



Power Systems

IBM Power 550 Express

(8204-E8A and 9409-M50)

removal and replacement procedures





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Note

Before using this information and the product it supports, read the information in “Notices,” on page 203, “Safety notices” on page v, the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125-5823.

This edition applies to IBM Power Systems™ servers that contain the POWER6® processor and to all associated models.

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

Laser compliance

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 metalically 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 metalically 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.

Chapter 1. Removing and replacing FRUs

Use these procedures to remove and replace failing parts.

Before you begin a replacement, perform these tasks:

1. If you are performing a replacement procedure that might put your data at risk, ensure, if possible, that you have a current backup of your system or logical partition (including operating systems, licensed programs, and data).
2. Review the installation or replacement procedure for the feature or part.
3. 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.
4. Ensure that you have access to a medium, flat-blade screwdriver.
5. If parts are incorrect, missing, or visibly damaged, contact the provider of your parts, or your next level of support.

Note: 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.

Attention:

Failure to follow the step-by-step sequence for FRU removal and installation may result in FRU or system damage.

Use the following precautions whenever you handle electronic components or cables.

- The electrostatic discharge (ESD) kit and the ESD wrist strap must be used when handling logic cards, SCMs, MCMs, electronic boards, and disk drives.
- Keep all electronic components in the shipping container or envelope until you are ready to install them.
- If you remove, then reinstall an electronic component, temporarily place the component on an ESD pad or blanket.

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 may also be referred to as the service processor menus.

To access the ASMI, refer to *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

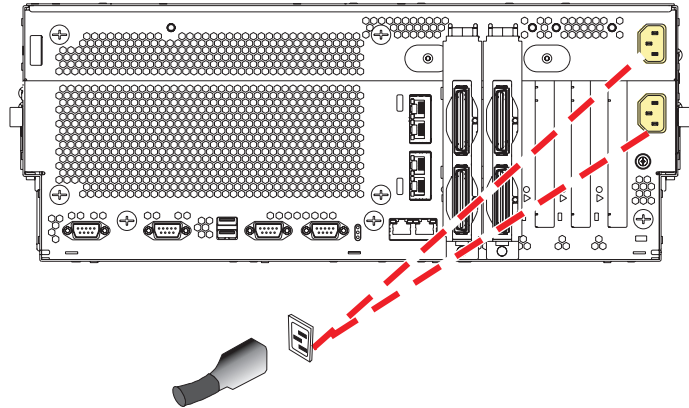
1. Check and record the admin user ID's password.
 2. Check and record the server firmware level prior to replacing this FRU. You may need to update the system to the latest server firmware code level after you replace this FRU.
 3. Check and record the service processor settings you previously set using Advanced System Management (ASM). This can be done using a Hardware Management Console (HMC) or PC to access ASM. You will need to reset these service processor settings after you replace this FRU or the default settings will be used. Settings to record include the following:
 - 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
 4. Record any service processor settings you may have set using operating system commands.
-

3. Power off the unit

Power should be removed from the unit containing the battery. If this unit is powered on, power it off now.

4. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

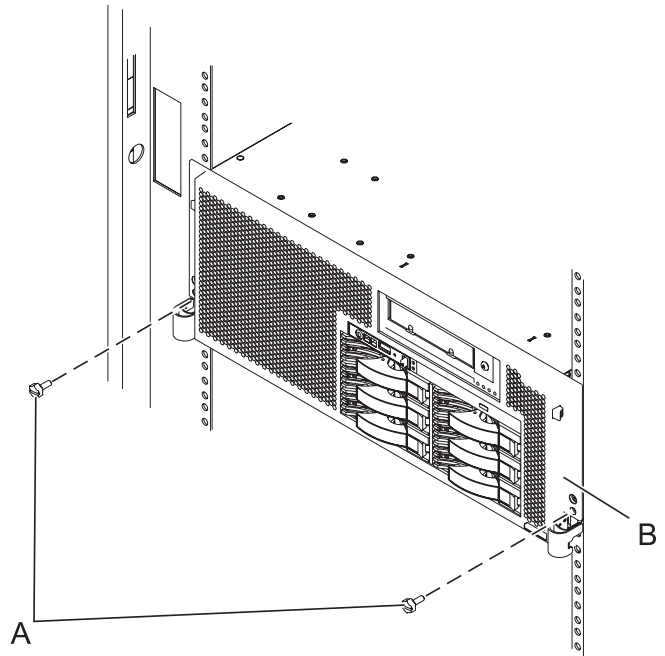


1. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

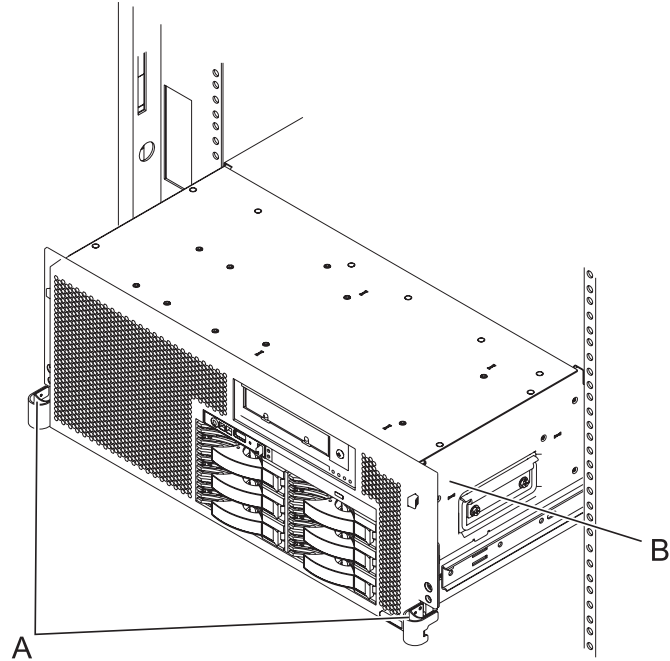


2. Place into service position (continued)

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.

