backplane (B) toward the front of the system.
4. Lift the system backplane up and out of the system chassis.  
**Note:** Use care when removing the system backplane. Do not lift the system backplane by any of the attached modules.

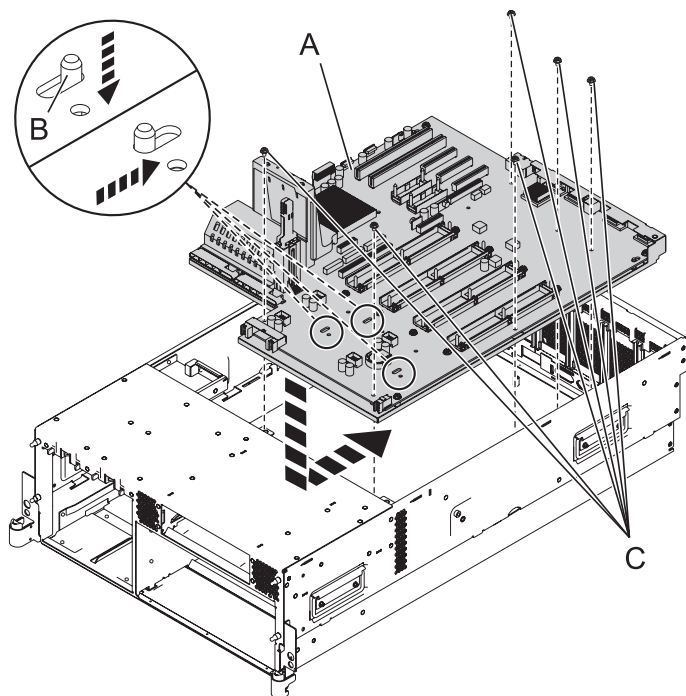


## Replacing the system backplane

### 1. Install the system backplane

**Note:** Use care when you replace the system backplane.

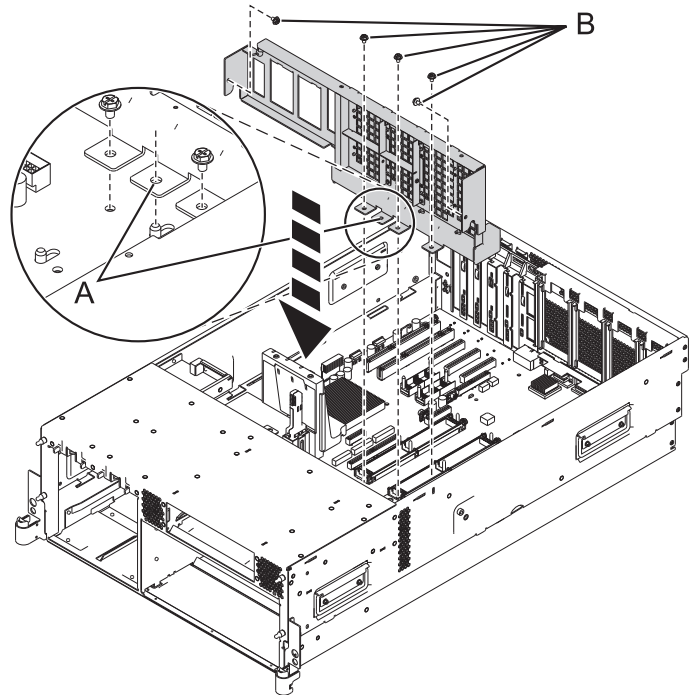
1. Carefully grasp the replacement system backplane (A) along two edges.  
**Note:** Ensure the pin holes on the system backplane are lined up correctly with the pins (B) on the system chassis.
2. Lower the system backplane at an angle, with the rear of the backplane connecting with the system chassis first.
3. Slide the system backplane toward the rear of the system chassis.
4. Tighten the six screws (C), securing the system backplane to the system chassis.
5. Reconnect all Ethernet cables that were previously removed.



### 2. Install the front processor support

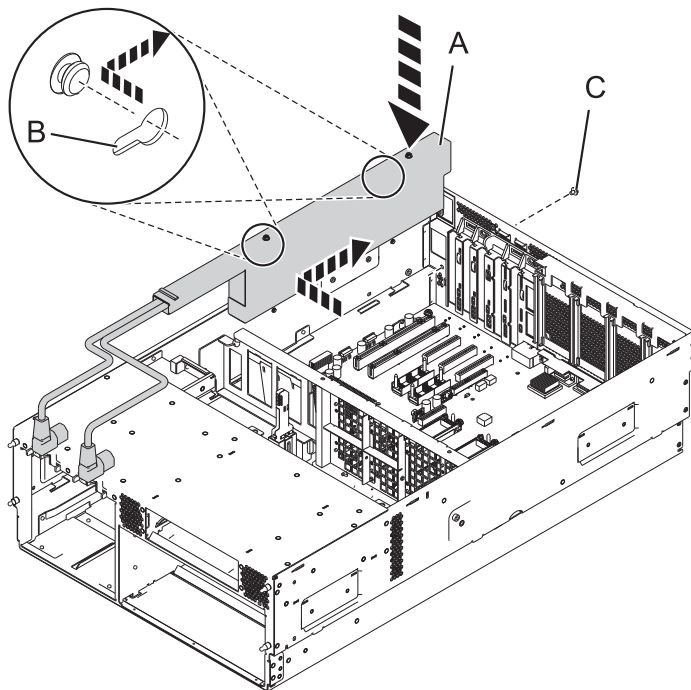


1. Align the pin hole (A) on the front processor support with the chassis guide pin on the system backplane.
2. Insert and tighten the five screws (B) to secure the front processor support.



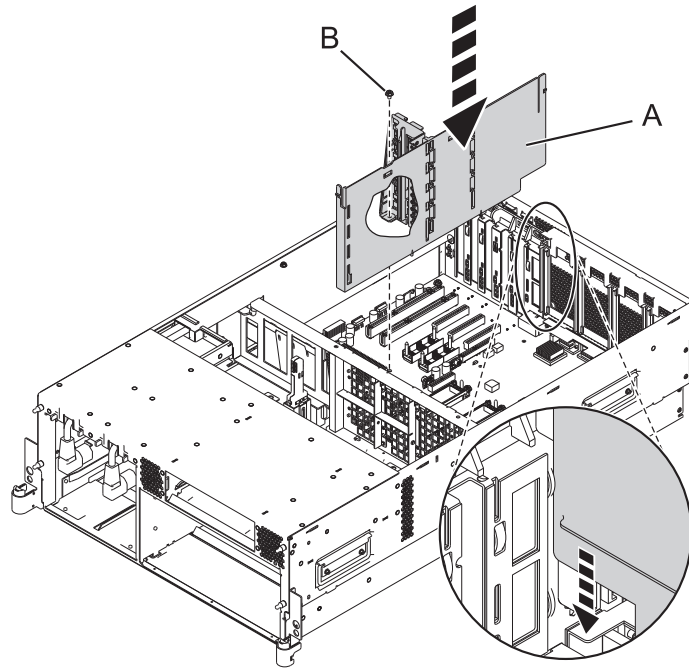
### 3. Install the line cord assembly

1. Place the line cord assembly (A) into position, ensuring that the slots (B) on the line cord assembly align with the pins on the system chassis.
2. Slide the line cord assembly toward the rear of the system to lock it into place.
3. Ensure that the *terra cota* cable retainers that hold the power supply cables are connected.
4. Insert and tighten the screw (C) to secure the line cord assembly.



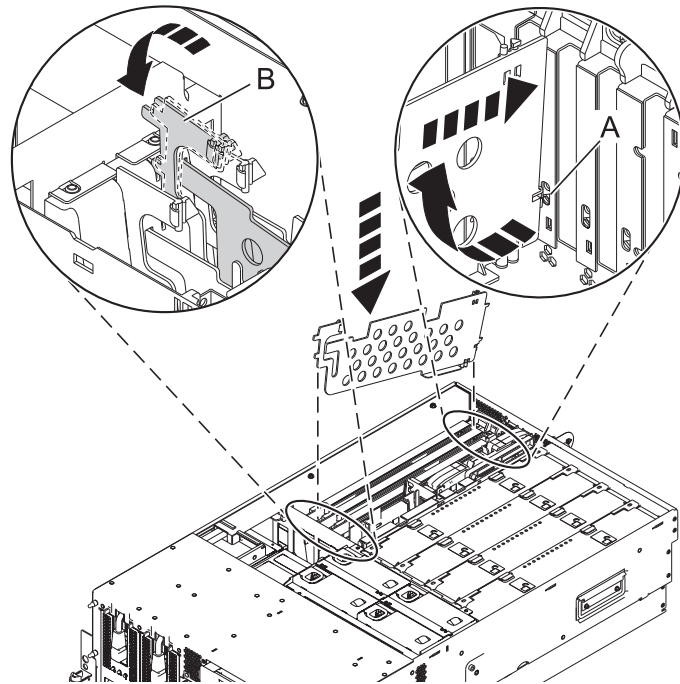
### 4. Install the middle divider

1. Align the middle system divider (A) in between the front and rear processor supports.
2. Slide the middle system divider down and into place.
3. Insert and tighten the screw (B) to secure the middle system divider.



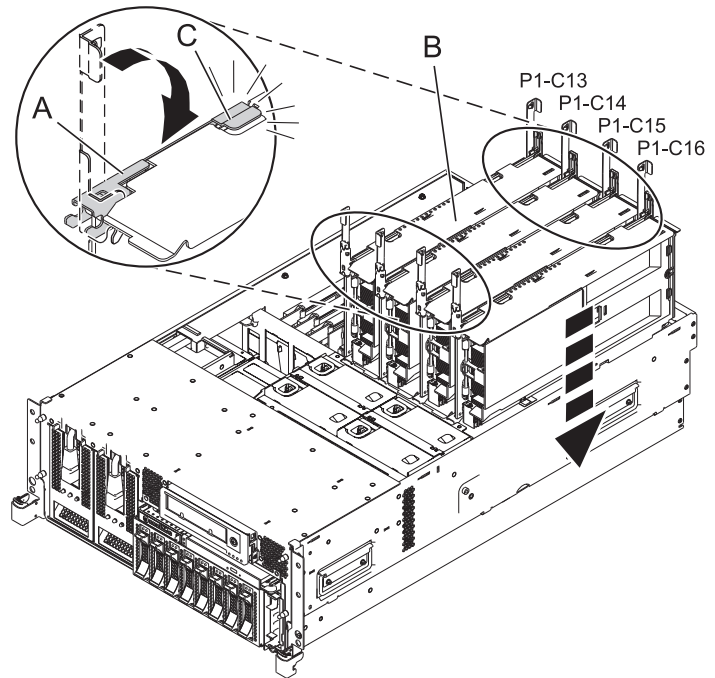
## 5. Install the PCI adapter dividers

1. Carefully grasp the PCI adapter divider by its top edge and align the rear edge of the divider with the retention notches (A) in the system chassis.
2. Insert the front edge of the divider (B) into the slots, and then press the divider into place.
3. Repeat these steps for the other PCI adapter dividers that need to be installed.



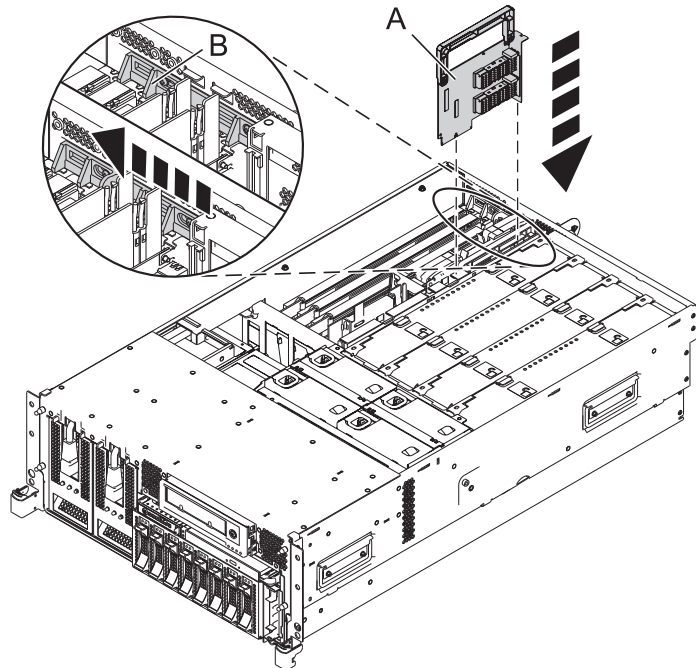
## 6. Install the system processor assemblies and fillers

1. Rotate the system processor assembly handles (A) to the open position.
2. Align the system processor assembly (B) with the slot in the system frame.
3. Carefully push on the system processor assembly until you feel it lock into place.
4. Rotate the handles to the locked position (C).
5. Repeat these steps to install all of the system processor assemblies and fillers.



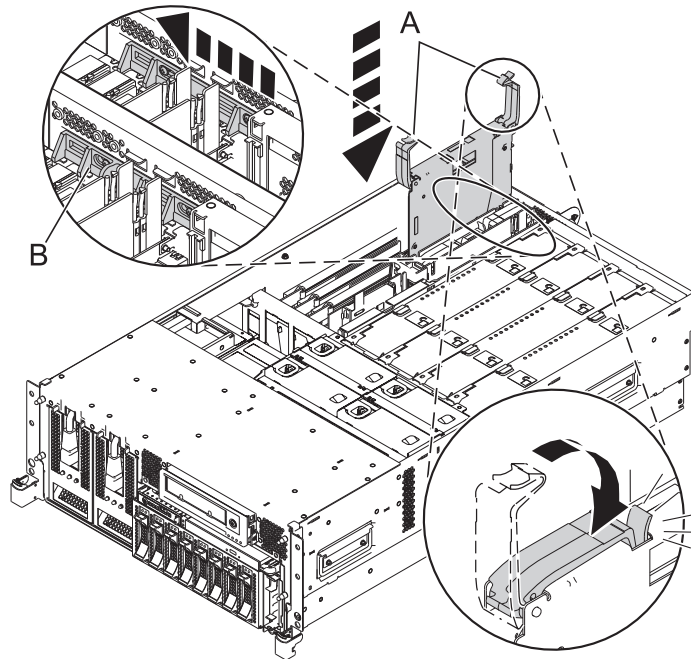
## 7. Install the Ethernet card

1. Carefully grasp the Ethernet card (A) by its top edge, and align the card with the expansion slot and its connector on the system backplane.
2. Press the Ethernet card firmly into its connector.
3. Slide the adapter latch (B) back into place in the direction shown to secure the Ethernet card.



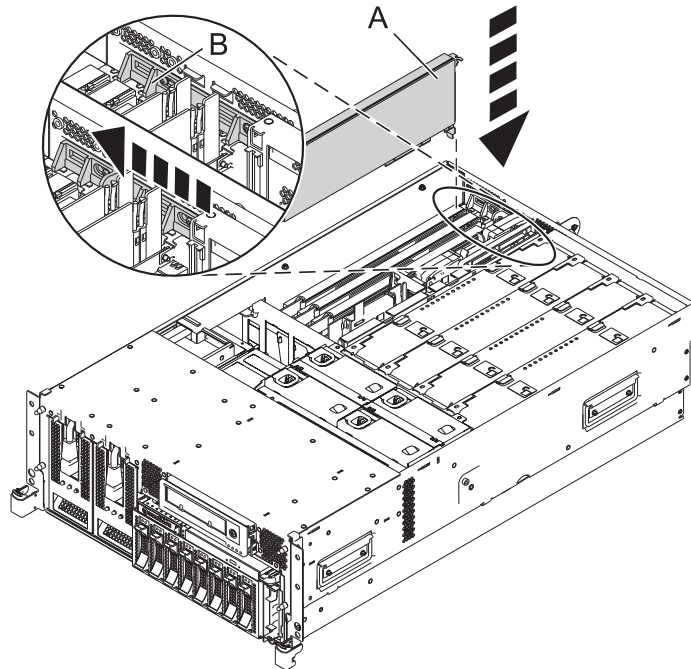
## 8. Install the GX adapter card, if previously removed

1. Align the adapter with the expansion slot and its connector on the system backplane.
2. With the latches (A) in the open position, gently push the adapter straight into the system.
3. Rotate the latches in the direction shown until they latch.
4. Slide the adapter latch (B) back into place in the direction shown to secure the adapter.
5. Repeat these steps to install a second GX adapter, if previously removed.



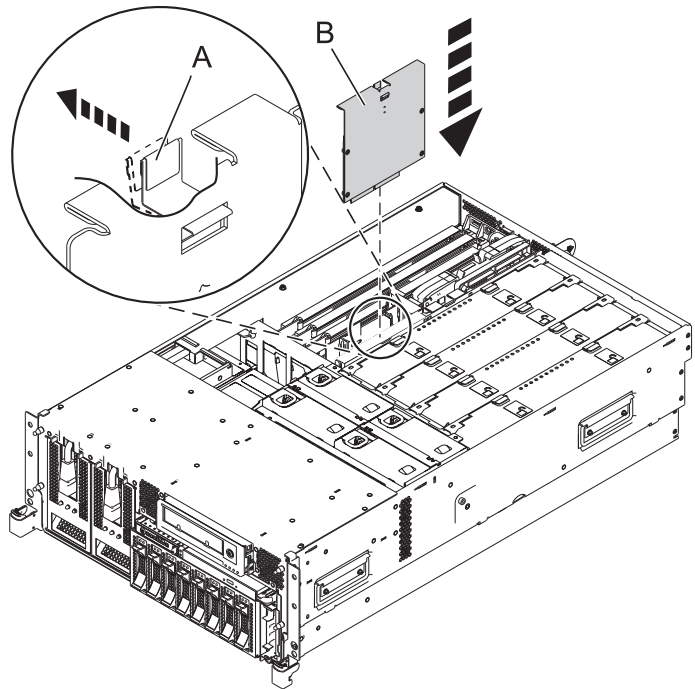
## 9. Install all PCI adapters

1. Carefully grasp the adapter (A) by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
2. Press the adapter firmly into its connector.
3. Slide the adapter latch (B) in the direction shown to secure the adapter.
4. Repeat these steps until all PCI adapters are installed.



## 10. Install the base RAID card, if previously removed

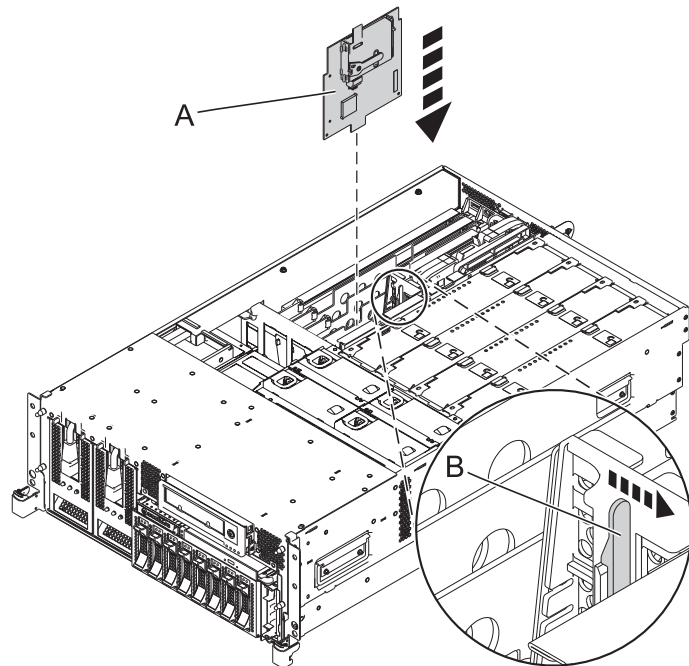
1. Gently push the card (B) in the direction shown straight into the enclosure.
2. Push the tab (A) in the direction shown to fit the card into its position.