Notes:

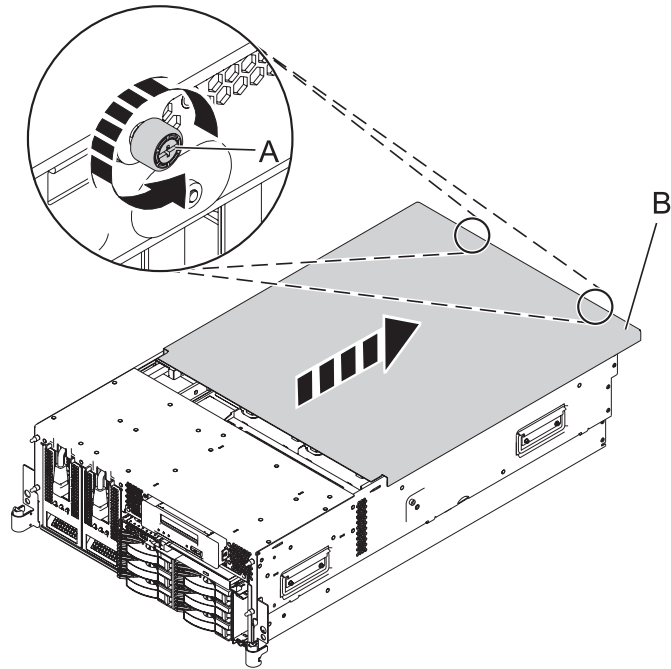
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



3. Remove the service access cover

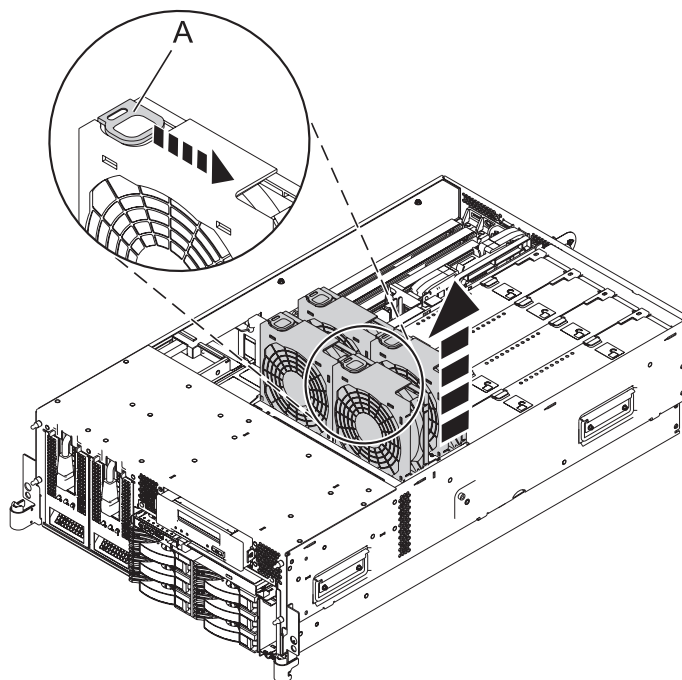
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



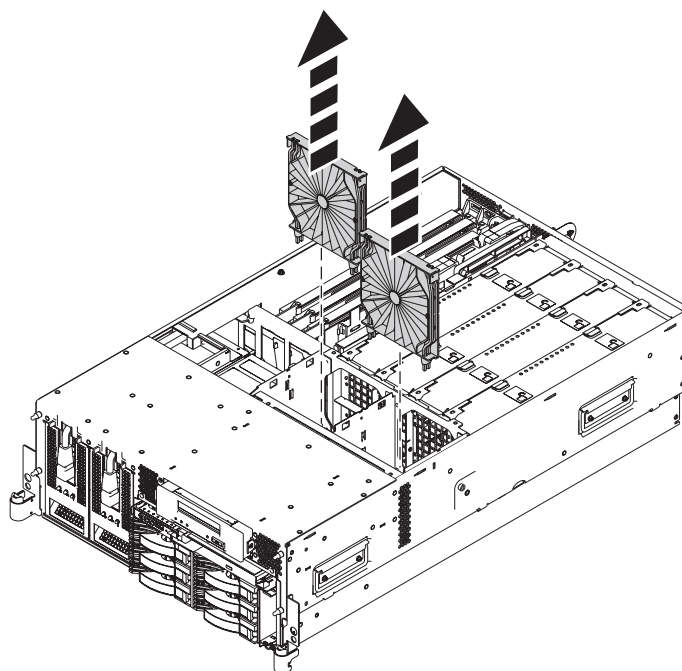
4. Remove the fans

1. While squeezing the latch **(A)**, reach through the hole of the fan and pull the fan out of the fan cage.
2. Repeat these steps until all system fans are removed from the fan cage.



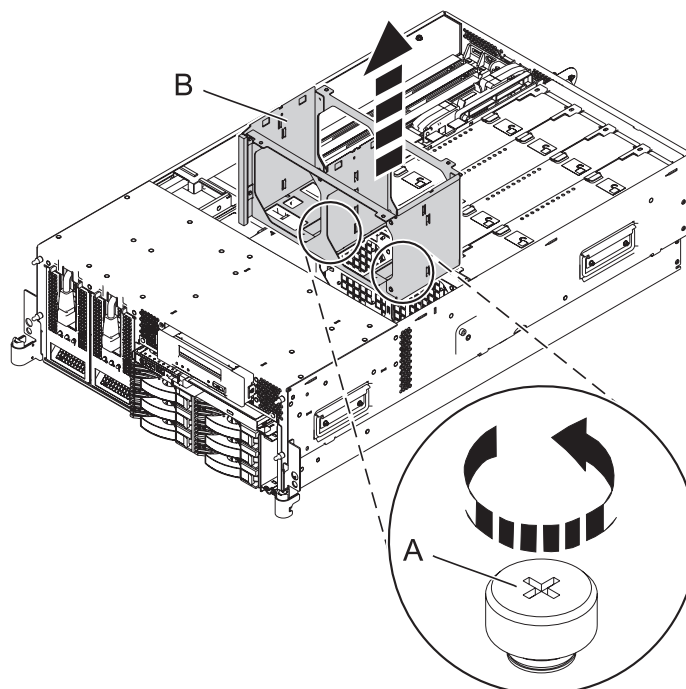
5. Remove the air baffles

Grasp the air baffles and pull them out of the fan cage.



6. 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.



7. Remove the time-of-day battery

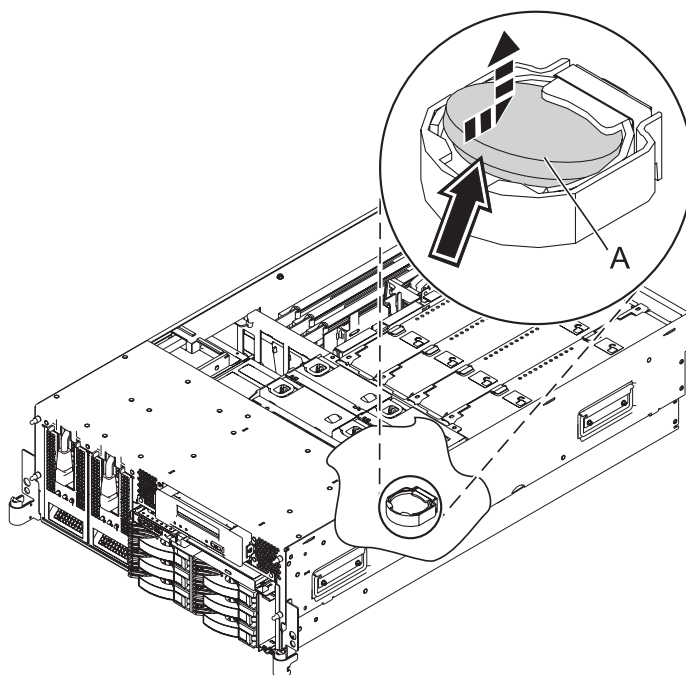
Remove the time-of-day battery (A) from the system backplane.