---

#### 11. Install the daughter RAID card, if previously removed

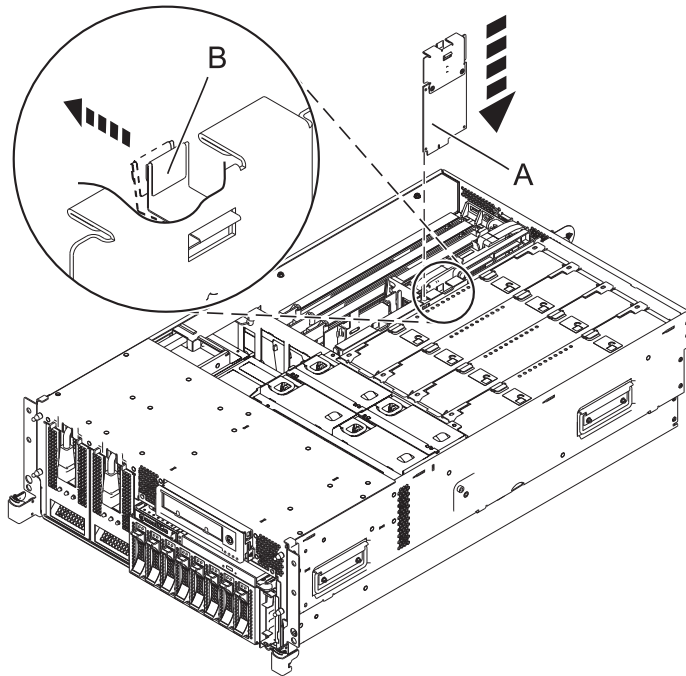
1. Gently push the card (A) in the direction shown straight into the enclosure.
2. Push the latch (B) in the direction shown to tighten the card into its position.



---

#### 12. Install the TPMD card, if previously removed

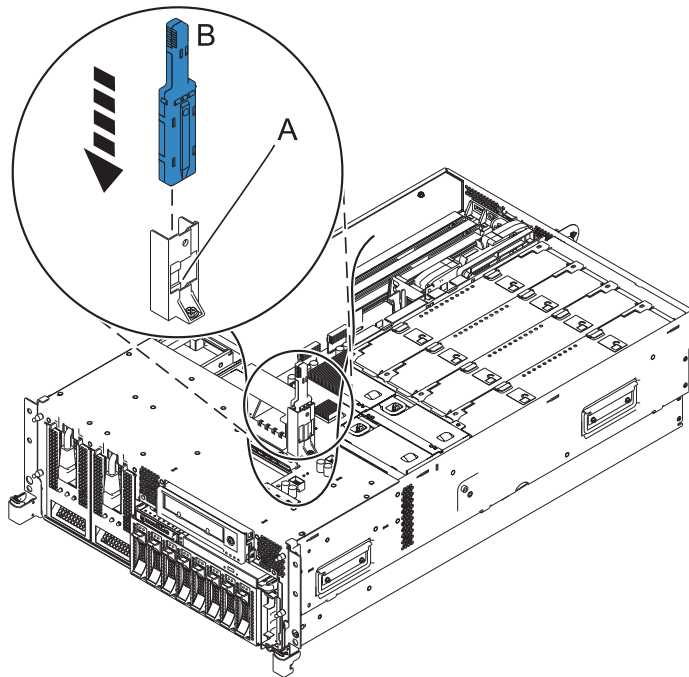
1. Gently push the card (A) straight into its slot on the system backplane.
2. Push the tab (B) in the direction shown to fit the card into its position.



---

### 13. Install the VPD card

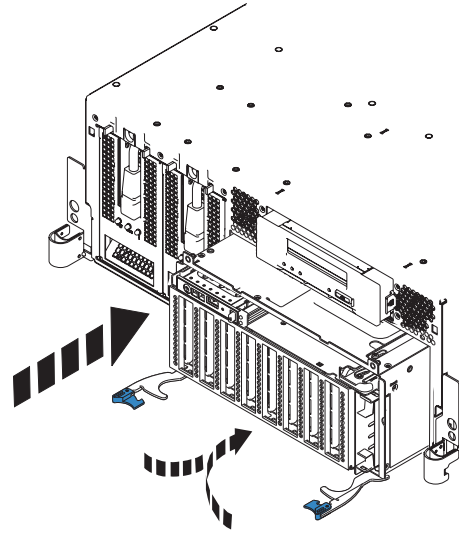
1. Insert the VPD card (B) into the VPD card guide (A).
2. Push until the VPD card is fully seated.



---

### 14. Install the disk unit cage

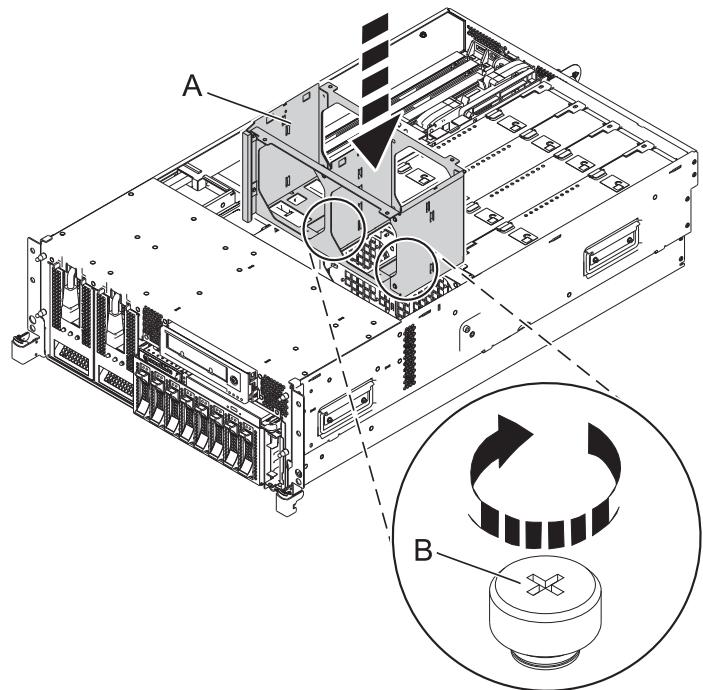
1. Slide the replacement disk unit cage into the system until you feel it lock.
2. Rotate the handles in the direction shown to secure the disk unit cage.
3. Reconnect the cables on the rear of the disk unit backplane.



---

## 15. Install the fan cage

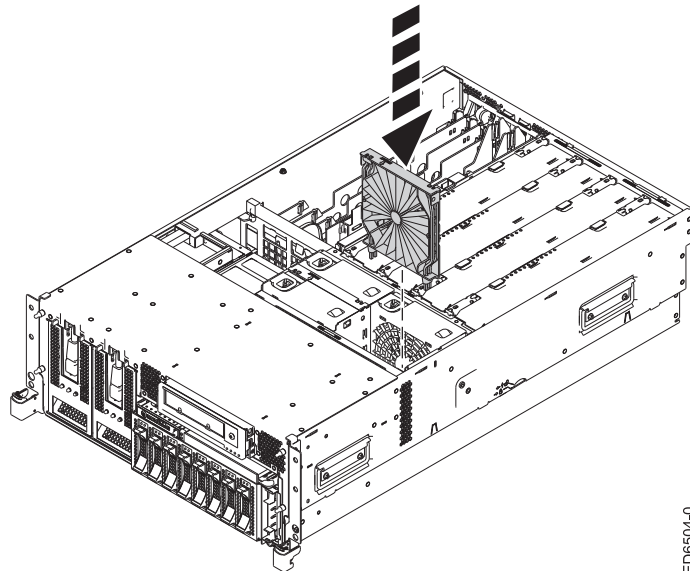
1. Lower the fan cage (A) into its location on the system board, aligning the locator pins through the holes.
2. Tighten the two retaining thumbscrews (B) securing the fan cage to the system board.



---

## 16. Install the air baffle

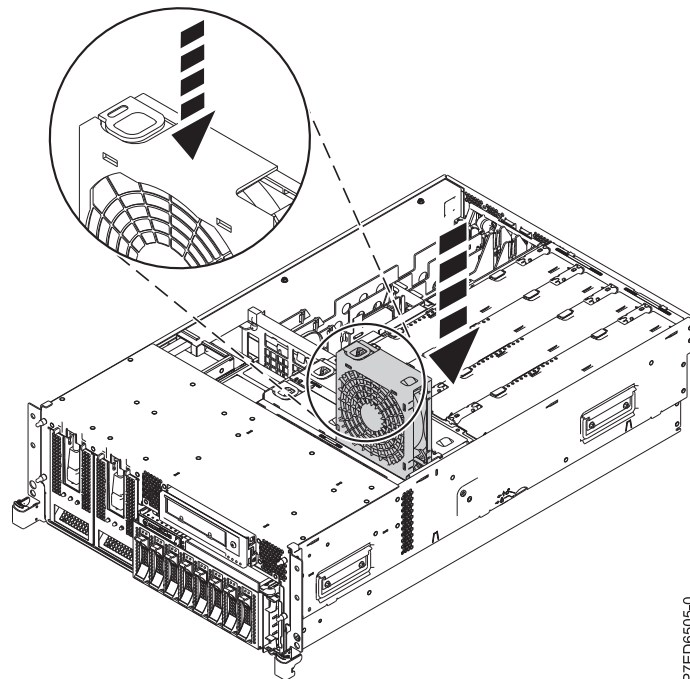
1. Lower the air baffle into its location in the fan cage, ensuring that the arrows on the air baffle point toward the front of the system.
2. Push down on the air baffle until it locks into place.



P7ED6504-0

## 17. Install the front fan

1. Lower the fan into its location in the fan cage.
2. Push down on the fan until it locks into place.

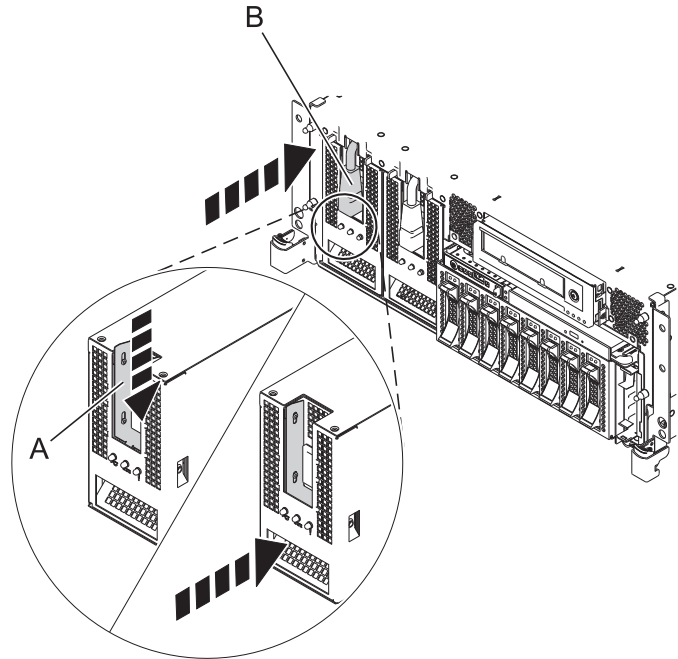


P7ED6505-0

## 18. Install both power supplies



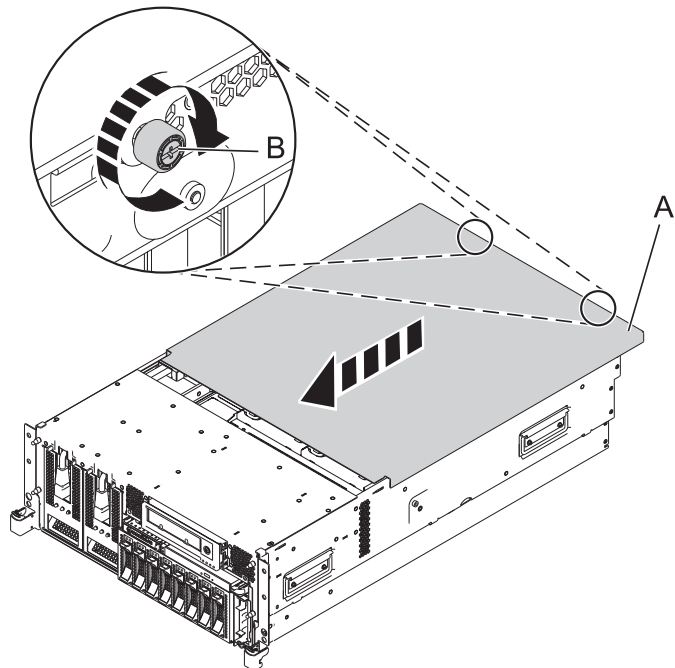
1. While pushing the lever **(A)** down, carefully slide the power supply into its location in the system.
2. Connect the power cable **(B)** to the power supply.
3. Repeat these steps to install the other power supply.



---

#### 19. Install the service access cover

1. Place the service access cover **(A)** on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align the two thumbscrews **(B)** located on the rear of the service access cover with the two holes on the rear of the system chassis.
4. Tighten the thumbscrews to secure the service access cover.

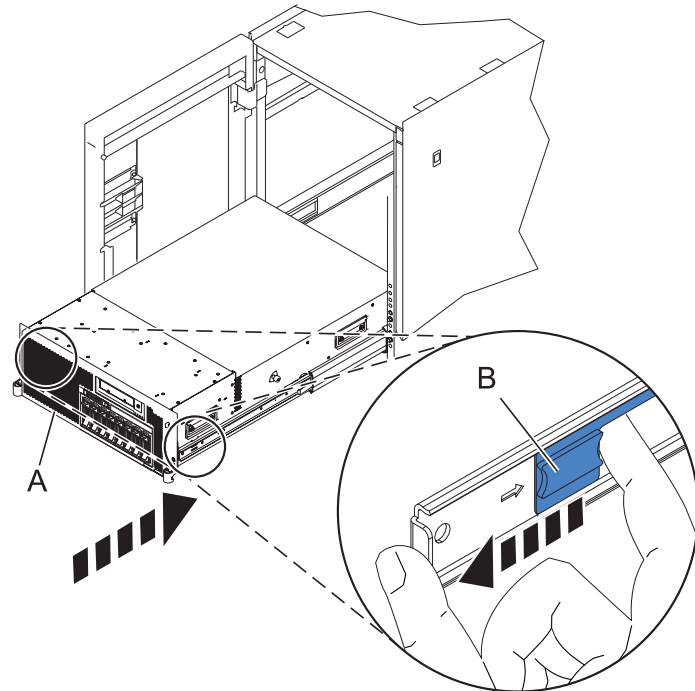


---

#### 20. Place the unit in the operating position

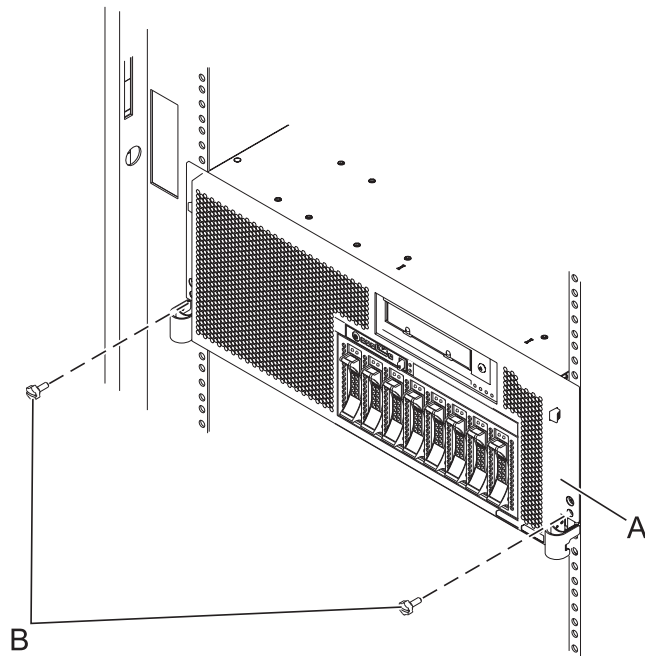
1. To unlock the rail safety latches (B), slide the latches toward the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches lock into position.

**Note:** Ensure that the cables at the rear of the system do not catch or bind as you push the system unit back into the rack.



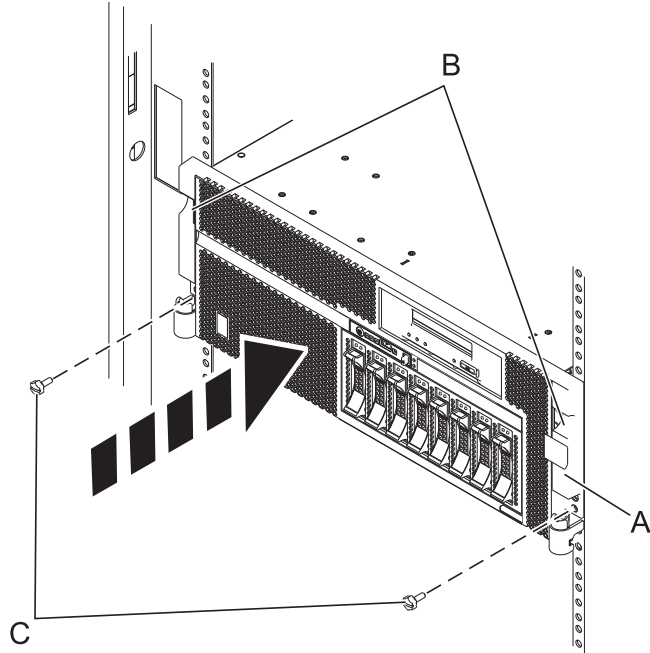
## 21. Place the unit in the operating position (continued)

Replace and tighten the two screws (B) that secure the system unit (A) to the rack.



## 22. Install the front cover

1. Position the cover on the front of the system unit so that the two thumbscrews (C) align with the screw holes on the front of the system unit (A).
2. Push the cover release latches (B) in the direction of the arrows to attach the cover to the front of the system unit as shown in the figure.
3. Tighten the thumbscrews.
4. Close the front rack door.



---

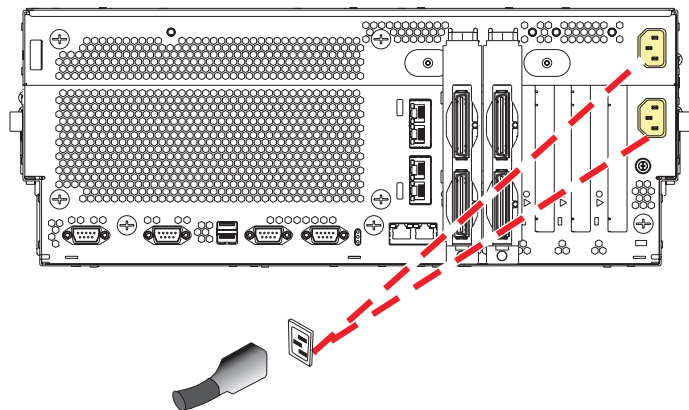
### 23. Reconnect the external cables

Reconnect the external cables, which you previously removed, to the FRU you are servicing.

---

### 24. Connect the power cords

If you removed the power cords, connect all power cords to the unit you are servicing.



---

### 25. Power on the system

---

## 26. Restore network connectivity

The installed service processor must connect to the network to be accessible from the management console.

### How will the IP address of the service processor be managed?

Obtain an IP address automatically from a Dynamic Host Configuration Protocol (DHCP) server	Configure a static IP address
↓	Go to step 28.

## 27. Restore service processor settings

**Note:** If the network connection uses the Dynamic Host Configuration Protocol (DHCP) to establish an IP address, and uses the Hardware Management Console (HMC) as the DHCP server, no additional configuration is necessary to enable network access to the service processor.

To enable network access to the service processor, complete the following steps.

1. Ensure that the service processor is connected to the existing service network by verifying that the HMC cable is connected to the HMC port on the service processor assembly.
2. If not already connected, connect all system power cables by plugging them into power outlets.

**Note:** Do not start the system at this time.

### Can you access the service network?

Yes	No
Go to step 30 on page 169.	Go to step 33 on page 169.

---

## 28. Restore service processor settings

If the network connection uses static IP address assignments, complete the following steps:

1. Connect a client with a Web browser directly to the service processor network port using one of the following URLs:
  - <https://169.254.2.147>
  - <https://169.254.3.147>**Note:** For additional information on IP address assignments, see *Accessing the ASMI using a PC or notebook and Web browser*.
2. If not already connected, connect all system power cables by plugging them into power outlets.  
**Note:** Do not start the system at this time.
3. Log in to Advanced System Management (ASM) with the user ID admin and the default password admin.
4. Change the admin user ID's password and the general user ID's password when prompted.
5. Configure network access using the static IP address.

---

## 29. Restore service processor settings

With the network connection now configured to use static IP address assignments, access the service network.

**Can you access the service network?**

Yes	No
↓	Go to step 34

---

**30. Access the ASMI**

The Advanced System Management Interface (ASMI) is the interface to the service processor that is required to perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power. The ASMI might also be referred to as the service processor menus.

To access the ASMI, see *Accessing the Advanced System Management Interface*.

When you have accessed the ASMI, continue with the next step.

---

**31. Set System Enclosure Type.**

The enclosure serial number is a seven-digit number printed on a bar-coded label on the system unit. When the system backplane is replaced, the seven-digit enclosure serial number and feature code number needs to be manually inputted and stored in the new system backplane using the Advanced System Management Interface (ASMI).

**32.**

Go to step 36.

---

**33. Restore service processor settings**

If the network connection uses DHCP to establish an IP address, but does not use a management console as the DHCP server, do the following steps:

1. Complete any network configuration necessary to allow the DHCP server to recognize and assign an IP address to the service processor.
2. Ensure that the service processor is connected to the existing service network by verifying that the network cable is connected to the network port on the service processor assembly.
3. If not already connected, connect all system power cables by plugging them into power outlets.

**Note:** Do not start the system at this time.

**Can you access the service network?**

No	Yes
↓	Go to step 30.

---

**34. Restore service processor settings**

You have indicated that you are still not able to access the service network.

You will need to reset the service processor network interfaces (and passwords) by moving the reset jumpers.

---

**35.**

Go to step 26 on page 168.

---

**36. Restore service processor settings**

Change the admin user ID's password when prompted by following these steps:

1. In the navigation area of ASM, expand **Login Profile**.
2. Select **Change Password**.
3. Specify the required information, and click **Continue**.

**Note:** Passwords can be any combination of up to 64 alphanumeric characters. The default password for the administrator ID is admin. After your initial login to ASM, the administrator passwords must be changed.

As a security measure, you are required to enter the password for your user ID in the **Current password for current user** field.

---

### 37. Restore service processor settings

Set the system name. The system name can be changed to any valid ASCII string. It does not have to follow the initialized machine type, model number, and serial number format.

To change the system name, complete the followings steps:

1. In the navigation area of ASM, expand **System Configuration**.
2. Select **System Name**.
3. Enter the desired system name using the previous naming convention.
4. Click **Save settings** to update the system name to the new value.

The new system name is displayed in the status frame, the area where the **logout** button is located. If another method, such as the management console, is used to change the system name, the status frame does not reflect the change.

---

### 38. Restore service processor settings

Set the time of day by completing these steps:

1. In the navigation area of ASM, expand **System Configuration**.
  2. Select **Time of Day**. If the system is powered off, the right pane displays a form that shows the current date (month, day, and year) and time (hours, minutes, and seconds).
  3. Change the date value, the time value, or both, and click **Update Time Of Day**.
- 

### 39. Restore service processor settings.

Verify if the server firmware level is same as the value recorded prior to replacing the system backplane. If the value is different then it must be fixed. For information on how to fix the firmware, see Getting firmware fixes.

### 40. Restore service processor settings

Reenter any of the following settings that you previously changed through ASM, unless you want to use the default settings:

1. System Power settings
  2. ASMI Service Aids settings
  3. System Configuration settings
  4. Network Services settings
  5. Login Profile settings
- 

### 41. Restore service processor settings

1. Reset any service processor settings that you might have set by using the operating system commands. You recorded these settings at the beginning of this procedure.
2. If you reset the management console access password, use one of the following methods:

For HMC:

- a. From the HMC GUI (preferred method):
  - 1) Expand the **Systems Management** folder in the navigation tree pane.
  - 2) Double click the **Servers** folder.
  - 3) Select a server in the central panel.
  - 4) Under the **Operations** folder, select **Change Password**.
  - 5) Provide the desired information and click **OK**.
- b. From the HMC command line, type `chsyspwd -m managed system -t access --passwd --newpasswd newpassword`  
where:
  - The value for *managed system* is the new service processor's managed system name.
  - No value for *--passwd* is entered thereby allowing authentication.
  - The value for *newpassword* is the new password value.

For SDMC:

- a. Go to the **Resources** tab and click **Hosts**.
  - b. Select a server in the right pane.
  - c. On the **Actions** menu, click **Operations > Change Password**.
  - d. Provide the desired information and click **OK**.
- 

## 42. Recover partition data on the service processor

The profile data that is stored in the managed server has been cleared or corrupted.

To recover profile data by using the HMC, complete the following steps:

1. Expand the **Systems Management** folder in the navigation tree pane.
2. Double click the **Servers** folder.
3. Use the check box to select a server, in the central panel.
4. In the **Configuration** folder if you have the **Manage Partition Data** folder, select **Restore**.

To recover profile data using the SDMC, complete the following steps:

1. Go to the **Resources** tab and click **Hosts**.
  2. Select a server in the right pane.
  3. On the **Actions** menu, click **System Configuration > Manage Partition Data > Restore**.
  4. Select the desired restore option and click **OK**.
- 

## 43. Update vital product data

If your system is running IBM i and is not managed by the management console, you must update the load source after replacing the system backplane.

To update the load source without using the management console, do the following steps:

1. Load the I\_BASE\_01 Licensed Internal Code optical media into the device that is defined for the system and access it to perform an initial program load (IPL).  
**Note:** This IPL can take several minutes.
  2. When the Select a Language Group display is shown, press Enter to select the default language feature 2924 (English).  
**Note:** To change the language feature, type the language feature that appears on the media that contains the operating system, and then press Enter. Confirm the language feature by pressing Enter.
  3. From the Install Licensed Internal Code display, select option 2 (Work with Dedicated Service Tools (DST)) and press Enter.  
Use the Dedicated Service Tools to make sure the disk units, including the load source, are reporting correctly and that there are no errors that might prevent the IPL from disk. When all errors have been resolved and the load source disk is reporting in correctly, continue with the next step.
  4. From the Work with Dedicated Service Tools (DST) display, select option 2 (Work with disk units) and press Enter.
  5. Select option 8 (Update system vital product data) to identify the location of the load source disk unit. Press Enter. The Update System Vital Product Data display appears.
  6. Press Enter to confirm that you want the vital product data to be written.
  7. Press F12 (Previous) twice.
  8. Press 1 and press Enter to exit DST. Use the system control panel to delay turning off the system. Change the IPL mode to B, and power on the system to perform an IPL from disk.
- 

#### 44. Restore boot list and Host Ethernet Adapter settings

The boot list is not present on a new system backplane, therefore; it is necessary to input the boot devices by booting into the system management services (SMS) menus. See Selecting boot options for information on setting the boot device list.

After the operating system is booted, the bootlist command can be used to verify, or make additional changes to, the list of boot devices for a system or partition.

To restore the Host Ethernet Adapter settings, see Configuring physical ports on a Host Ethernet Adapter.

---

#### 45. Verify the repair

Go to Verifying a repair.

---

## System processor assembly

Use this procedure to service the control panel or signal cable.

### Removing the system processor assembly

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the system processor assembly from the server. For instructions, see Removing a part using the Systems Director Management Console.

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove the system processor assembly from the server. For information about using the HMC to remove the processor voltage regulator module, see Removing a part using the Hardware Management Console.

If you do not have an HMC or SDMC, complete the following steps to remove either the system processor assembly or the filler for the system processor assembly:



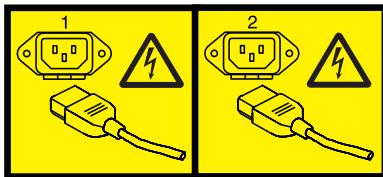
1. Perform the prerequisite tasks listed in “Before you begin” on page 115.
2. If necessary, identify the system processor assembly that you need to replace. See Identifying a part.
3. Stop the system or logical partition. See Stopping a system or logical partition.
4. Place the system in the service position. See Placing a 8233-E8B or 8236-E8C in the service position.
5. Remove the service access cover. See Removing the service access cover from an 8233-E8B or 8236-E8C system.
6. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
7. Disconnect the power cables from the primary power supply and secondary power supply if present.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

(L003)



or



8. As shown in Figure 80 on page 174, unlock the latches (A) on the system processor assembly. Using both hands, grasp the unlocked latches (B) to pull the system processor assembly (C) through the guide rails away from the system backplane assembly.

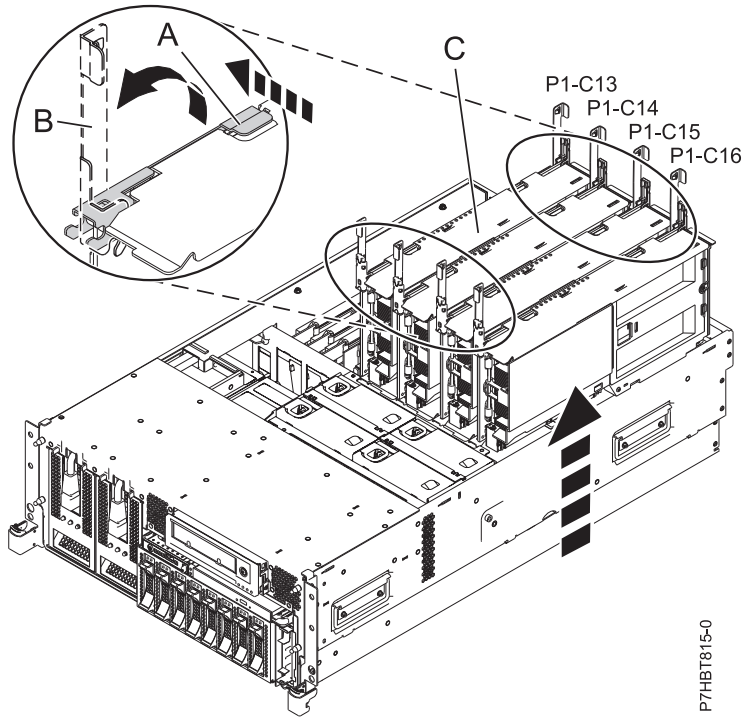


Figure 80. Removing system processor assembly from the backplane assembly in a rack-mounted system

9. Place the system processor assembly on an acceptable ESD surface.
10. If necessary, remove the memory modules to reinstall them in the new system processor assembly. See Memory modules.

## Replacing the system processor assembly

To complete this procedure, you must have already completed the removal procedure. For the removal procedure instructions, see Removing the 8233-E8B or 8236-E8C system processor assembly.

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the system processor assembly. For instructions, see Replacing a part using the Systems Director Management Console.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to replace the system processor assembly. For information about using the HMC to replace voltage regulator modules, see Exchanging a part using the Hardware Management Console.

If you do not have an HMC or SDMC, complete the following steps to replace the system processor assembly:

### Attention:

Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.

When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.

If you do not have a wrist strap prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.

1. If necessary, remove the system processor assembly from its antistatic package.

2. Move the existing memory modules or memory fillers in to the new system processor assembly. Use the same configuration that you had before you removed the memory modules. See the memory module information you printed for this procedure. If you did not print the memory module topic, see Memory modules.
3. With the latches (A) in the unlocked position, correctly align the system processor assembly (B) and slide it through the guide rails into the system backplane assembly.

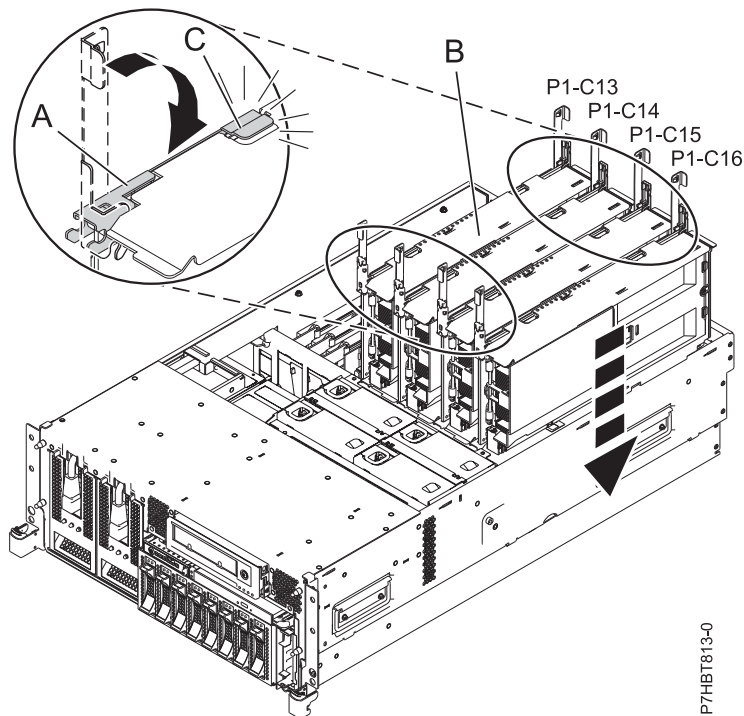


Figure 81. Installing the system processor assembly into the backplane assembly of a rack-mounted model

4. Move the latches (A) in the direction of the arrow to lock the system processor assembly into position.
5. Replace the service access cover. For instructions, see Installing the service access cover on an 8233-E8B or 8236-E8C system.
6. Place the system in the operating position. For instructions, see Placing the 8233-E8B or 8236-E8C in the operating position.
7. Restore power to the system by reconnecting the system power cables.
8. Start the system or logical partition. For instructions, see Starting the system or logical partition.
9. Verify that the system processor assembly is functional. For instructions, see Verifying the installed part.
10. Do one of the following actions:
  - If you received new activation codes for your feature, see Activate Capacity on Demand or Advanced POWER Virtualization for more information about entering the new code.
  - If you did not receive a new activation code but one is required, see Order Capacity on Demand to enter the new code order. After you receive your new activation code, see Activate Capacity on Demand or Advanced POWER Virtualization for more information about entering the new code.

To search for an activation code for a specific system, see Capacity on Demand activation codes.

## System VPD card

Use this procedure to service the system vital product data (VPD) card.

**Attention:** The system VPD card contains data that is vital to system operation:

- Machine type, model, and serial number
- System brand
- System unique ID
- Activation codes for Capacity on Demand (CoD) and Virtualization Engine technologies, if applicable.

If the VPD card is replaced, this data must be programmed into the replacement VPD card. If the system is still functional prior to the replacement of the VPD card, view and record the system unique ID.

New, replacement activation codes for CoD and Virtualization Engine technologies must be generated. The original activation codes for the system cannot be reused. Contact your next level of support for new activation codes.

**Note:** If you plan to replace the VPD card and have the replacement card available, you can contact the following e-mail address from 8 a.m. to 5 p.m. U.S. Central Time, Monday through Friday, to obtain replacement activation codes prior to repair. You must supply machine type and serial number, and the part number and serial number of the replacement VPD card. For System p systems contact [pcod@us.ibm.com](mailto:pcod@us.ibm.com), and for System i® systems contact [icod@us.ibm.com](mailto:icod@us.ibm.com).

To exchange the VPD card, perform the following procedure:

### 1. Access the ASMI

The Advanced System Management Interface (ASMI) is the interface to the service processor that is required to perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power. The ASMI might also be referred to as the service processor menus.

To access the ASMI, see [Accessing the Advanced System Management Interface](#).

When you have accessed the ASMI, continue with the next step.

---

### 2. Save the system identifiers

1. On the ASM Welcome pane, specify your user ID and password, and click **Log in**.  
**Note:** To perform this operation, your authority level must be administrator or authorized service provider.
  2. In the navigation area, expand **System Configuration** → **Program Vital Product Data**.
  3. Select **System Brand**.
  4. In the right pane, manually record the value for the System Brand.
  5. Under **Program Vital Product Data**, Select **System Keywords**.
  6. In the right pane, manually record the values for the machine type and model, system serial number, system unique ID, and (if applicable) activation codes for Capacity on Demand (COD) and Virtualization Engine technologies.
- 

### 3. Power off the unit

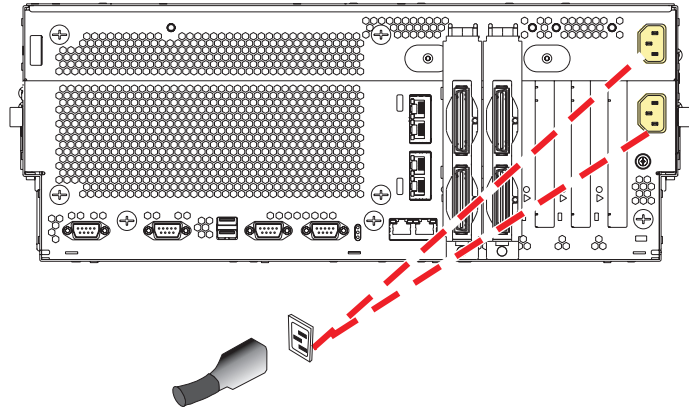
If the unit that contains the VPD card is powered on, power it off now.