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

Do not:

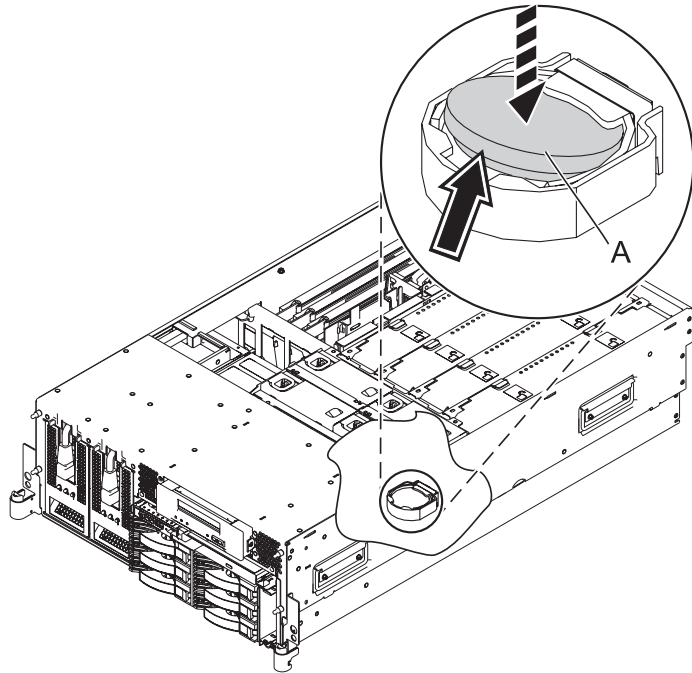
- Throw or immerse into water.
- Heat to more than 100 degrees C (212 degrees F).
- Repair or disassemble.

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C003)



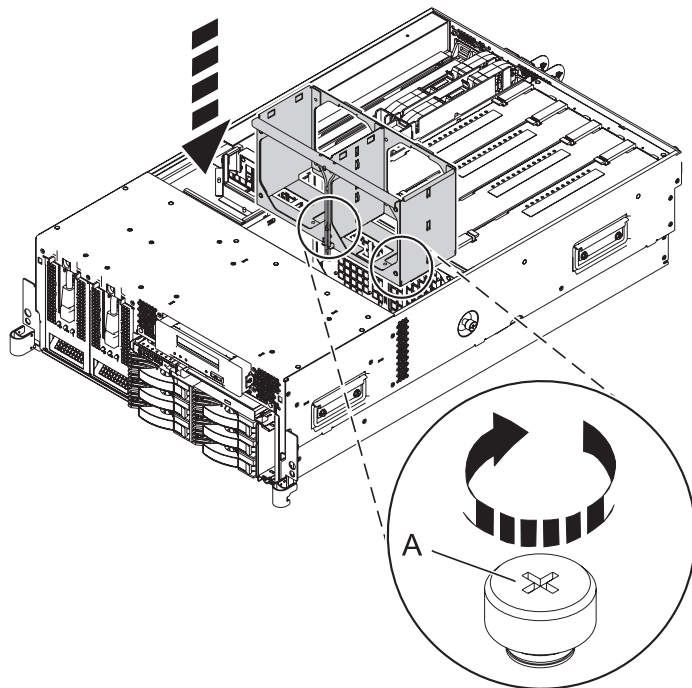
8. Install the time-of-day battery

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



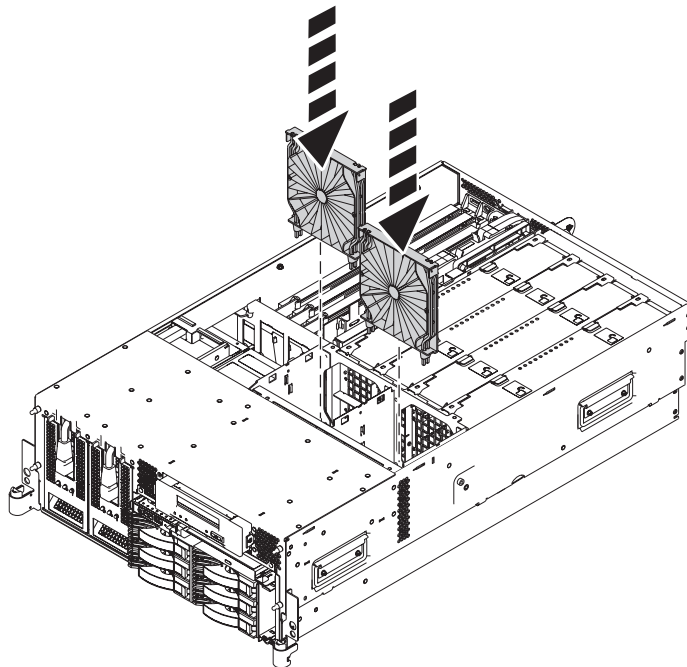
9. Install the fan cage

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.



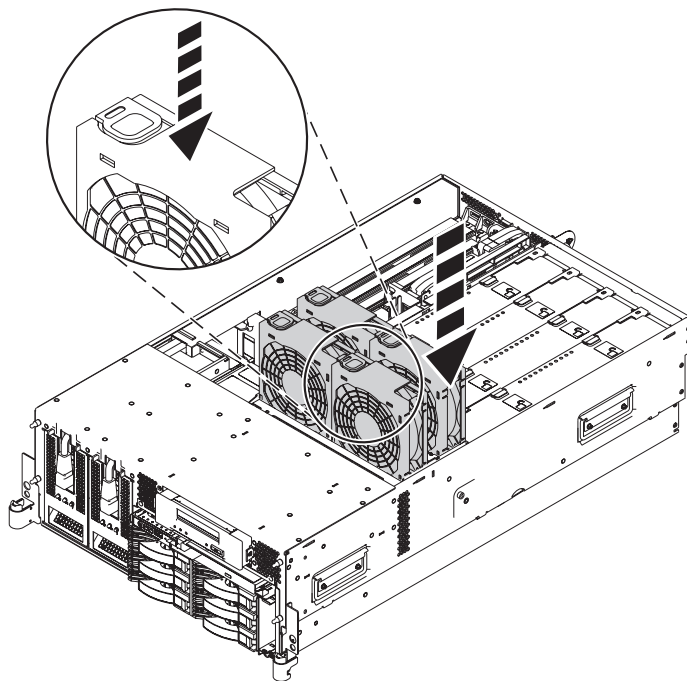
10. Install the air baffles

1. Lower the air baffles into their location in the fan cage.
2. Push down on the air baffles until they lock into place.