---

### 4. Disconnect the power cords

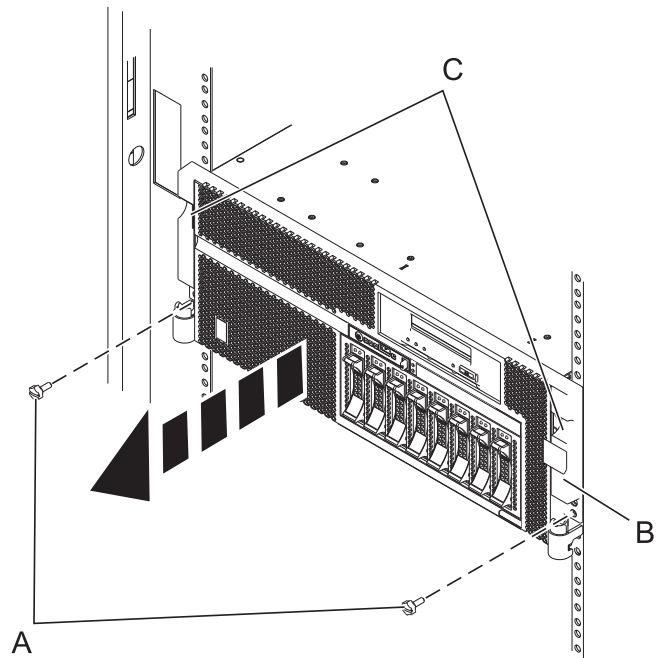
To disconnect the power cords, complete the following steps:

1. Open the rear rack door.
2. Disconnect all power cords from the unit you are servicing.



#### 5. Remove the front cover

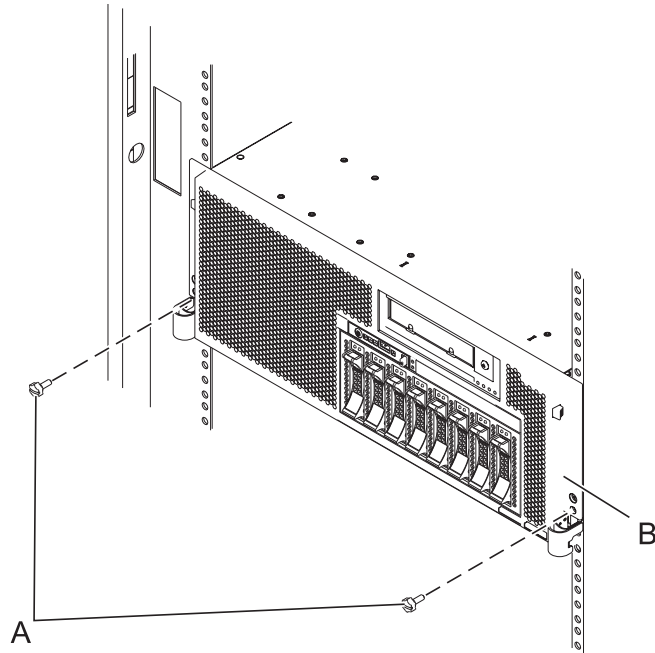
1. Open the front rack door.
2. Remove the two thumbscrews (A) that secure the front cover to the system unit.
3. Push the cover release latches (C) in the direction of the arrow to release the cover from the system unit.
4. Pull the cover out and away from the system unit.



#### 6. Place the unit into the service position

**Attention:** When placing the model rack into the service position, it is essential that all stability plates are firmly in position to prevent the rack from toppling. Ensure that only one system unit is in the service position at a time.

Remove two screws (A) securing the system unit (B) to the rack.

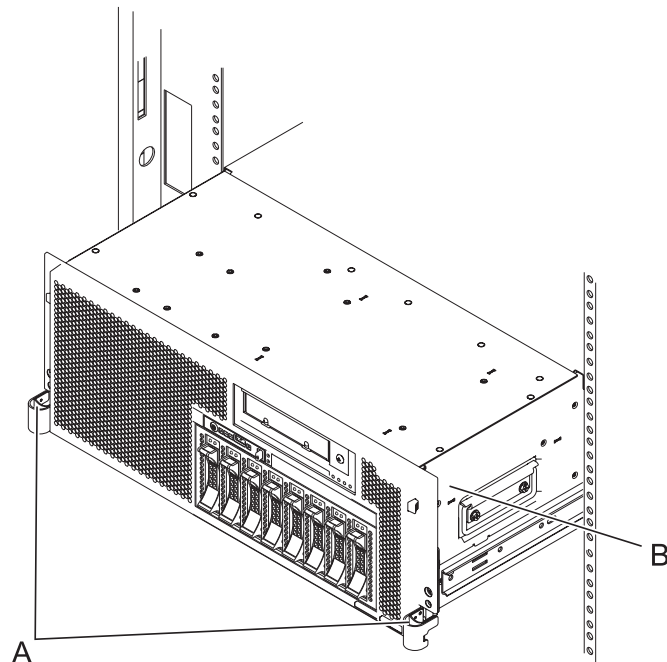


#### 7. Place the unit into the service position (continued)

**Notes:**

1. Ensure that the cables at the rear of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.

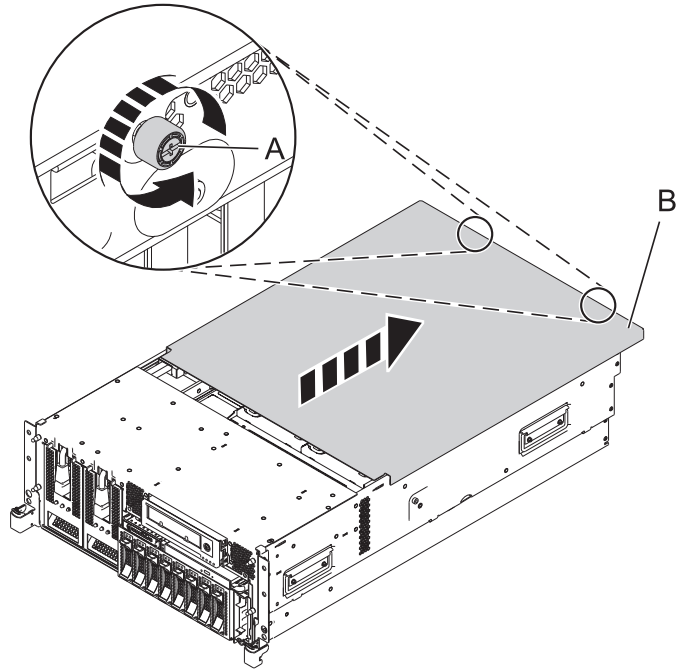
While holding the system-unit release latches (A) down on both the left and right sides, pull the system unit (B) out from the rack until the rails are fully extended and locked.



#### 8. Remove the service access cover

1. Loosen the two thumbscrews (A) located at the rear of the cover.
2. Slide the cover (B) toward the rear of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

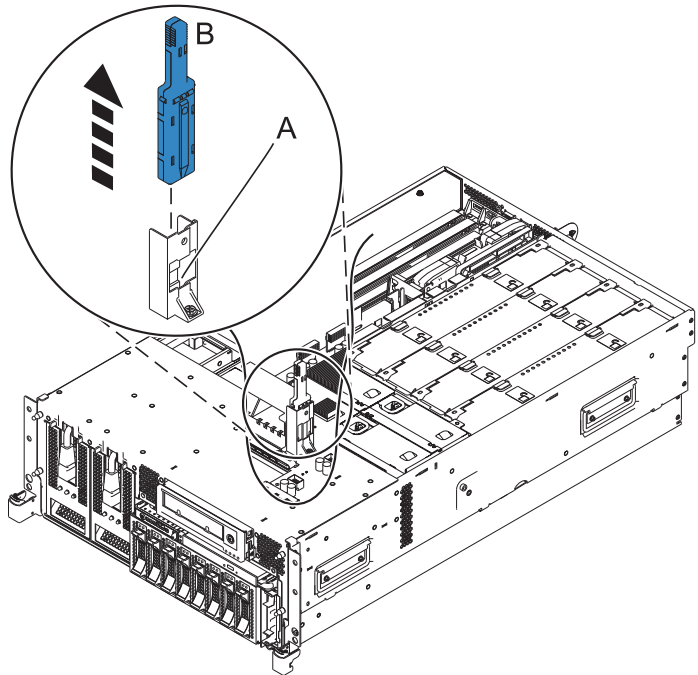
**Attention:** For proper cooling and airflow, replace the cover before turning on the system. Operating the system without the cover for more than 30 minutes could damage the system components.



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#### 9. Remove the vital product data (VPD) card

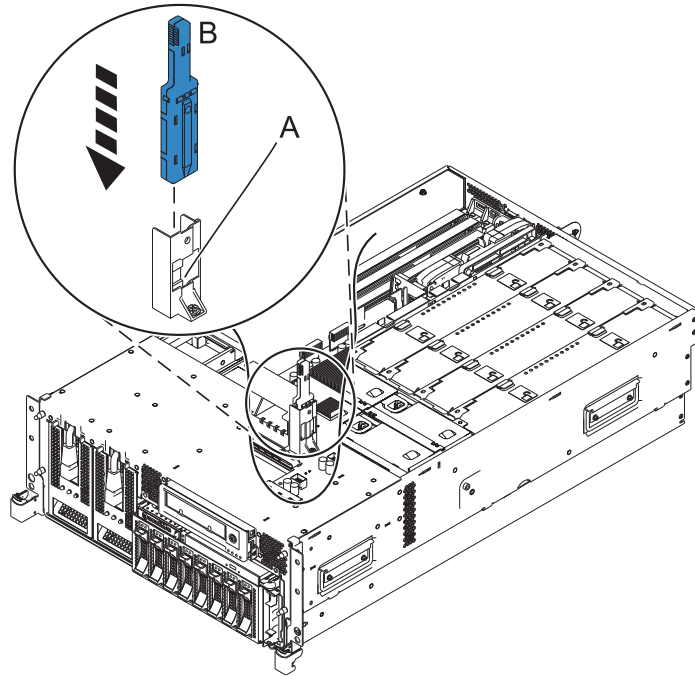
Remove the VPD card (B) from the VPD card guide (A) on the planar by pulling the blue handle.



---

#### 10. Install the VPD card

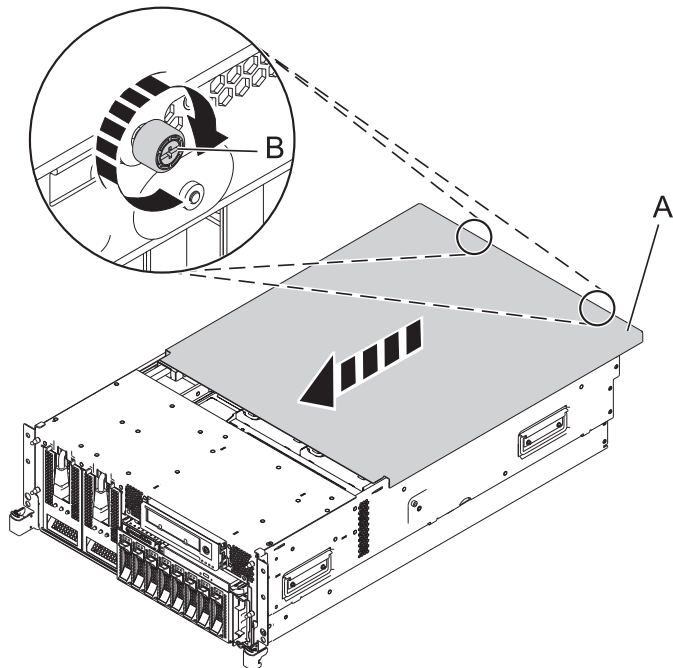
1. Insert the VPD card (B) into the VPD card guide (A).
2. Push until the VPD card is fully seated.



---

## 11. Install the service access cover

1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align the two thumbscrews (B) located on the rear of the service access cover with the two holes on the rear of the system chassis.
4. Tighten the thumbscrews to secure the service access cover.



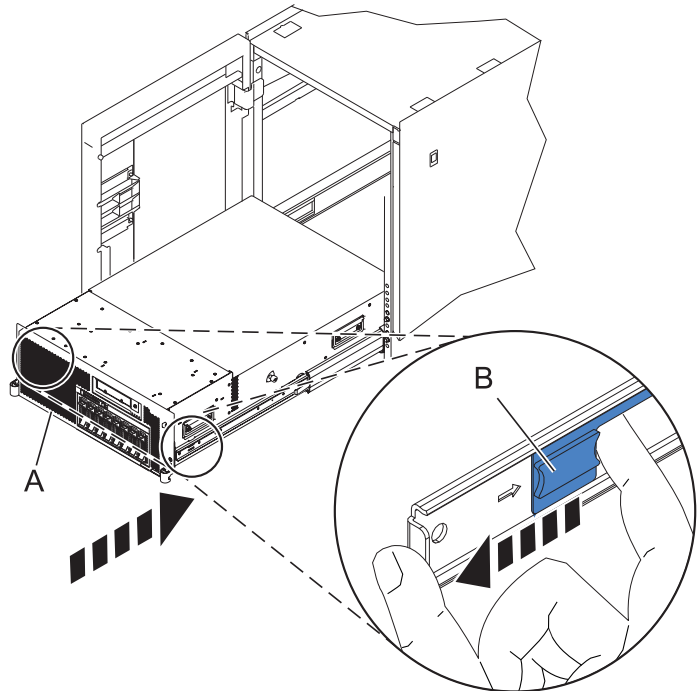
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## 12. Place the unit in the operating position



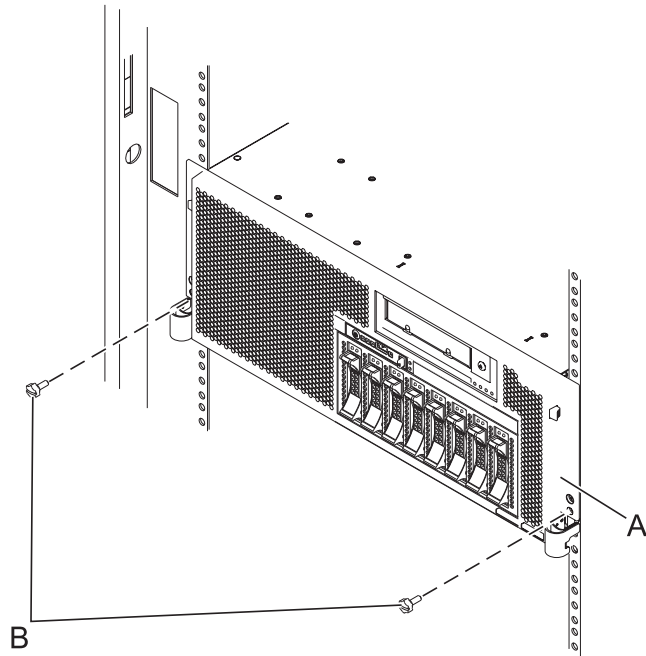
1. To unlock the rail safety latches (B), slide the latches toward the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches lock into position.

**Note:** Ensure that the cables at the rear of the system do not catch or bind as you push the system unit back into the rack.



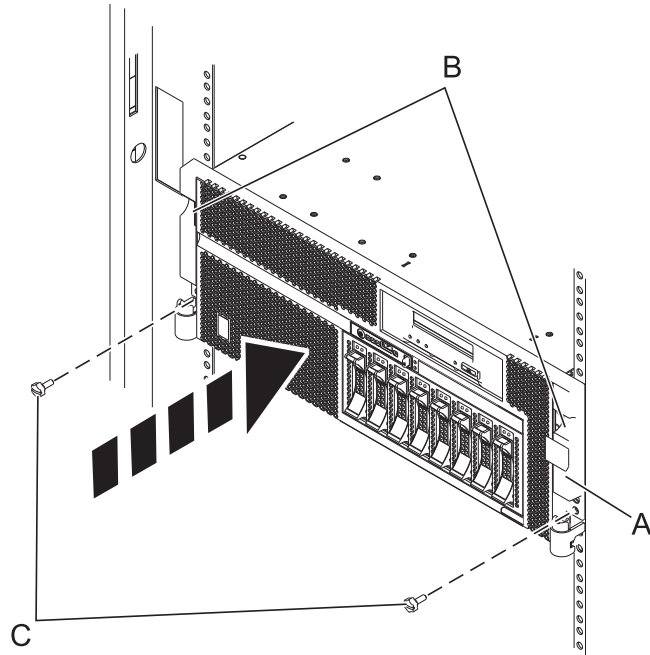
### 13. Place the unit in the operating position (continued)

Replace and tighten the two screws (B) that secure the system unit (A) to the rack.



### 14. Install the front cover

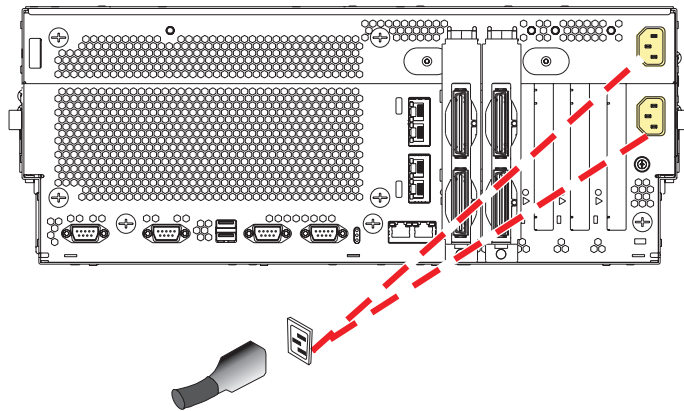
1. Position the cover on the front of the system unit so that the two thumbscrews (C) align with the screw holes on the front of the system unit (A).
2. Push the cover release latches (B) in the direction of the arrows to attach the cover to the front of the system unit as shown in the figure.
3. Tighten the thumbscrews.
4. Close the front rack door.



---

## 15. Connect the power cords

If you removed the power cords, connect all power cords to the unit you are servicing.



---

## 16. Power on the system

---

## 17. Access the ASMI

The Advanced System Management Interface (ASMI) is the interface to the service processor that is required to perform general and administrator-level service tasks, such as reading service processor error logs, reading vital product data, setting up the service processor, and controlling the system power. The ASMI might also be referred to as the service processor menus.

To access the ASMI, see [Accessing the Advanced System Management Interface](#).

When you have accessed the ASMI, continue with the next step.

---

## 18. Set the system identifiers

1. On the ASM Welcome pane, if you have not already logged in, specify your user ID and password, and click **Log In**.

**Note:** To perform this operation, your authority level must be administrator or authorized service provider.

2. In the navigation area, expand **System Configuration** → **Program Vital Product Data**.
  3. Click **System Brand**.
  4. If the backed up system brand is correct, click **Accept backed up setting and save**. Otherwise, enter the correct system brand and click **Continue**.  
**Note:** If you do not know the correct system brand, contact your next level of support.
  5. Click **Save setting** to update the system brand to the VPD.
  6. Under **Program Vital Product Data**, click **System Keywords**.
  7. If the backed-up system keywords are correct, click **Accept backed up setting and save**. Otherwise, enter the values for the machine type and model, system serial number, system unique ID, and (if applicable) activation codes for Capacity on Demand (COD) and Virtualization Engine technologies. Set the **Reserved** field to blank spaces unless directed otherwise by Level 4 technical support.  
**Note:** If you do not know the system unique ID, contact your next level of support. You cannot boot the system until valid values are entered for all fields. You can change these entries only once.
  8. Click **Save settings** to update the system keywords and to save them to the VPD.
- 

## 19. Verify the repair.

Go to [Verifying a repair](#).

---

## Thermal power management device

Use this procedure to service the thermal power management device (TPMD).

### Removing the TPMD card

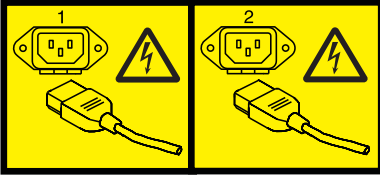
For information about using the HMC to remove the TPMD card, see [Removing a part by using the Hardware Management Console](#)

To remove the TPMD card from a system that is not managed by the HMC, complete the following steps:

1. Complete the prerequisite tasks described in “Before you begin” on page 115.
2. Stop the system, as described in [Stopping a system or logical partition](#).
3. Disconnect all power cords from the unit you are servicing.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)



OR

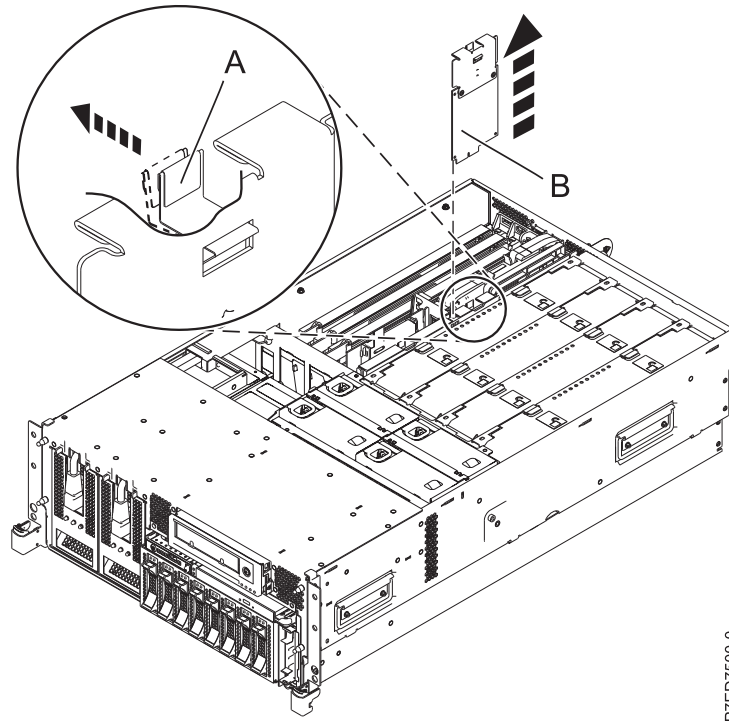


4. If you have a rack-mounted system, place it in the service position, as described in Placing a 8233-E8B or 8236-E8C in the service position.
5. Remove the service access cover, as described in Removing the service access cover from an 8233-E8B or 8236-E8C system.
6. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
- When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.

7. Locate the TPMD card that is indicated by the amber fault LED being on.
8. Remove the TPMD card as follows:
  - a. Push the tab **(A)** in the direction shown to release the card **(B)**.
  - b. Gently pull the card straight out of its slot on the system backplane.



P7ED7500-0

**Note:** The location code of the TPM card is P1-C12 or you can identify the card with the amber fault LED on.

If you removed the TPM card as part of another service action, return to that procedure. If you need to replace the TPM card that you removed, see Replacing the 8233-E8B or 8236-E8C TPM card.

## Replacing the TPM card

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system. For information about software prerequisites, see IBM Prerequisite. If the required software is not installed, see the following Web sites to download it, and then install it before continuing:

- To download firmware and software updates and fixes, see [Microcode downloads](#).
- To download Hardware Management Console (HMC) updates and fixes, see [Hardware Management Console Support and downloads](#).

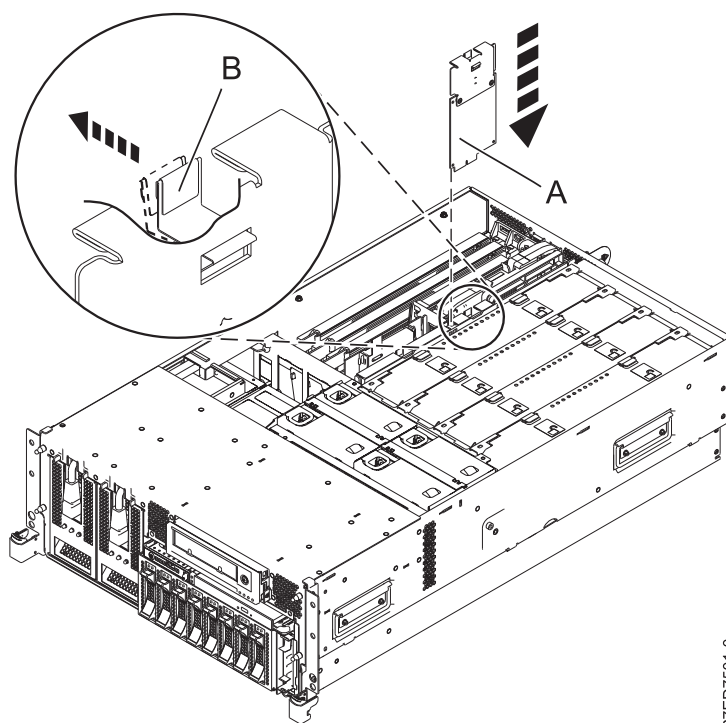
If your system is managed by the HMC, use the HMC to complete the steps for replacing the TPM card in the server. For information about using the HMC to replace the TPM card, see [Replacing a part by using the Hardware Management Console](#).

To replace a TPM card from a system that is not managed by an HMC, complete the following steps:

1. Complete the prerequisite tasks described in “Before you begin” on page 115.
2. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
3. If necessary, remove the TPMD card from its antistatic package.
  4. Install the TPMD card as follows:
    - a. Gently push the card (A) straight into its slot on the system backplane.
    - b. Push the tab (B) in the direction shown to fit the card into its position.



P7ED7501-0

5. Replace the service access cover, as described in Installing the service access cover on an 8233-E8B or 8236-E8C system.
6. Place the system in the operating position, as described in Placing the 8233-E8B or 8236-E8C in the operating position.
7. If you removed the power cords, connect all power cords to the unit you are servicing.
8. Verify the installed part, as described in Verifying the installed part.

## Voltage regulators

Use this procedure to service the voltage regulator.

### Removing the processor voltage regulator

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the processor voltage regulator module from the server. For instructions, see Removing a feature using the Systems Director Management Console.

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove the processor voltage regulator modules from the server. For information about using the HMC to remove the processor voltage regulator module, see Removing a part using the Hardware Management Console.

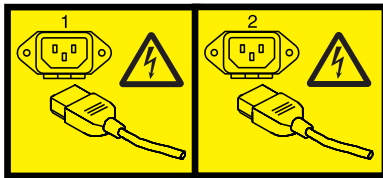
If you do not have an HMC or SDMC, complete the following steps to remove a memory voltage regulator module:

**Note:** Ensure that you keep a screwdriver handy before you begin with this procedure.

1. Perform the prerequisite tasks as described in “Before you begin” on page 115.
2. Remove the front cover. For instructions, see Removing the front cover from an 8233-E8B or 8236-E8C system
3. Open the back rack door.
4. Stop the system. For instructions, see Stopping a system or logical partition.
5. Disconnect the power source from the system by unplugging the system.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

(L003)



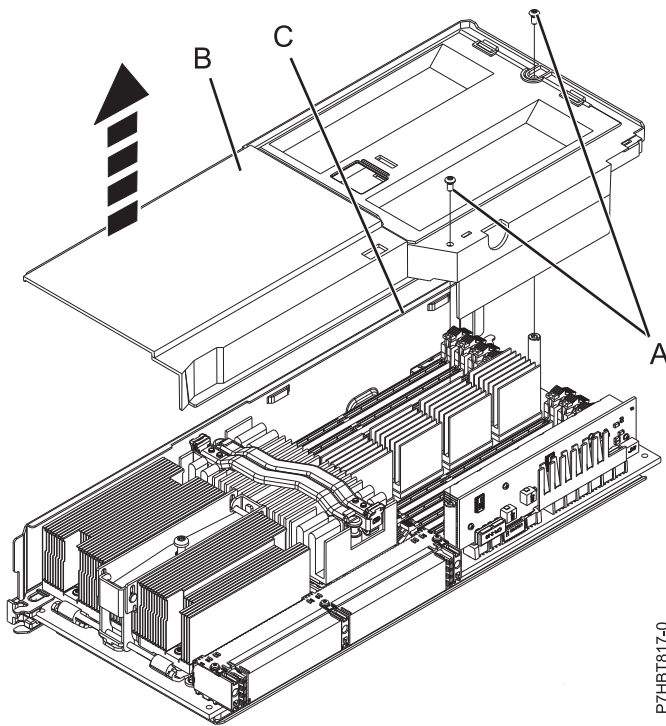
or



6. Place the system in the service position. For instructions, see Placing a 8233-E8B or 8236-E8C in the service position.
7. Remove the access cover. For instructions, see Removing the service access cover from an 8233-E8B or 8236-E8C system.
8. Attach the wrist strap.

**Attention:**

- Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
9. Remove the system processor assembly. (Skip the steps you have already completed.) For instructions, see Removing the 8233-E8B or 8236-E8C system processor assembly.
  10. Remove the airflow cover by lifting the clear shield from the system.
    - a. Loosen the screws (A).
    - b. Slide the cover (B) from under the flange (C) and remove from the system processor assembly.



11. Locate the processor voltage regulator module to be removed from the system processor assembly.

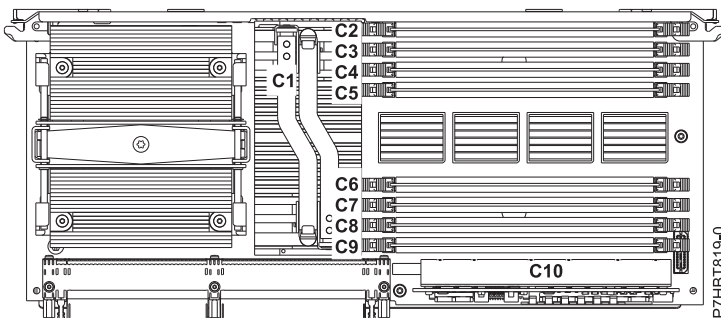
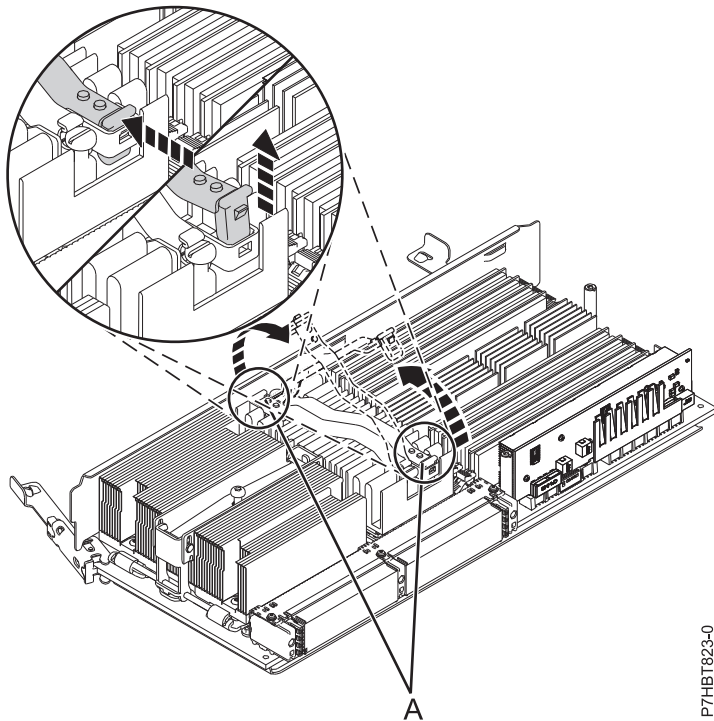


Figure 82. Processor voltage regulator module location (C1)



12. To remove the processor voltage regulator module from the system processor assembly, follow these steps:
  - a. Grasp the latch end of both of the locked mechanical arms, and pull the locking latch (A) back to unlock, as shown in the following figure.



P7HBT823-0

Figure 83. Unlocking the processor voltage regulator module arms

- b. Lift both of the mechanical voltage regulator arms (A) upward at the same time until they are in the vertical position, as shown in Figure 84 on page 190.
    - c. Carefully pull up on both of the arms (A), at the same time, to lift the processor voltage regulator module from the system processor assembly.

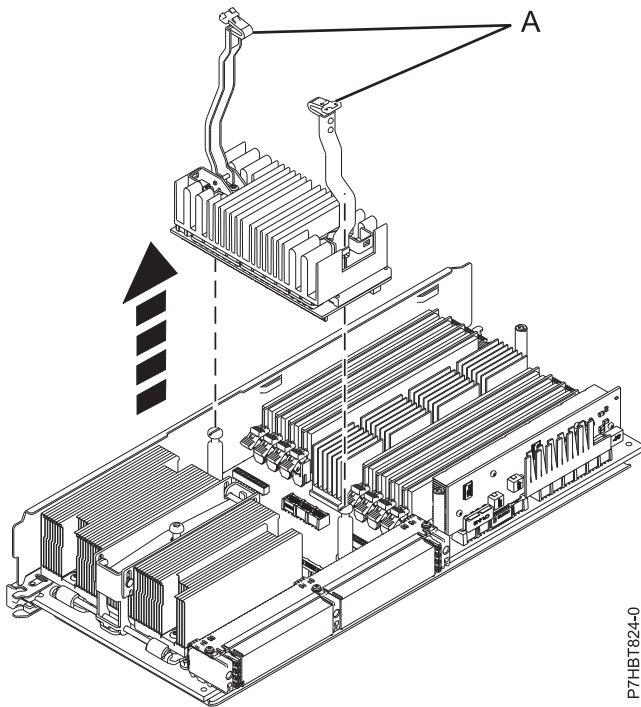


Figure 84. Removing the processor voltage regulator module from the system

13. Place the voltage regulator module on an electrostatic discharge (ESD) surface.

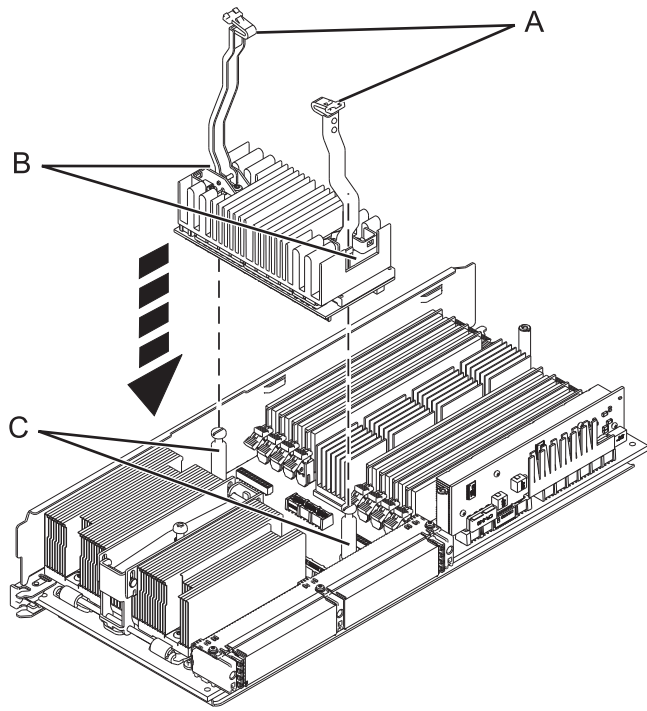
## Replacing the processor voltage regulator

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the processor voltage regulator module. For instructions, see [Replacing a feature using the Systems Director Management Console](#).

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to replace the processor voltage regulator module. For information about using the HMC to replace voltage regulator modules, see [Exchanging a part using the Hardware Management Console](#).

If you do not have an HMC or SDMC, complete the following steps to replace a processor voltage regulator module:

1. Remove the voltage regulator module from its antistatic package. Locate the connectors in the system processor assembly to place the module.



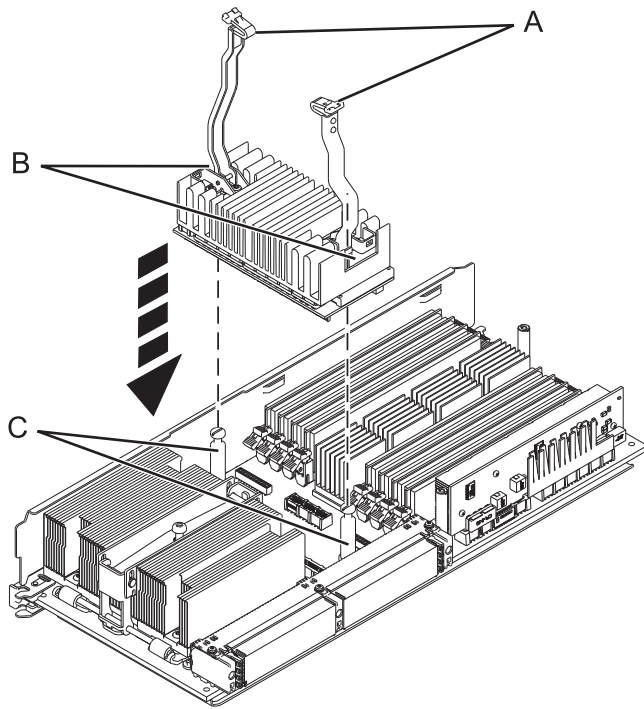
P7HBT820-0

Figure 85. Processor voltage regulator module shown above the location in the system processor assembly

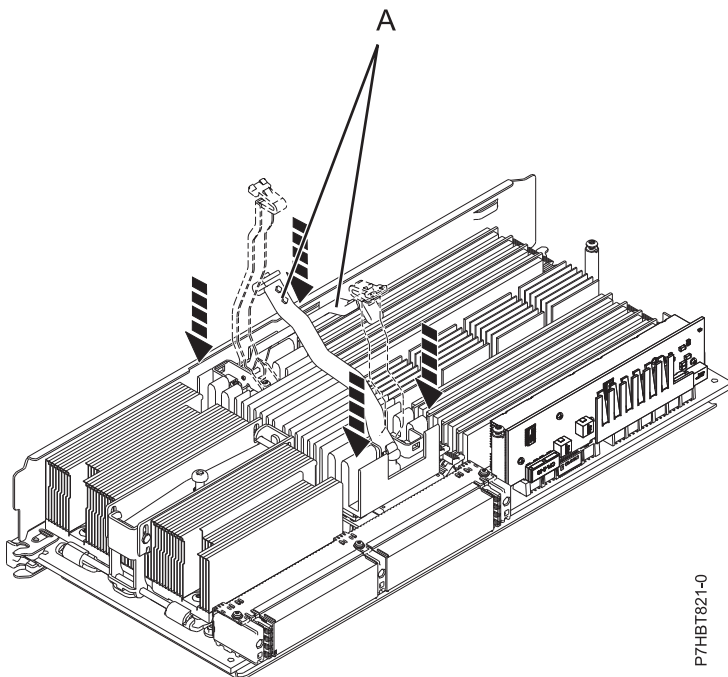
2. Open both of the locking arms on the processor voltage regulator module, at the same time, until they extend straight up from the voltage regulator module.
3. To replace the voltage regulator module, complete the following steps:

**Note:** When reinstalling processor voltage regulator module, ensure that the DIMM latches are fully engaged and latched to the DIMMs or blanks to avoid possible damage to the DIMM latches.