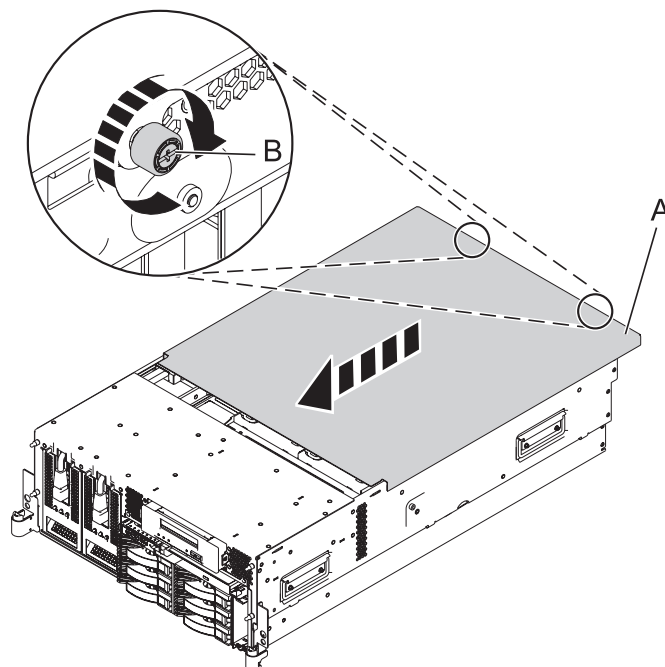
11. Install the fans

1. Lower the fan into its location in the fan cage.
2. Push down on the fan until it locks into place.
3. Repeat these steps until all system fans are installed.



12. Install the service access cover

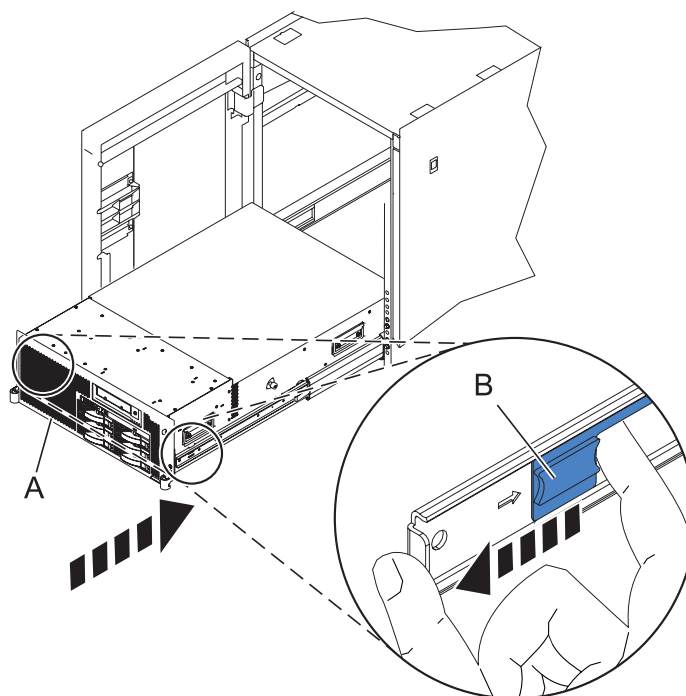
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



13. Place into operating position

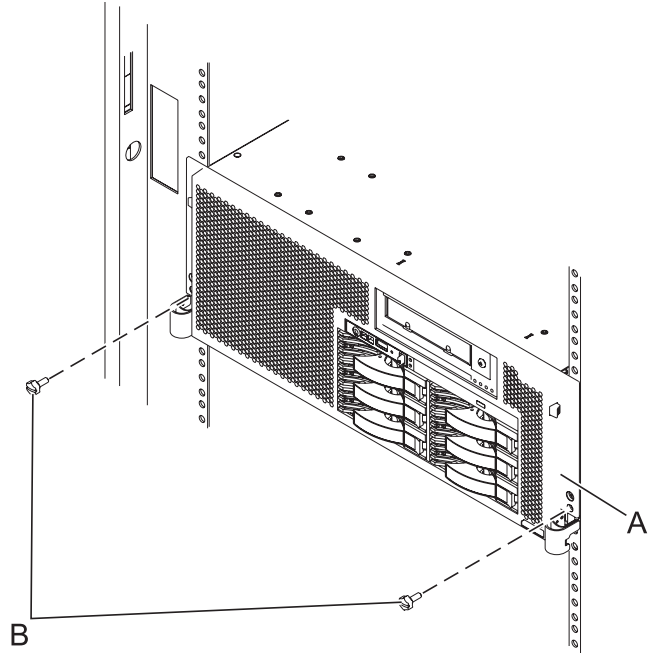
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



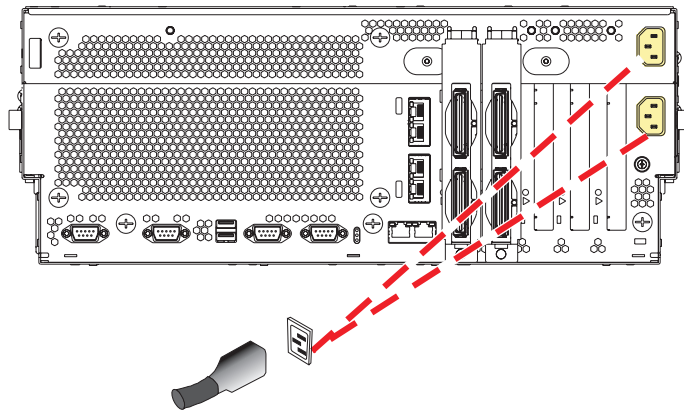
14. Place into operating position (continued)

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



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.

Power on the system.

17. Restore network connectivity

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

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 19.
---	----------------

18. Restore service processor settings

Enable network access to the service processor by doing the following:

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. Do the following:

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 21.	Go to step 23 on page 12

19. Restore service processor settings

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

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>
 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 on 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.
-

20. 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 24 on page 12

21. 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 may also be referred to as the service processor menus.

To access the ASMI, refer to *Accessing the Advanced System Management Interface*.

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

22.

Go to step 26.

23. Restore service processor settings

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

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 21 on page 11

24. 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 pressing the pin-hole switch on the control panel.

25.

Go to step 17 on page 10.

26. 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.

27. 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 MachineType-Model#-Serial# format.

To change the system name, do the following:

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 HMC, is used to change the system name, the status frame does not reflect the change.

28. Restore service processor settings

Set the time of day.

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, seconds).
 3. Change either the date value or the time value or both, and click **Update Time Of Day**.
-

29. 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.
-

30. Restore service processor settings

1. Reset any service processor settings that you may have set using operating system commands. You recorded these settings at the beginning of this procedure.
 2. If you choose to reset the HMC access password, do the following:
 3.
 - a. From the HMC GUI (preferred method):
 - b.
 - Expand the **Systems Management** folder in the navigation tree pane.
 - Expand the **Servers** folder.
 - Select the server to be powered off. A list of server-related tasks will display in the **Tasks** pane.
 - Expand the **Configuration** folder in the **Tasks** pane.
 - Under the **Configuration** folder, click the **Update Managed System Password** task.
 - c. Or, from the HMC command line, type:
 - d. `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.
-

31. Recover partition data on the FSP

Profile data stored in the managed server has been cleared or corrupted.

To recover profile data using the HMC, do the following:

- 1. Expand the **Systems Management** folder in the navigation tree pane.
 - 2. Double click on the **Servers** folder.
 - 3. Use the checkbox to select a server.
 - 4. Click on the **Tasks** drop-down menu that appears on the table toolbar.
 - 5. From the menu, select **Recover Partition Data**.
-

32.

Go to Verifying a repair.

Cache battery pack

Use this procedure to service the cache battery pack.

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 machine off, power it on before you continue.

2.

Select your operating system:

AIX®	Linux	IBM i
↓	Go to step 5 on page 15.	Go to step 7 on page 16.

3. Force the cache battery pack into an error state using the AIX operating system

To force the cache battery pack into an error state (to prevent possible data loss), do the following steps:

1. Navigate to the IBM SAS Disk Array Manager by using the following steps:
2.
 - At the command prompt, type `smi t`, and press Enter.
 - Select **Devices**.
 - Select **Disk Array**.
 - Select **IBM SAS Disk Array**.
 - Select **IBM SAS Disk Array Manager** from the menu with options for configuring and managing the IBM SAS RAID Controller.
3. Select **Diagnostics and Recovery Options**.
4. Select **Controller Rechargeable Battery Maintenance**.
5. Select **Force Controller Rechargeable Battery Error**.
6. Select the **IBM SAS RAID Controller** whose battery you want to replace.
7. **Note:** Using this option places the battery into the error state, which requires it to be replaced.
8. Press Enter.
9. Determine that it is safe to replace the Cache Battery Pack. Refer to **Displaying Rechargeable Battery Information** below. It is safe to replace the Cache Battery Pack when Yes is displayed next to Battery pack can be safely replaced. You may need to reselect the option to **Display Controller Rechargeable Battery Information** multiple times as it may take several minutes before it is safe to replace the Cache Battery Pack.

Displaying rechargeable battery information

1. Navigate to the IBM SAS Disk Array Manager by using the steps above.
 2. Select **Diagnostics and Recovery Options**.
 3. Select **Controller Rechargeable Battery Maintenance**.
 4. Select **Display Controller Rechargeable Battery Information**.
 5. Select the **IBM SAS RAID Controller**.
-

4.

Go to step 8 on page 16.

5. **Force the cache battery pack into an error state using the Linux operating system**

To force the cache battery pack into an error state (to prevent possible data loss), do the following steps:

1. Run the iprconfig utility by typing `iprconfig`.
2. Select **Work with disk unit recovery**.
3. Select **Work with resources containing cache battery packs**.
4. Select your adapter and type 2. Then press Enter to force the battery error.
Note: Using this option places the battery into the error state, which requires it to be replaced.
5. 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.
6. Determine that it is safe to replace the Cache Battery Pack. Refer to **Displaying rechargeable battery information** below.
7. It is safe to replace the Cache Battery Pack when Yes is displayed next to Battery pack can be safely replaced. You may need to reselect the option to **Display Controller Rechargeable Battery Information** multiple times as it may take several minutes before it is safe to replace the Cache Battery Pack.

Displaying rechargeable battery information

1. Navigate to the **IBM SAS Disk Array Manager** by using the steps above.
2. Select **Diagnostics and Recovery Options**
3. Select **Controller Rechargeable Battery Maintenance**.
4. Select **Display Controller Rechargeable Battery Information**.
5. Select the **IBM SAS RAID Controller**.

6.

Go to step 8.

7. Force the cache battery pack into an error state on using the IBM i operating system

To force the cache battery pack into an error state in order to prevent possible data loss, proceed as follows on the system or partition containing the adapter:

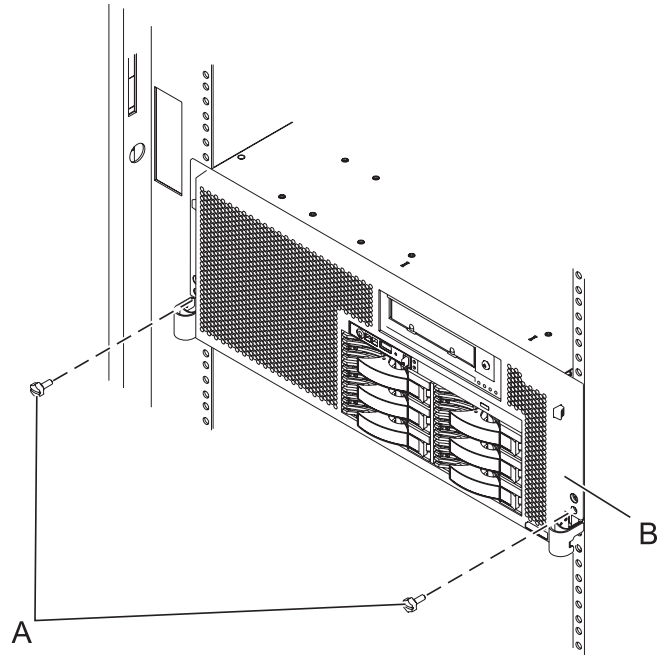
1. Be sure that you are signed on to the system with at least service level authority.
2. Type `strsst` on the command line and press Enter.
3. Type your service tools userid and service tools password on the **System Service Tools (SST) Sign On** display. Press Enter.
4. Select **Start a Service Tool** from the **System Service Tools (SST)** display. Press Enter.
5. Select **Hardware Service Manager** from the **Start a Service Tool** display. Press Enter.
6. Select **Work with resources containing cache battery packs** from the **Hardware Service Manager** display. Press Enter.
7. Select **Force battery pack into error state** for the I/O card you are working with from the **Work with Resources containing cache battery packs** display. Press Enter.
8. 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.
9. 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**. **Note:** This may take several minutes and you may need to press the refresh key to see the field update.

8. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

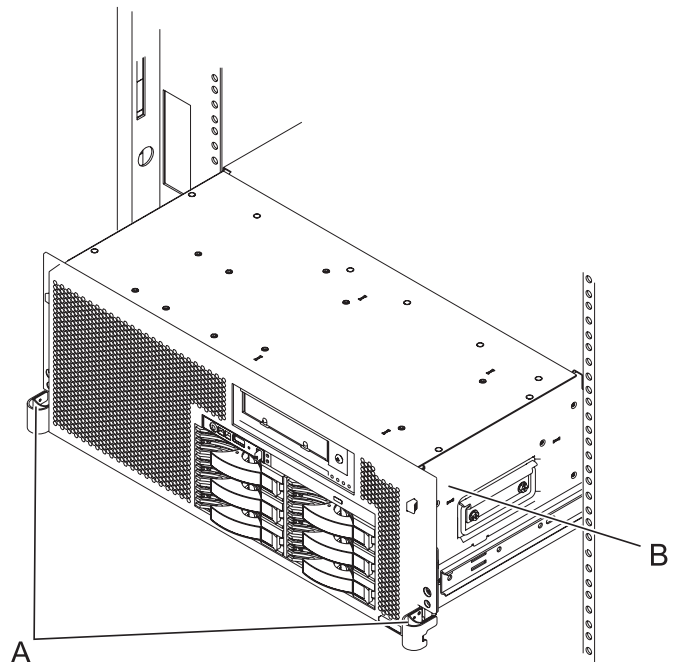


9. Place into service position (continued)

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.

Notes:

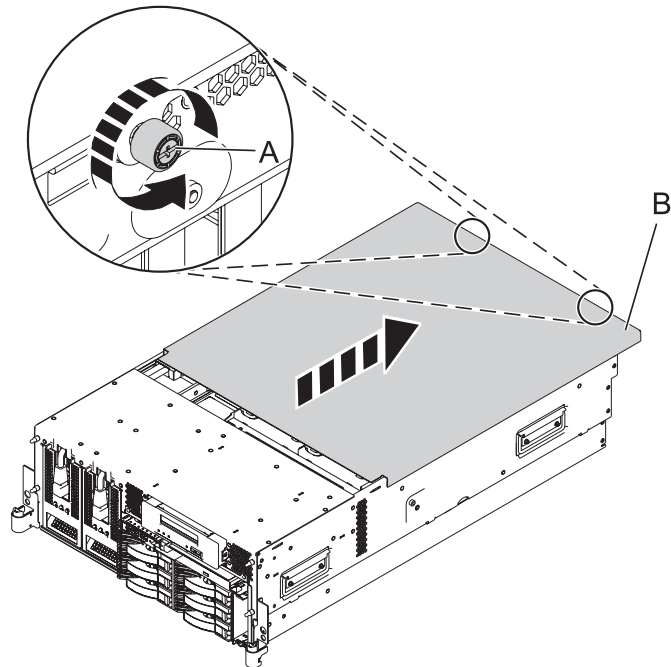
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



10. Remove the service access cover

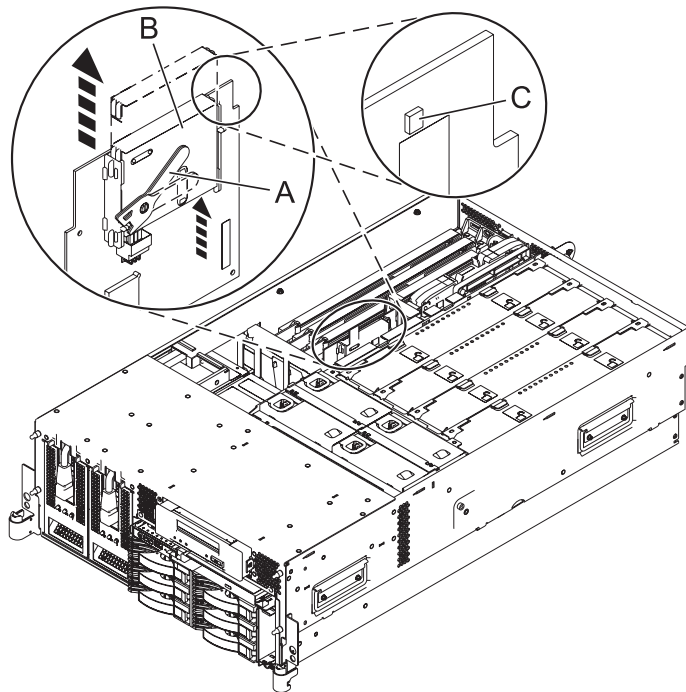
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



11. Check cache battery LED

Examine the LED on the cache battery pack. It is located in area C in the graphic to the right.

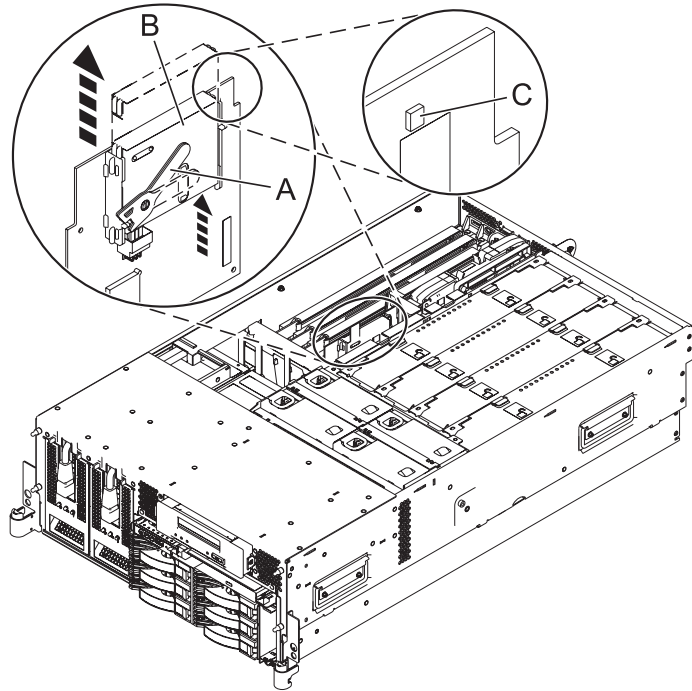


Is the cache battery LED flashing?