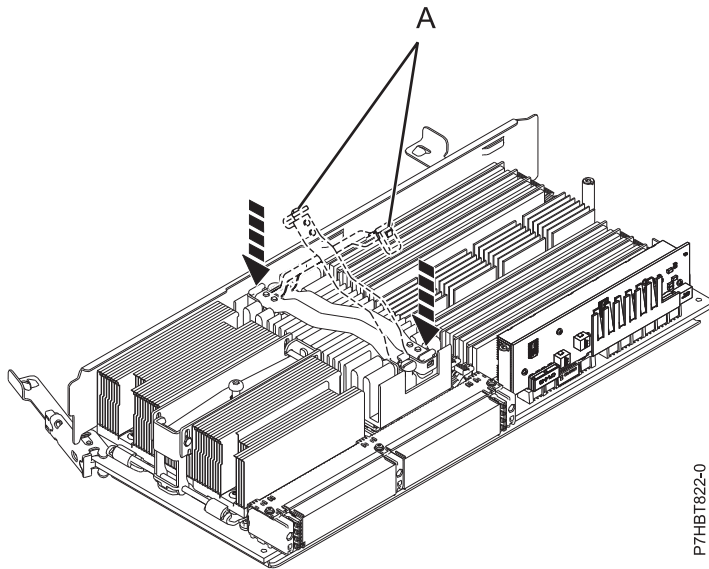
- a. Lift the voltage regulator module by both of the arms (A). Hold the voltage regulator module above the system processor assembly, aligning the connectors of the voltage regulator module with the connectors on the system processor assembly.
- b. Align the holes in the processor voltage regulator module (B) with the large mechanical pins (C) on the system processor assembly. Slide the voltage regulator module down onto the system processor assembly until the arms touch the top of the pins.



- c. Use both hands to apply downward force on all four corners of the processor voltage regulator module, as shown by the arrows. When the arms are in the half open position, the voltage regulator module is in place.

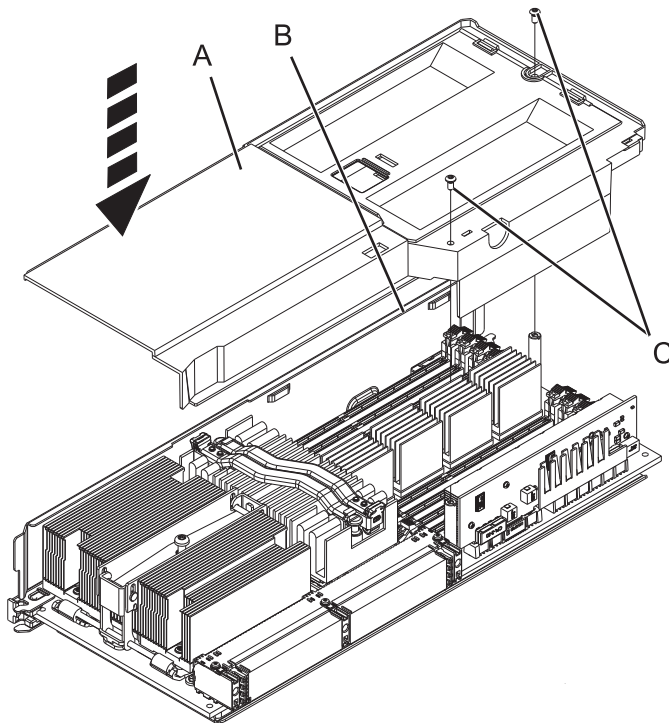


- d. Using one finger on each hand, apply pressure downward on both processor voltage regulator arms at the same time, to move to the close position. Press down at the end of each arm A until they reach the locked position.



4. Install the airflow cover as shown in the following figure.
  - a. To install the airflow cover, slide the cover (A) under the flange (B).
  - b. Tighten the screws (C).

The memory voltage regulator is locked into place.



5. Replace the system processor assembly. (Skip the steps you have already completed.) For instructions, see [Replacing the 8233-E8B or 8236-E8C system processor assembly](#)
6. Replace the service access cover: For instructions, see [Installing the service access cover on an 8233-E8B or 8236-E8C system](#).
7. Place the system in the operating position. For instructions, see [Placing the 8233-E8B or 8236-E8C in the operating position](#).

8. Replace the front cover. For instructions, see Installing the front cover on an 8233-E8B or 8236-E8C system.
9. Reconnect all power and signal cables to their respective connectors.
10. Close the back rack door or the back system door.
11. Start the system. For instructions, see Starting the system or logical partition.
12. Verify that the new resource is working correctly. For instructions, see Verifying the installed part.

## Removing the memory voltage regulator

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to remove the memory voltage regulator module from the server. For instructions, see Removing a feature using the Systems Director Management Console.

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove the memory voltage regulator modules from the server. For information about using the HMC to remove the memory voltage regulator module, see Removing a part using the Hardware Management Console.

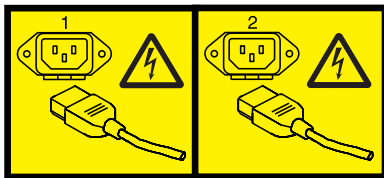
If you do not have an HMC or SDMC, complete the following steps to remove a memory voltage regulator module:

**Note:** Ensure that you keep a screwdriver handy before you continue with this procedure.

1. Perform the prerequisite tasks as described in “Before you begin” on page 115.
2. Remove the front cover. For instructions, see Removing the front cover from an 8233-E8B or 8236-E8C system.
3. On a rack-mounted system unit, open the back rack door.
4. Stop the system. For instructions, see Stopping a system or logical partition.
5. Disconnect the power source from the system by unplugging the system.

**Note:** This system has a second power supply. Before continuing with this procedure, ensure that the power source to the system has been completely disconnected.

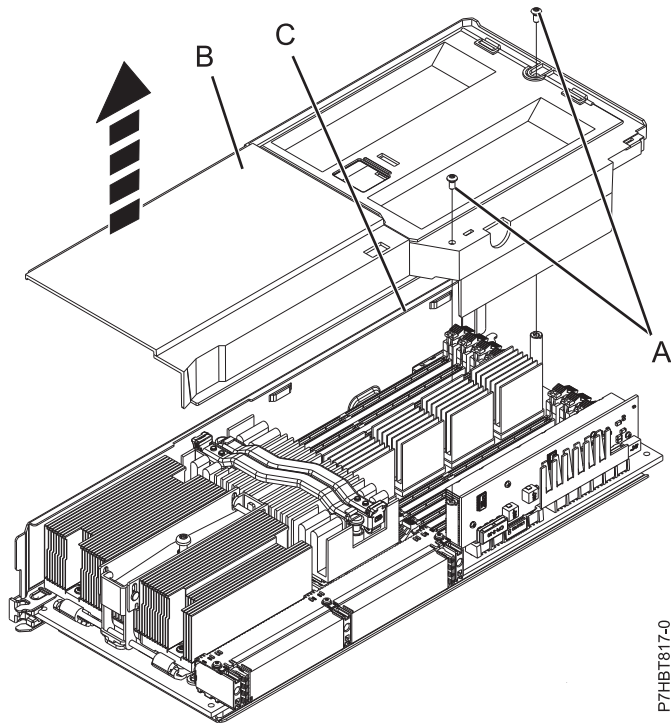
(L003)



or

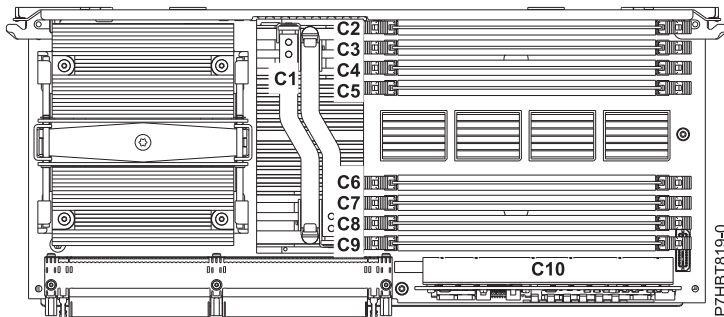


6. Place the system in the service position. For instructions, see Placing a 8233-E8B or 8236-E8C in the service position.
7. Remove the access cover. For instructions, see Removing the service access cover from an 8233-E8B or 8236-E8C system.
8. Attach the wrist strap.  
**Attention:**
  - Attach a wrist strap to an unpainted surface of your hardware to prevent electrostatic discharge (ESD) from damaging your hardware.
  - When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
  - If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted surface of the system for a minimum of 5 seconds.
9. Remove the system processor assembly. (Skip the steps you have already completed.) For more information, see Removing the 8233-E8B or 8236-E8C system processor assembly.
10. Remove the airflow cover by lifting the clear shield from the system.
  - a. Loosen the screws **(A)**.
  - b. Slide the cover **(B)** from under the flange **(C)** and remove from the system processor assembly.



P7HBT817-0

11. Locate the memory voltage regulator module to be removed from the system processor assembly. Figure 86 shows the memory voltage regulator (**C10**) in relation to the location on the system processor assembly.

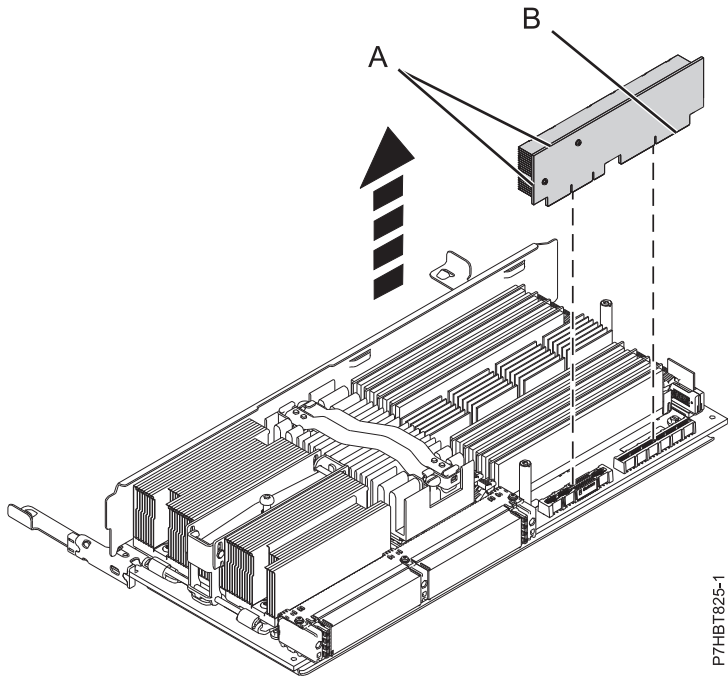


P7HBT819-0

Figure 86. Memory voltage regulator module location (C10)

12. Remove the memory voltage regulator module (**A**) from the connectors, as shown in the following figure:
  - a. Grasp the top or back edge (**A**) of the memory voltage regulator module to loosen from the connectors.
  - b. Place your thumb under bottom edge (**B**) the voltage regulator module and lift to remove the module from the connectors.





P7HBT825-1

Figure 87. Removing the memory voltage regulator module

13. Place the voltage regulator module on an electrostatic discharge (ESD) surface.

### Replacing the memory voltage regulator

If your system is managed by the IBM Systems Director Management Console (SDMC), use the SDMC to replace the memory voltage regulator module. For instructions, see [Replacing a feature using the Systems Director Management Console](#).

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to replace the memory voltage regulator module. For information about using the HMC to replace voltage regulator modules, see [Exchanging a part using the Hardware Management Console](#).

If you do not have an HMC or SDMC, complete the following steps to replace a memory voltage regulator module:

1. Remove the voltage regulator module from its antistatic package. Locate the connectors on the system processor assembly to connect the module.

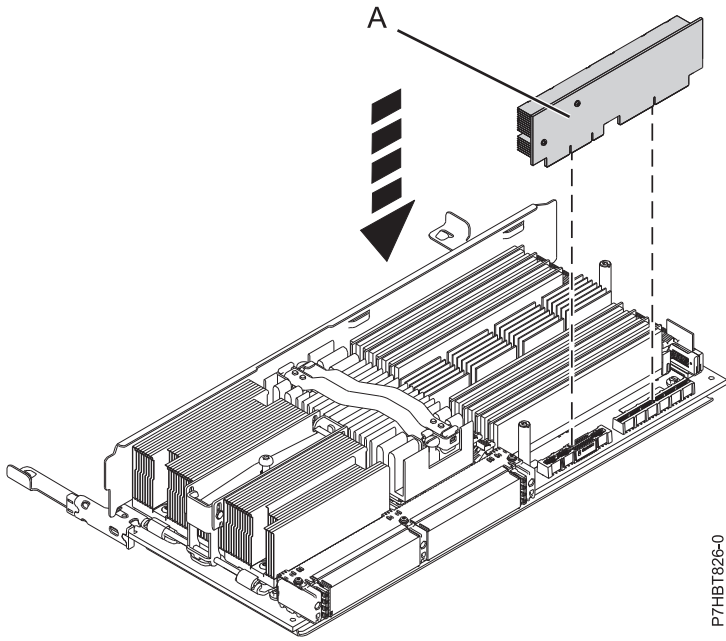


Figure 88. Memory voltage regulator module (A) shown above the voltage regulator connectors on the system processor assembly

2. Install the voltage regulator module by completing the following steps:
  - a. Carefully grasp the voltage regulator module along two edges and align it with the connectors.
  - b. Insert the voltage regulator module (A) into the connectors and firmly push down into position.

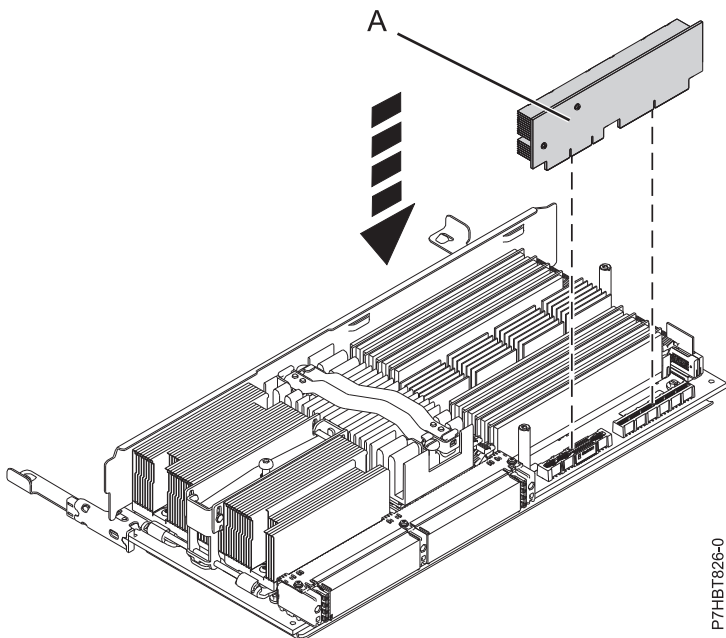
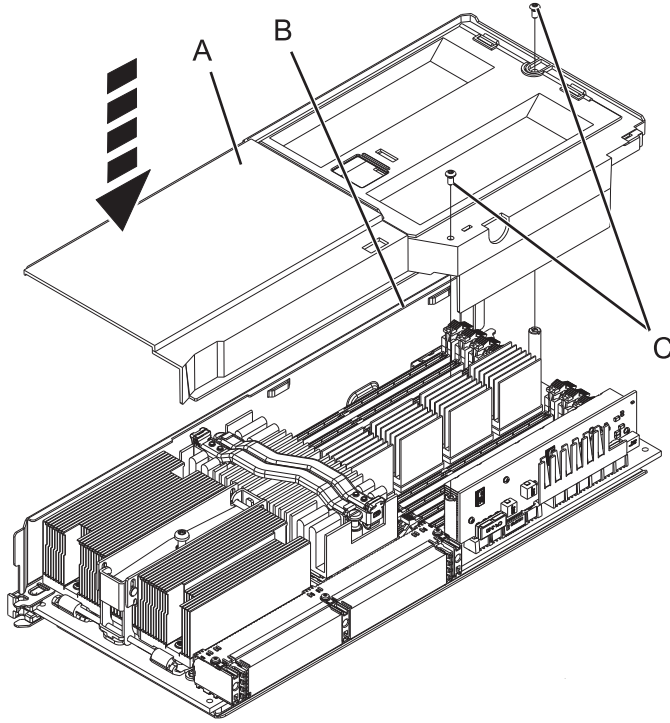


Figure 89. Installing the memory voltage regulator module

3. Install the airflow cover as shown in the following figure.
  - a. To install the airflow cover, slide the cover (A) under the flange (B).
  - b. Tighten the screws (C).

The memory voltage regulator is locked into place.



4. Replace the system processor assembly. (Skip the steps you have already completed.) For instructions, see Replacing the 8233-E8B or 8236-E8C system processor assembly
5. Replace the service access cover. For instructions, see Installing the service access cover on an 8233-E8B or 8236-E8C system
6. Place the system in the operating position. See Placing the 8233-E8B or 8236-E8C in the operating position.
7. Replace the front cover. For a rack-mounted system unit, see Installing the front cover on an 8233-E8B or 8236-E8C system.
8. Reconnect all power and signal cables to their respective connectors.
9. Close the back rack door or the back system door.
10. Start the system. See Starting the system or logical partition.
11. Verify that the new resource is working correctly. For instructions, see Verifying the installed part.

---

## Verifying a repair

Use these procedures to verify hardware operation after making repairs to the system.

Choose from the following options:

- To verify the repair of a system that is currently powered off, go to step 1.
  - To verify the repair of a system that is currently powered on with no operating system loaded, go to step 3 on page 200.
  - To verify the repair of a system that is currently powered on and that has an operating system loaded, go to step 5 on page 200.
1. Power on the server and all attached I/O enclosures.

### Did all the enclosures power on?

**Yes:** Go to step 3 on page 200. ↓ Go to step 3 on page 200.

**No:** Continue with the next step.

---

2. Choose from the following options:

- If the original problem was that an enclosure would not power on and you have another FRU to replace, locate and replace the next field-replaceable unit (FRU).
  - If the next FRU in the FRU list is an isolation procedure, perform the isolation procedure.
  - If the original problem was that an enclosure would not power on and you have an isolation procedure to complete, perform the isolation procedure.
  - If the original problem was that an enclosure would not power on and there are no more FRUs or isolation procedures in the FRU list, contact your next level of support.
  - If you have a new problem, perform problem analysis and repair the new problem.
- 

3. Load the operating system.

**Did the operating system load successfully?**

**Yes:** Go to step 5.

**No:** Continue with the next step.

---

4. Choose from the following options:

- If the original problem was a failing disk drive that contained the operating system software, go to step 5.
  - If the original problem was that the operating system would not load and you have another FRU to replace, go to your FRU locations section to locate the next FRU.
  - If the next FRU in the FRU list is an isolation procedure, perform the isolation procedure.
  - If the original problem was that the operating system would not load and you have an isolation procedure to complete, perform the isolation procedure.
  - If the original problem was that the operating system would not load and there are no more FRUs or isolation procedures in the FRU list, contact your next level of support.
  - If you have a new problem, perform problem analysis and repair the new problem.
- 

5. Choose from the following options:

- “Verifying the repair in AIX”
- “Verifying the repair in Linux” on page 203
- “Verifying a repair using an IBM i system or logical partition” on page 204

## Verifying the repair in AIX

You can use this procedure to verify that a repair is complete using the AIX operating system.