Yes, the LED is flashing	No, the LED is not flashing
↓	Go to step 13

12. Stop removing the cache battery pack

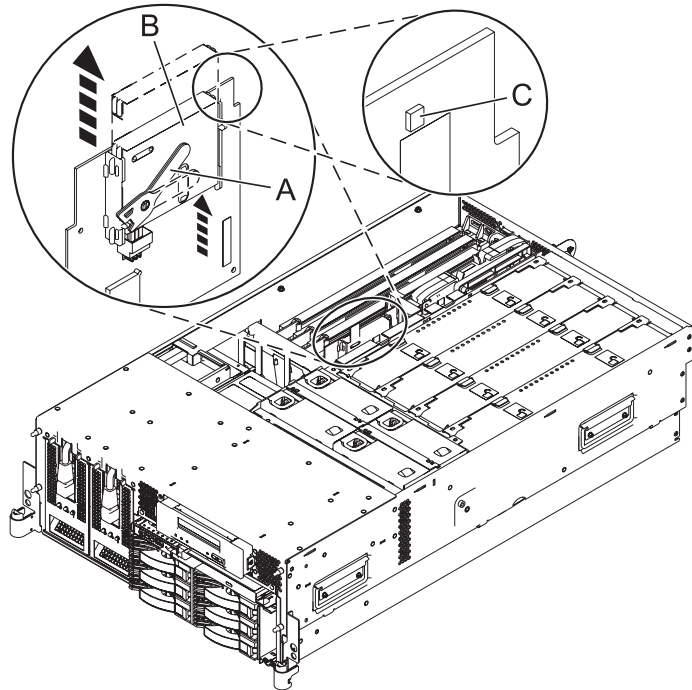
The flashing LED indicates that there is cached data on the battery that has not been saved. This data will be lost if the battery is removed at this time. Please complete this service procedure without replacing the battery, then retry it to ensure all cache data is saved before the battery is replaced.



Go to step 15.

13. Remove the cache battery pack

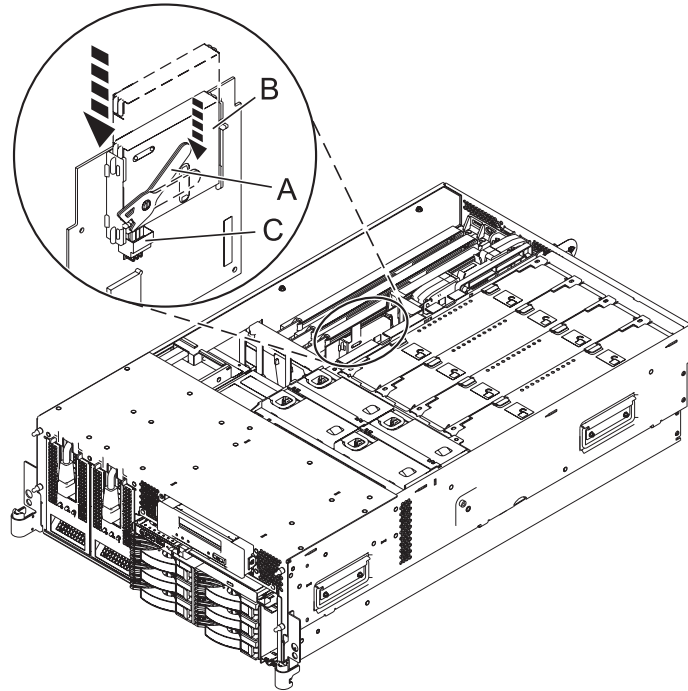
1. While applying pressure downward on the card to ensure that it remains seated, move the cache battery lever (A) away from the connector to disengage the battery from the connector.
2. Slide the cache battery pack (B) out of the mounting guides and remove it from the controller.
3. **Attention:** Do not remove battery if LED (C) is flashing; cache data exists.



14. Install the cache battery pack

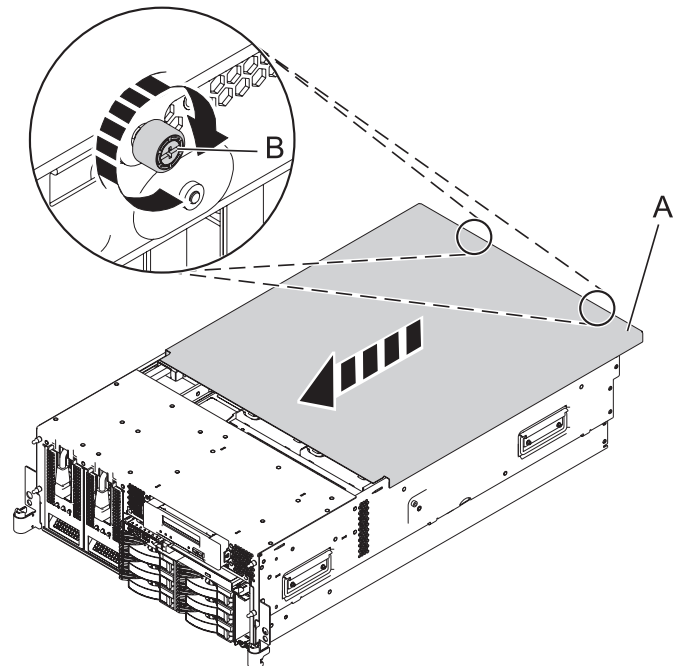
Note: Ensure that the cache battery pack is disconnected for at least **60** seconds before connecting the new battery. This is the minimum amount of time needed for the card to recognize that the battery has been replaced.

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



15. Install the service access cover

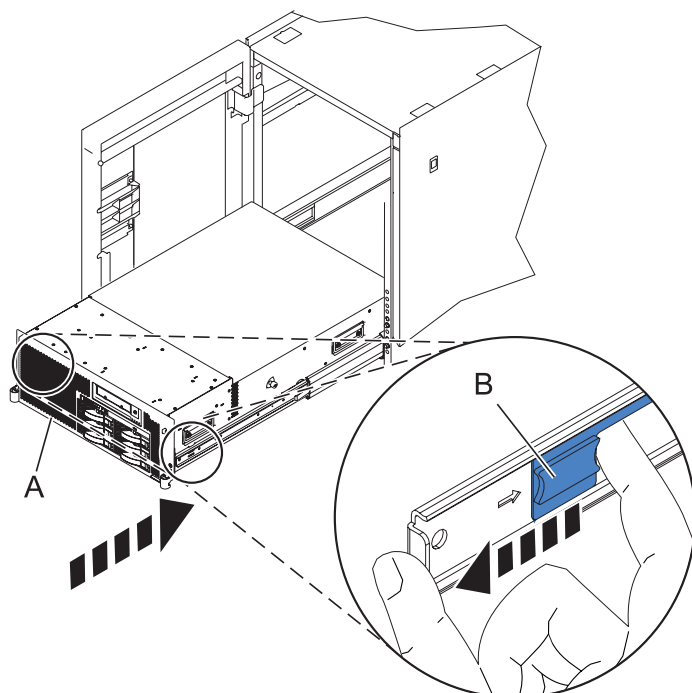
1. Place the service access cover (**A**) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