Use this maintenance analysis procedure (MAP) to check out the server after a repair is completed.

1. Did you replace a disk drive in the root volume group?

**No** Go to step 3 on page 201.

**Yes** Continue with the next step.

---

2. Run stand-alone diagnostics either from a CD or from a Network Installation Management (NIM) server.

**Did you encounter any problems?**

**No** Reinstall the operating system and continue with step 5.

**Yes** If the original problem still exists, replace the field-replaceable unit (FRU) or perform the isolation procedure that is next in the FRU list. If you have reached the end of the FRU list, contact your next level of support.  
  
If a new problem has occurred, go to Beginning problem analysis.

---

3. Did you replace a FRU with the power turned on and concurrently with system operations?

**No** Go to step 5.

**Yes** Continue with the next step.

---

4. Did you use an AIX diagnostics service aid hot-swap operation to change the FRU?

**Yes** Go to step 6.

**Note:** The AIX diagnostic service aid was used if a resource was removed using the **Hot Plug** task.

**No** Go to step 7.

---

5.

**Note:** If any FRUs have been removed that should be reinstalled, reinstall them now.  
Perform the following steps:

1. If the system is not powered on, power it on now.
2. Perform a slow boot.
3. Wait until the AIX operating system login prompt displays or until system activity on the operator panel or display apparently has stopped.
4. Did you encounter any problems?

**No** Continue at step 6.

**Yes** If the original problem still exists, replace the FRU or perform the isolation procedure that is next in the FRU list. If you have reached the end of the FRU list, contact your next level of support.  
  
If a new problem has occurred, go to Beginning problem analysis.

---

6. If the Resource Repair Action menu is already displayed, go to step 9 on page 202; otherwise, perform the following steps:

1. Log into the operating system either with root authority (if needed, ask the customer to enter the password) or use the CE login.
  2. Enter the `diag -a` command and check for missing resources. Follow any instructions that display. If an SRN displays, suspect a loose card or connection. If no instructions display, no resources were detected as missing. Continue with the next step.
- 

7. Perform the following steps:

1. Enter **diag** at the command prompt.
2. Press **Enter**.
3. Select the **Diagnostics Routines** option.
4. When the Diagnostic Mode Selection menu displays, select **System verification**.
5. When the Diagnostic Selection menu displays, select the **All Resources** option or test the FRUs you exchanged, and any devices that are attached to the FRU(s) you exchanged, by selecting the diagnostics for the individual FRU.

Did the Resource Repair Action menu (801015) display?

**No** Continue with the next step.

**Yes** Go to step 9.

---

8. Did the Testing Complete, no trouble was found menu (801010) display?

**Yes** Use the **Log Repair Action** option, if not previously logged, in the TASK SELECTION menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action.

If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.

**Note:** If the system attention indicator is on, this action will set it back to the normal state.

Go to step 11 on page 203.

**No** If the original problem still exists, replace the FRU or perform the isolation procedure that is next in the FRU list. If you have reached the end of the FRU list, contact your next level of support.

If a new problem has occurred, go to Beginning problem analysis.

---

9. When a test is run on a resource in system verification mode, that resource has an entry in the AIX error log. If the test on that resource was successful, the Resource Repair Action menu displays. After replacing a FRU, you must select the resource for that FRU from the Resource Repair Action menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.

**Note:** If the system attention indicator is on, this action will set it back to the normal state.

Perform the following steps:

1. Select the resource that has been replaced from the Resource Repair Action menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.
2. Press **Commit** after you make your selections.

Did another Resource Repair Action (801015) display?

**No** If the No Trouble Found menu displays, go to step 11 on page 203.

**Yes** Continue with the next step.

---

10. The parent or child of the resource you just replaced might also require that you run the Resource Repair Action service aid on it.

When a test is run on a resource in system verification mode, that resource has an entry in the AIX error log. If the test on the resource was successful, the Resource Repair Action menu displays. After replacing that FRU, you must select the resource for that FRU from the Resource Repair Action menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.

**Note:** If the system attention indicator is on, this action will set it back to the normal state.

Perform the following steps:

1. From the RESOURCE REPAIR ACTION menu, select the parent or child of the resource that has been replaced. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.
  2. Press COMMIT after you make your selections.
  3. If the No Trouble Found menu displays, continue with the next step.
- 
11. If you changed the service processor or network settings, as instructed in previous MAPs, restore the settings to the value they had prior to servicing the system. If you ran stand-alone diagnostics from CD-ROM, remove the stand-alone diagnostics CD-ROM from the system.

**Did you perform service on a RAID subsystem involving changing of the PCI RAID adapter cache card or changing the configuration?**

**Note:** This information does not apply to the PCI-X RAID adapter or cache.

**No**      Go to the close of call procedure.

**Yes**      Continue with the next step.

- 
12. Use the **Recover Options** selection to resolve the RAID configuration. To do this, perform the following steps:
    1. On the PCI SCSI Disk Array Manager display, select **Recovery options**.
    2. If a previous configuration exists on the replacement adapter, this must be cleared. Select **Clear PCI SCSI Adapter Configuration** and press F3.
    3. On the Recovery Options screen, select **Resolve PCI SCSI RAID Adapter Configuration**.
    4. On the Resolve PCI SCSI RAID Adapter Configuration screen, select **Accept Configuration on Drives**.
    5. On the PCI SCSI RAID Adapter selections menu, select the adapter that you changed.
    6. On the next screen, press Enter.
    7. When you see the Are You Sure selection menu, press Enter to continue.
    8. If you see a Failed status message, verify that you selected the correct adapter, and then repeat this procedure. When the recovery is complete, exit the operating system.
    9. Go to the close of call procedure.

## Verifying the repair in Linux

You can use this procedure to verify that a repair is complete using the Linux operating system.

1. Run stand-alone diagnostics from either a CD or from a Network Installation Management (NIM) server. See Running the stand-alone diagnostics from CD-ROM.

**Did you encounter any problems?**

**No** Reboot the operating system and continue with the close of call procedure.

**Yes** If the original problem still exists, replace the field-replaceable unit (FRU) or perform the isolation procedure that is next in the FRU list. If you have reached the end of the FRU list, contact your next level of support.

If a new problem has occurred, go to Beginning problem analysis and repair the new problem.

---

## Verifying a repair using an IBM i system or logical partition

Use this procedure to verify a repair using the IBM i operating system.

1. Was the system powered off during the repair?  
**Yes:** Continue with the next step.  
**No:** Continue with step 3.
2. Perform the following tasks:
  - a. Verify that the power cable is plugged into the power outlet.
  - b. Verify that power is available at the customer's power outlet.
3. Was the partition powered off during the repair?  
**Yes:** Continue with the next step.  
**No:** Continue with step 6.
4. Select the IPL type and mode for the system or logical partition that the customer uses (see IPL type mode and speed options in the Service functions).
5. Start an IPL by powering on the system or partition (see Powering on and powering off). Did the system complete the IPL?  
**Yes:** Continue with the next step.  
**No:** This might be a new problem. Go to the Start of call procedure. **This ends the procedure.**
6. Did the system or partition remain running throughout the repair, and was the I/O processor, I/O adapter, or storage device replaced?  
**Yes:** Continue with step 10.  
**No:** Continue with the next step.
7. Use the service action log or serviceable event view (if the system is managed by an HMC) to look for any reference codes that are related to this IPL (see Using the Service Action Log). Are there any reference codes that are related to this IPL?  
**Yes:** Continue with the next step.  
**No:** If the problem was related to removable media or communications, perform the verification procedures in the Service functions to verify that the problem is corrected. Then return the system to the customer and have the customer verify the system date and time. **This ends the procedure.**
8. Is the new reference code the same as the original reference code?  
**Yes:** Continue with the next step.  
**No:** A new symptom might have occurred. Go to the Start of call procedure. **This ends the procedure.**
9. Are there any other failing items that remain to be replaced?  
**Yes:** Replace the next failing item listed for this reference code. **This ends the procedure.**  
**No:** Contact your next level of support for assistance. **This ends the procedure.**
10. Was concurrent maintenance performed on an optical storage unit?



**Yes:** The product activity log and service action log, in most cases, contain a reference code for the optical storage unit when concurrent maintenance is performed. You can ignore this reference code. Perform the following:

- Perform the verification procedures in the Service functions topic to verify that the problem is corrected.

- Return the system to the customer and have the customer verify the system date and time. **This ends the procedure.**

**No:** Continue with the next step.

11. Use the service action log to look for any new reference codes (see Using the Service Action Log). Are there any new reference codes?

**Yes:** Continue with the next step.

**No:** Go to step 14.

12. Is the new reference code the same as the original reference code?

**Yes:** Continue with the next step.

**No:** A new symptom might have occurred. Go to the Start of call procedure to determine the cause of the problem. **This ends the procedure.**

13. Are there any other failing items that need to be replaced?

**Yes:** Replace the next failing item listed for the reference code. **This ends the procedure..**

**No:** Contact your next level of support for assistance. **This ends the procedure.**

14. Are you working with a tape device?

**Yes:** Perform the verification procedures in the Service functions to verify that the problem is corrected. After the verification test is complete, the tape device description will be set to the failed state because a resource change was detected. Perform the following tasks:

- Vary the tape device description off and then on.

- Return the system to the customer and have the customer verify the system date and time. Then go to Verifying the repair from the HMC. **This ends the procedure.**

**No:** Continue with the next step.

15. Are you working with an IOP or an IOA?

**Yes:** Use the display hardware configuration service function to check for any missing or failed hardware:

- On the command line, enter the STRSST (Start System Service Tools command). If you cannot get to SST, select DST. Do not IPL the system or partition to get to DST.

- On the Start Service Tools Sign On display, enter the user ID with the service authority and password.

- Select **Start a service tool** → **Hardware service manager** → **Logical hardware resources** → **System bus resources**.

- Select the function key for **Include nonreporting resources**.

- If the IOP and IOA that you just replaced is a failed or non-reporting resource, the problem has not been fixed. Continue to the next failing item in the failing item list. **This ends the procedure.**

**No:** Perform the verification procedures in the Service functions topics to verify that the problem is corrected. Resources that usually vary on automatically during an IPL, or that were previously varied on manually, might need to be varied on again after the verification procedures are complete. Return the system to the customer and have the customer verify the system date and time. **This ends the procedure.**

---

## Closing a service call

Perform these procedures to close problem numbers, clear hardware messages, and prepare the server to return to the customer.

Follow this checklist before performing the procedures:

- Return the server to the state that the customer normally uses such as IPL type, IPL mode, and the way the system is configured or partitioned.  
**Attention:** Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.
- While you were performing the problem analysis on the original serviceable event, other serviceable events might have been opened. Close all serviceable events that were opened as a result of your service activity.
- Ensure that server verification has been performed and no problems require additional service actions.
- If the repair was done using the management console online repair procedures, ensure that the original serviceable event is now closed.
  1. Record the system reference code (SRC) or symptom and the location code of the field-replaceable unit (FRU) you replaced, for future reference. Is the server managed by a management console?
    - **Yes:** Continue with the next step.
    - **No:** Do one of the following steps:
      - If the server is managed by Integrated Virtualization Manager (IVM), go to “Closing a service call using Integrated Virtualization Manager” on page 210.
      - If the server is not partitioned and is running the AIX or Linux operating system, go to “Closing a service call using AIX or Linux” on page 214.

- 
2. On the HMC, open **Manage Serviceable Events** and examine the service action event log for any open service action events.

- 
3. Are there any service action events that are open?

- **Yes:** Continue with the next step.
- **No:** If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 218. Return the system to the customer. **This completes the repair.**

- 
4. Record the list of open service action events.

- 
5. From the list of serviceable events recorded in step 4, perform the following step 6 through step 32 on page 209 for each open service action event.

- 
6. Determine the error class of the serviceable event. Record for future use.

- 
7. Examine the details of the open service action event.

Is the error code that is associated with this service action event the same as recorded in Step 1?

- **Yes:** Go to step 11.
  - **No:** Continue with the next step.
- 

8. Examine the FRU list of the service action event. Are any FRUs listed for the service action event?

- **Yes:** Continue with the next step.
  - **No:** Go to step 11.
- 

9. Is the FRU list identical (same FRUs, same number of FRUs, and same order of FRUs) to the FRU list of the error code recorded in step 1 on page 206?

- **Yes:** Go to step 11.
  - **No:** Continue with the next step.
- 

10. The FRU list is different. Is the FRU you replaced and recorded in step 1 on page 206 in the list of FRUs for this service action event?

- **Yes:** Continue with the next step.
  - **No:** Go to step 32 on page 209.  
**Note:** There are service action events that will remain open when you leave this MAP. Further service actions might be required to complete the repair.
- 

11. Examine the details of this service action event, and record the partitions involved in this service action event for use in a later step.

---

12. Is the error code associated with this service action event of the form A11-xxx or A01-xxx?

- **Yes:** Continue with the next step.
  - **No:** Go to step 17.
- 

13. Have you begun a list of Axx partitions from prior service action events that you processed in this maintenance analysis procedure (MAP)?

- **Yes:** Go to step 15.
  - **No:** Continue with the next step.
- 

14. Begin a new list of Axx partitions by copying the list of partitions obtained in step 11. Go to step 16.

---

15. Add the partition list obtained in step 11 to the existing list of Axx partitions obtained from processing previous service action events in this MAP.

---

16. Remove all entries in the list of all partitions you recorded in step 11. If you are referred to the list of partitions obtained in step 11 in future steps, the list is empty. Go to step 17.

---

17. Select and highlight the service action event from the Error Associated With This Serviceable Event window.

---

18. Click **Close Event**.

---

19. Add comments for the serviceable event. Include any unique additional information. Click **OK**. The following steps will add or update FRU information.

---

20. Did you replace, add, or modify a FRU of the open service action event?

- **Yes:** Continue with the next step.
  - **No:** Go to step 22.
- 

21. From the FRU list, select a FRU that you need to update. Double-click the FRU, and update the FRU information. Go to step 23.

---

22. Select the **No FRU Replaced for this Serviceable Event** option.

---

23. Click **OK** to close the service action event.

---

24. Is the list of all partitions you recorded in step 11 on page 207 empty?

- **Yes:** Go to step 32 on page 209.
  - **No:** Continue with the next step.
- 

25. Does the list of all partitions you recorded in step 11 on page 207 contain more than one entry?

- **Yes:** Continue with the next step.
  - **No:** Go to step 32 on page 209.
- 

26. Is the error class recorded in step 25 AIX?

- **Yes:** Continue with the next step.
  - **No:** Go to step 32 on page 209.
- 

27. Perform the following steps for each entry in the list of all partitions you recorded in step 11 on page 207, except the partition you were using to debug the original problem.

---

28. From the HMC virtual terminal window of a partition in the list of all partitions, type `diag` at the AIX command prompt.

---

29. When the diagnostic operating instructions are displayed, do the following steps:

1. Press Enter.
  2. Select the **Task Selection** option.
  3. Select the **Log Repair** option.
  4. Select the resource associated with the repair action. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your repair action is not displayed on the Resource List, select **sysplanar0**.
  5. Click **Commit** after you have made your selection.
- 

**Note:** If the terminal type is not defined, you are prompted to define it before you can proceed.

30. Exit from diagnostics in this partition and return to the AIX prompt.
- 

31. Have all the partitions in the list of all the partitions you recorded in step 11 on page 207 been processed?

- **Yes:** Continue with the next step.
  - **No:** Go to step 24 on page 208 to process the next partition in the list you recorded in step 11 on page 207.
- 

32. Have all the serviceable events recorded in step 4 on page 206 been processed?

- **Yes:** Continue with the next step.
  - **No:** Go to step 5 on page 206 and process the next service action event in the list of serviceable events recorded in step 4 on page 206.
- 

33. While processing all service action events, were you directed to step 14 on page 207?

- **Yes:** Continue with the next step.
  - **No:** If the system attention LED is still on, turn off the LED as described in "Activating and deactivating LEDs" on page 218. Return the system to the customer. **This completes the repair.**  
**Note:** If during the processing of the list of open service action events, some service action events remained open, further service actions might be required to complete the repair.
- 

34. Perform the following steps for each entry in the list of Axx partitions you began recording in step 14 on page 207, except the partition you were using to debug the original problem.
- 

35. From the management console virtual terminal window of a partition in the list of Axx partitions, type `diag` at the AIX command prompt.
- 

36. When the diagnostic operating instructions are displayed, do the following steps:

1. Press Enter.
  2. Select the **Task Selection** option.  
**Note:** If the terminal type is not defined, you are prompted to define it before you can proceed.
  3. Select the **Log Repair** option.
  4. Select the resource associated with the repair action. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your repair action is not displayed on the Resource List, select **sysplanar0**.
  5. Click **Commit** after you have made your selection.
- 

37. Exit from diagnostics in this partition and return to the AIX prompt.

---

38. Have all the partitions in the list of Axx partitions you began recording in step 14 on page 207 been processed?

- **Yes:** Continue with the next step.
  - **No:** Go to step 34 on page 209 to process the next partition in the list you recorded in step 14 on page 207.
- 

39. If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 218. This completes the repair. Return the system to the customer.

**Note:** If during the processing of the list of open service action events, some service action events remained open, further service actions might be required to complete the repair.

---

## Closing a service call using Integrated Virtualization Manager

Perform these procedures to close problem numbers, clear hardware messages, and prepare the server to return to the customer.

Follow this checklist before performing the procedures:

- Return the server to the state that the customer normally uses, such as IPL type, IPL mode, and the way the system is configured or partitioned.  
**Attention:** Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.
  - While you were performing the problem analysis on the original serviceable event, other serviceable-event numbers might have been opened. Close all serviceable events that were opened as a result of your service activity.
  - Ensure that server verification has been performed and there are no problems that require additional service actions.
  - If the repair was done using the Integrated Virtualization Manager (IVM) online repair procedures, ensure that the original serviceable event is now closed.
    1. Record the system reference code (SRC) or symptom and the location code of the field-replaceable unit (FRU) you replaced, for future reference.
- 

2. On the IVM, open **Manage Serviceable Events** and look at existing serviceable events.

---

3. Are there any service action events that are open?

- **Yes:** Continue with the next step.
  - **No:** If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 218. Return the system to the customer. **This completes the repair.**
- 

4. Record the list of open service action events.

---

5. From the list of serviceable events recorded in step 4, perform step 6 through step 30 on page 213 for each open service action event.

---

6. Determine the error class of the serviceable event. Record for future use.

---

7. Examine the details of the open service action event.

Is the error code associated with this service action event the same as recorded in step 1 on page 210?

- **Yes:** Go to step 11.
  - **No:** Continue with the next step.
- 

8. Examine the FRU list of the service action event. Are any FRUs listed for the service action event?

- **Yes:** Continue with the next step.
  - **No:** Go to step 11.
- 

9. Is the FRU list identical (same FRUs, same number of FRUs, and same order of FRUs) to the FRU list of the error code recorded in step 1 on page 210?

- **Yes:** Go to step 11.
  - **No:** Continue with the next step.
- 

10. Is the FRU you replaced and recorded in step 1 on page 210 in the list of FRUs for this service action event?

- **Yes:** Continue with the next step.
  - **No:** Go to step 30 on page 213.  
**Note:** There are service action events that will remain open when you leave this MAP. Further service actions might be required to complete the repair.
- 

11. Examine the details of this service action event, and record the partitions involved in this service action event for use in a later step.

---

12. Is the error code associated with this service action event of the form A11-xxx or A01-xxx?

---

- **Yes:** Continue with the next step.
  - **No:** Go to step 17.
- 

13. Have you begun a list of *Axx* partitions from prior service action events that you processed in this maintenance analysis procedure (MAP)?

- **Yes:** Go to step 15.
  - **No:** Continue with the next step.
- 

14. Begin a new list of *Axx* partitions by copying the list of partitions obtained in step 11 on page 211. Go to step 16.

---

15. Add the partition list obtained in step 11 on page 211 to the existing list of *Axx* partitions obtained from processing previous service action events in this MAP.

---

16. Remove all entries in the list of all partitions you recorded in step 11 on page 211. If you are referred to the list of partitions obtained in step 11 on page 211 in future steps, the list is empty. Go to step 17.

---

17. Select and highlight the service action event from the Manage Serviceable Events window.

---

18. Click **Close Event**.

---

19. Add comments for the serviceable event. Include any unique additional information. Click **OK**.

---

20. Add or update FRU information:

Did you replace, add, or modify a FRU of the open service action event?

- **Yes:** Continue with the next step.
  - **No:** Go to step 22.
- 

21. Click **OK** to close the service action event.

---

22. Is the list of all partitions you recorded in step 11 on page 211 empty?

- **Yes:** Go to step 30 on page 213.
  - **No:** Continue with the next step.
- 

23. Does the list of all partitions you recorded in step 11 on page 211 contain more than one entry?



- **Yes:** Continue with the next step.
  - **No:** Go to step 30.
- 

24. Is the error class recorded in step 23 on page 212?

- **Yes:** Continue with the next step.
  - **No:** Go to step 30.
- 

25. Perform the following steps for each entry in the list of all partitions you recorded in step 11 on page 211, except the partition you were using to debug the original problem.

---

26. From the IVM virtual terminal window of a partition in the list of all partitions, type `diag` at the AIX command prompt.

---

27. When the diagnostic operating instructions are displayed, do the following steps:

1. Press Enter.
  2. Select the **Task Selection** option.
  3. Select the **Log Repair** option.
  4. Select the resource associated with the repair action. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your repair action is not displayed on the Resource List, select **sysplanar0**.
  5. Click **Commit** after you have made your selection.
- 

**Note:** If the terminal type is not defined, you are prompted to define it before you can proceed.

28. Exit from diagnostics in this partition and return to the AIX prompt.

---

29. Have all the partitions in the list of all partitions you recorded in step 11 on page 211 been processed?

- **Yes:** Continue with the next step.
  - **No:** Go to step 25 to process the next partition in the list you recorded in step 11 on page 211.
- 

30. Have all the serviceable events recorded in step 4 on page 211 been processed?

- **Yes:** Continue with the next step.
  - **No:** Go to step 5 on page 211 and process the next service action event in the list of serviceable events recorded in step 4 on page 211.
- 

31. While processing all service action events, were you directed to step 14 on page 212?

- **Yes:** Continue with the next step.
  - **No:** If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 218. Return the system to the customer. **This completes the repair.**  
**Note:** If during the processing of the list of open service action events, some service action events remained open, further service actions might be required to complete the repair.
-

32. Perform the following steps for each entry in the list of Axx partitions you began recording in step 14 on page 212, except the partition you were using to debug the original problem.

---

33. From the IVM virtual terminal window of a partition in the list of Axx partitions, type `diag` at the AIX command prompt.

---

34. When the diagnostic operating instructions are displayed, do the following steps:

1. Press Enter.
  2. Select the **Task Selection** option.  
**Note:** If the terminal type is not defined, you are prompted to define it before you can proceed.
  3. Select the **Log Repair** option.
  4. Select the resource associated with the repair action. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your repair action is not displayed on the Resource List, select **sysplanar0**.
  5. Click **Commit** after you have made your selection.
- 

35. Exit from diagnostics in this partition and return to the AIX prompt.

---

36. Have all the partitions in the list of Axx partitions you began recording in step 14 on page 212 been processed?

- **Yes:** Continue with the next step.
  - **No:** Go to step 32 to process the next partition in the list you recorded in step 14 on page 212.
- 

37. If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 218. This completes the repair. Return the system to the customer.

**Note:** If, during the processing of the list of open service action events, some service action events remained open, further service actions might be required to complete the repair.

---

## Closing a service call using AIX or Linux

If the server is not connected to an management console and not using Integrated Virtualization Manager (IVM), perform these procedures to close problem numbers, clear hardware messages, and prepare the server to return to the customer.

Follow this checklist before performing the procedures:

- Return the server to the state that the customer normally uses, such as IPL type, IPL mode, and the way the system is configured or partitioned.  
**Attention:** Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.
- While you were performing the problem analysis on the original serviceable event, other serviceable-event numbers might have been opened. Close all serviceable events that were opened as a result of your service activity.

- Ensure that server verification has been performed and that no problems require additional service actions.
- If the repair was done using the IVM online repair procedures, ensure that the original serviceable event is now closed.

1. Did you use an AIX diagnostics service aid hot-swap operation to change the FRU?

- **Yes:** Go to step 4
  - **No:** Continue with the next step.
- 

2. Do you have any field-replaceable units (FRUs) (for example cards, adapters, cables, or devices) that were removed during problem analysis that you want to put back into the system?

**Note:** If the system planar or battery has been replaced and you are loading diagnostics from a server over a network, it might be necessary for the customer to set the network boot information for this system before diagnostics can be loaded. The system time and date information should also be set when the repair is completed.

- **Yes:** Reinstall all of the FRUs that were removed during problem analysis. Go to step 3
  - **No:** Continue with the next step.
- 

3. Is the system or logical partition that you are performing a repair action on running the AIX operating system?

- **Yes:** Continue with the next step.
  - **No:** Go to step 5.
- 

4. Does the system or logical partition you are performing a repair action on have AIX installed?

**Note:** Answer no to this question if you have just replaced a hard disk in the root volume group.

- **Yes:** Go to step 7 on page 216.
  - **No:** Continue with the next step.
- 

5. Run stand-alone diagnostics in problem determination mode from either a CD-ROM or from a Network Installation Management (NIM) server.

**Note:** For instructions on running stand-alone diagnostics from a CD and not using an HMC, go to Running the stand-alone diagnostics from CD on a server without an HMC attached.

For instructions on running stand-alone diagnostics from a NIM server, go to Running the stand-alone diagnostics from a Network Installation Management server.

Did you encounter any problems?

- **Yes:** Go to problem analysis.
  - **No:** Continue with the next step.
- 

6. The system hardware is functioning correctly.

If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 218.

**This completes the repair.**

**Note:** If, during the processing of the list of open service action events, some service action events remained open, further service actions might be required to complete the repair.

Return the server to the state that the customer normally uses, such as IPL type, IPL mode, and the way the system is configured or partitioned. This might require you to reboot the operating system.

**Attention:** Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.

---

7. Complete the following steps:

1. If the system supports slow boot (see Performing a slow boot), do a slow boot on the system. If the system does not support slow boot, do a normal boot.
2. Power on the system.
3. Wait until the AIX operating system login prompt displays or until system activity on the operator panel or display apparently has stopped.

Did the AIX Login Prompt display?

- **Yes:** Continue with the next step.
  - **No:** Go to problem analysis.
- 

8. If the Resource Repair Action menu is already displayed, go to 12 on page 217; otherwise, do the following steps:

1. Log into the operating system, either with root authority (if needed, ask the customer to enter the password) or use the CE login.
  2. Enter the `diag -a` command and check for missing resources. Follow any instructions that display. If a system request number (SRN) displays, suspect a loose card or connection. If no instructions display, no resources were detected as missing. Continue with 9.
- 

9. Complete the following steps:

1. Enter `diag` at the command prompt.
2. Press Enter.
3. Select the **Diagnostics Routines** option.
4. When the Diagnostic Mode Selection menu displays, select **Problem determination**.
5. When the Advanced Diagnostic Selection menu displays, select the **All Resources** option, or test the FRUs you exchanged, and any devices that are attached to the FRUs you exchanged, by selecting the diagnostics for the individual FRU.

Did the Resource Repair Action menu (801015) display?

- **Yes:** Go to step 13.
  - **No:** Continue with the next step.
- 

10. Did the TESTING COMPLETE, no trouble was found menu (801010) display?

- **Yes:** Continue with the next step.
  - **No:** There is still a problem. Go to problem analysis.
- 

11. Use the **Log Repair Action** option, if not previously logged, in the TASK SELECTION menu to update the AIX error log. If the repair action was reseating a cable or adapter, select the resource associated with that repair action.

If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.

**Note:** If the system attention indicator is on, this will set it back to the normal state. Go to step 14 on page 218.

---

12. When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the Resource Repair Action menu displays.

After replacing a FRU, you must select the resource for that FRU from the Resource Repair Action menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.

**Note:** If the system attention indicator is on, this action will set it back to the normal state.

Do the following steps:

1. Select the resource that has been replaced from the Resource Repair Action menu. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.
2. Press **Commit** after you make your selections.

Did another Resource Repair Action (801015) display?

- **Yes:** Continue with the next step.
  - **No:** If the No Trouble Found menu displays, go to step 14 on page 218.
- 

13. The parent or child of the resource you just replaced might also require that you run the Resource Repair Action service aid on it.

When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the Resource Repair Action menu displays.

After replacing that FRU, you must select the resource for that FRU from the Resource Repair Action menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.

**Note:** If the system attention indicator is on, this action will set it back to the normal state.

Do the following steps:

1. From the Resource Repair Action menu, select the parent or child of the resource that has been replaced. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.
2. Press COMMIT after you make your selections.

Did the No Trouble Found menu display?

- **Yes:** Continue with the next step.
  - **No:** Go to problem analysis.
- 

14. If you changed the service processor or network settings, as instructed in previous MAPs, restore the settings to the value they had prior to servicing the system. If you ran stand-alone diagnostics from CD-ROM, remove the stand-alone diagnostics CD-ROM from the system.

Did you perform service on a RAID subsystem involving changing of the PCI RAID adapter cache card or changing the configuration?

**Note:** This does not refer to the PCI-X RAID adapter or cache.

- **Yes:** Continue with the next step.
  - **No:** Go to step 16.
- 

15. Use the **Recover Options** selection to resolve the RAID configuration. To do this, do the following steps:

1. On the PCI SCSI Disk Array Manager dialog, select **Recovery options**.
  2. If a previous configuration exists on the replacement adapter, this must be cleared. Select **Clear PCI SCSI Adapter Configuration** and press F3.
  3. On the Recovery Options dialog, select **Resolve PCI SCSI RAID Adapter Configuration**.
  4. On the Resolve PCI SCSI RAID Adapter Configuration dialog, select **Accept Configuration on Drives**.
  5. On the PCI SCSI RAID Adapter selections menu, select the adapter that you changed.
  6. On the next dialog, press Enter.
  7. When you see the Are You Sure selection menu, press Enter to continue.
  8. You should see an OK status message when the recover is complete. If you get a Failed status message, verify that you selected the correct adapter, and then repeat this procedure. When recover is complete, exit the operating system.
  9. Go to 16.
- 

16. The system hardware is functioning correctly. Return the server to the state that the customer normally uses, such as IPL type, IPL mode, and the way the system is configured or partitioned.

**Attention:** Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.

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## Activating and deactivating LEDs

You can use these procedures to activate or deactivate light-emitting diodes (LEDs) using the management console or the Advanced System Management Interface (ASMI).

For IBM Power Systems™ servers that contain the POWER7® processor, the LEDs can be used to identify or verify a part that you are servicing. The error and identify function (amber) LED indicates an error and corresponds to the location code in the system reference code (SRC). The LED is activated and deactivated automatically.

Additionally, the following procedures can also be used to activate and deactivate LEDs.

- “Deactivating a system attention LED or partition LED using the management console”
- “Activating or deactivating an identify LED using the management console”
- “Deactivating a system attention LED or logical partition LED using the Advanced System Management Interface” on page 220
- “Activating or deactivating an identify LED using the Advanced System Management Interface” on page 221

### **Deactivating a system attention LED or partition LED using the management console**

You can deactivate a system attention LED or a logical partition LED if you decide that a problem is not a high priority and you decide to repair the problem at a later time. You can do this task from the Hardware Management Console (HMC) or the IBM Systems Director Management Console (SDMC).

If you want to be alerted if another problem occurs, you must deactivate the system attention LED so that it can be activated again if another problem occurs.

To deactivate a system attention LED by using HMC, complete the following steps:

1. In the navigation area, open **Systems management**.
2. Select the server you are working on by checking the box next to its name.
3. Open **Operations**.
4. Open **LED Status**.
5. Select **View System Attention**. The system attention LED window opens. The selected system and its LED state are displayed in the upper part of the window. The logical partition and its LED state are displayed in the lower part of the window. From the system attention LED window, you can deactivate both the system attention LED and the logical partition LED.
6. Select **Deactivate System Attention LED** from the Action menu. A confirmation window is displayed that provides the following information:
  - A verification that the system attention LED was deactivated.
  - An indication that there still might be open problems within the system.
  - An indication that you cannot activate the system attention LED.
7. Select one of the logical partitions in the lower table, and select **Deactivate partition LED** from the Partition Operations menu. A confirmation window is displayed that provides the following information:
  - A verification that the logical partition LED was deactivated.
  - An indication that there still might be open problems within the logical partition.
  - An indication that you cannot activate the logical partition LED.

To deactivate a system attention LED by using SDMC, complete the following steps:

1. On the **Welcome** page, under the **Resources** tab, select the server.
2. Click **Actions > Service and Support > Hardware > System Attention LED**.
3. Click **OK**.

### **Activating or deactivating an identify LED using the management console**

You can activate or deactivate an identify LED for components attached to the system from the Hardware Management Console (HMC) or the IBM Systems Director Management Console (SDMC).

The system provides several LEDs that help identify various components, such as enclosures or field-replaceable units (FRUs), in the system. For this reason, they are called *identify LEDs*.

You can activate or deactivate the following types of identify LEDs:

- **Identify LED for an enclosure** If you want to add an adapter to a specific drawer (enclosure), you need to know the machine type, model, and serial number (MTMS) of the drawer. To determine whether you have the correct MTMS for the drawer that needs the new adapter, you can activate the LED for a drawer and verify that the MTMS corresponds to the drawer that requires the new adapter.
- **Identify LED for a FRU associated with a specified enclosure** If you want to hook up a cable to a specific I/O adapter, you can activate the LED for the adapter, which is a field replaceable unit (FRU), and then physically check to see where you should hook up the cable. This is especially useful when you have several adapters with open ports.

To activate or deactivate an identify LED for an enclosure or FRU by using the HMC, follow these steps:

1. In the navigation area, open **Systems management**.
2. Select the server you are working on.
3. Click **Operations** → **LED Status** → **Identify LED**. The Identify LED, Select Enclosure window opens.
4. To activate or deactivate an identify LED for an enclosure, select an enclosure from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.
5. To activate or deactivate an identify LED for a FRU, select an enclosure from the table, and then select **Selected** → **List FRUs**.
6. Select one or more FRUs from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.

To activate or deactivate an identify LED for an enclosure or FRU by using the SDMC, complete these steps:

1. On the **Welcome** page, under the **Resources** tab, select the server.
2. Click **Actions** > **Service and Support** > **Hardware** > **Identify LED**.
3. To activate or deactivate an identify LED for an enclosure, select an enclosure from the table, and click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.
4. To activate or deactivate an identify LED for a FRU, select an enclosure from the table, and then click **List FRUs**.
5. Select one or more FRUs from the table, and then click either **Activate LED** or **Deactivate LED**. The associated LED is either turned on or off.

## Deactivating a system attention LED or logical partition LED using the Advanced System Management Interface

You can deactivate a system attention LED or a logical partition LED using the Advanced System Management Interface (ASMI).

The system attention indicator provides a visual signal that the system as a whole requires attention or service. Each system has a single system attention indicator. When an event occurs that either needs your intervention or that of service and support, the system attention indicator lights continuously. The system attention indicator is turned on when an entry is made in the service processor error log. The error entry is transmitted to the system error log and the operating system error log.

To perform this operation, your authority level must be one of the following levels:

- Administrator
- Authorized service provider

To turn off the system attention indicator, do the following steps:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.



2. In the navigation area, expand **System Configuration** → **Service Indicators** → **System Attention Indicator**.
3. In the right pane, click **Turn off system attention indicator**. If the attempt is unsuccessful, an error message is displayed.

### **Activating or deactivating an identify LED using the Advanced System Management Interface**

You can activate or deactivate an identify LED using the Advanced System Management Interface (ASMI).

You can specify the location code of any indicator to view or modify its current state. If you provide the wrong location code, the advanced system manager attempts to go to the next higher level of the location code.

The next level is the base-level location code for that field replaceable unit (FRU). For example, a user types the location code for the FRU located on the second I/O slot of the third enclosure in the system. If the location code for the second I/O slot is incorrect (the FRU does not exist at this location), an attempt to set the indicator for the third enclosure is initiated. This process continues until a FRU is located or no other level is available.

To perform this operation, your authority level must be one of the following levels:

- Administrator
- Authorized service provider

To change the current state of an indicator, do the following steps:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log In**.
2. In the navigation area, expand **System Configuration** → **Service Indicators** → **Indicators by Location code**.
3. In the right pane, enter the location code of the FRU and click **Continue**.
4. Select the preferred state from the list.
5. Click **Save settings**.



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European Community contact:  
IBM Deutschland GmbH  
Technical Regulations, Department M456  
IBM-Allee 1, 71139 Ehningen, Germany  
Tele: +49 7032 15-2937  
email: tjahn@de.ibm.com

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台北市松仁路7號3樓  
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Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:  
International Business Machines Corp.  
New Orchard Road  
Armonk, New York 10504  
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:  
IBM Deutschland GmbH  
Technical Regulations, Abteilung M456  
IBM-Allee 1, 71139 Ehningen, Germany  
Tel: +49 7032 15-2937  
email: tjahn@de.ibm.com

Generelle Informationen:

**Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.**

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**ВНИМАНИЕ! Настоящее изделие относится к классу А.  
В жилых помещениях оно может создавать  
радиопомехи, для снижения которых необходимы  
дополнительные меры**

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