16. Place into operating position

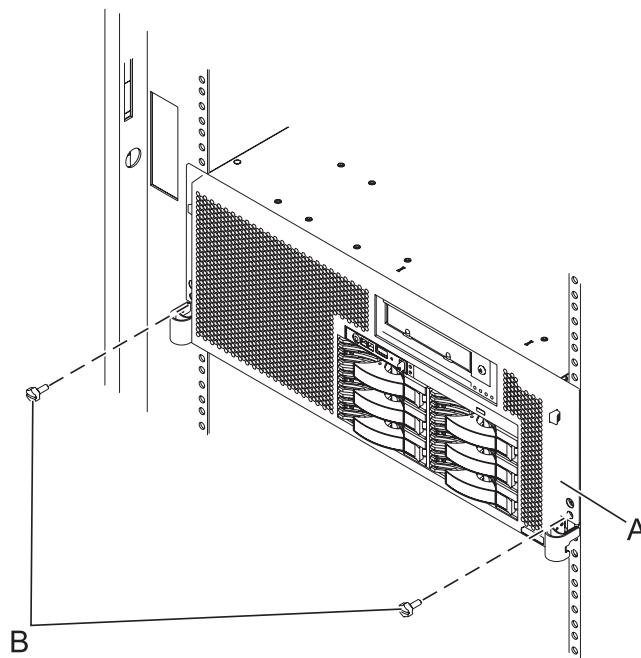
1. To unlock the rail safety latches (**B**), slide the latches towards the front of the system.
2. Push the system unit (**A**) back into the rack until both system-unit release latches have locked into position.

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



17. Place into operating position (continued)

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



18. Close the back door

Close the back rack door on the unit you are servicing.

19.

Was the cache battery LED flashing during steps 11 and 12 of this procedure?

Yes, the LED was flashing. Do not restart the adapter's write cache.

No, the LED was not flashing. Restart the adapter's write cache.
Go to step 2 on page 14 or contact your next level of support.

20. Restart the adapter's write cache by doing the following steps:

Select your operating system:

- AIX: Go to step 21.
 - Linux: Go to step 22.
 - IBM i: Go to step 23.
-

21. Perform the following steps:

- Navigate to the IBM SAS Disk Array Manager by using the information in step 3a.
 - Select **Diagnostics and Recovery Options**.
 - Select **Controller Rechargeable Battery Maintenance**.
 - Select **Start Adapter Cache**.
 - Select the controller with the battery you just replaced and press Enter.
 - Go to Chapter 2, "Verifying a repair," on page 179.
-

22. Perform the following steps:

- Run the iprconfig utility by typing iprconfig.
 - Select **Work with disk unit recovery**.
 - Select **Work with resources containing cache battery packs**.
 - Start the I/O adapter cache on the adapter for the battery that you just replaced by typing 3 and press Enter.
 - Go to Chapter 2, "Verifying a repair," on page 179.
-

23. Perform the following steps:

- 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.
 - Ensure that you get the message Cache was started.
 - Go to Chapter 2, "Verifying a repair," on page 179.
-

Control panel

Use this procedure to service the control panel.

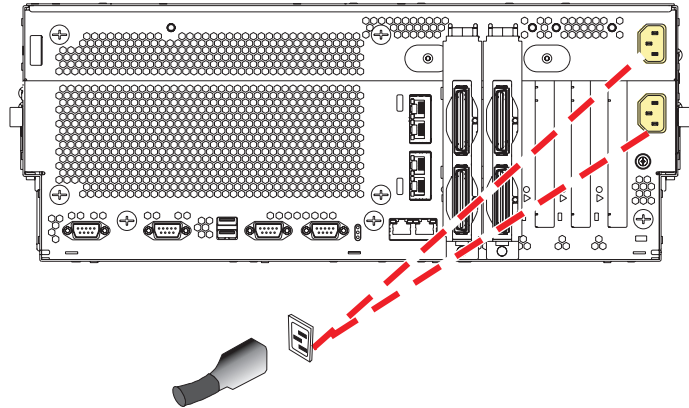
Note: If you need instructions on how to use the control panel function keys, see Control panel concepts.

1. Power off the unit

Power should be removed from the unit containing the control panel. If this unit is powered on, power it off now.

2. Disconnect the power cords

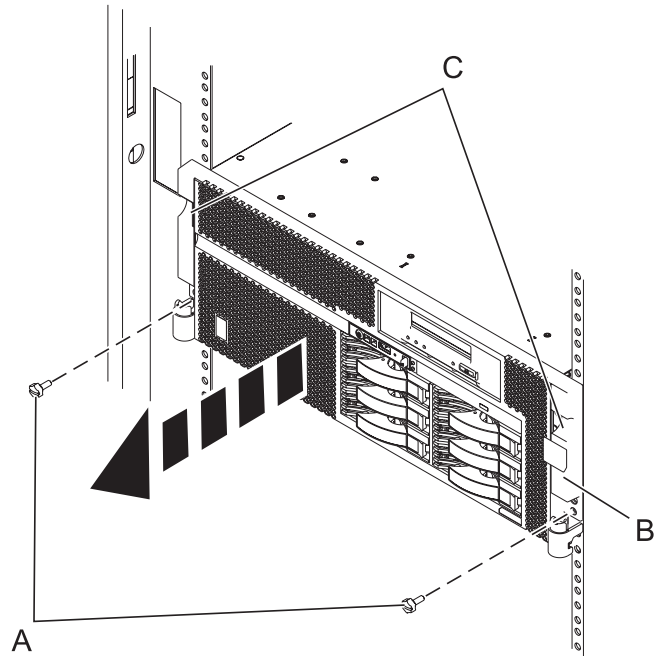
Disconnect all power cords from the unit you are servicing.



3. Remove the front cover

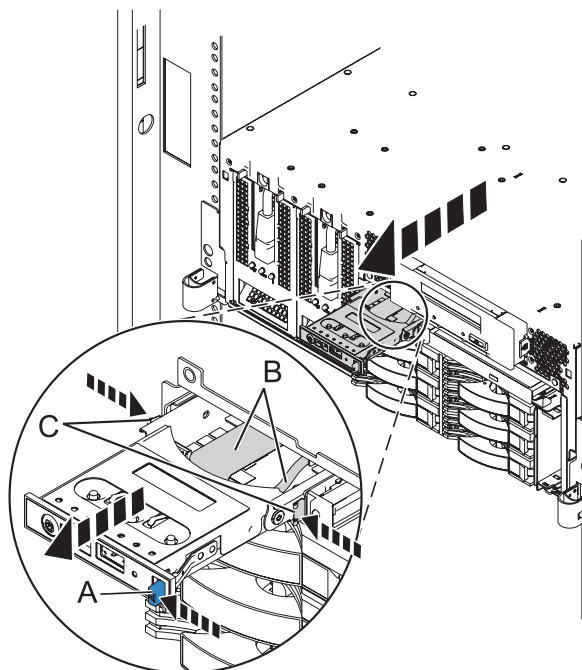
Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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



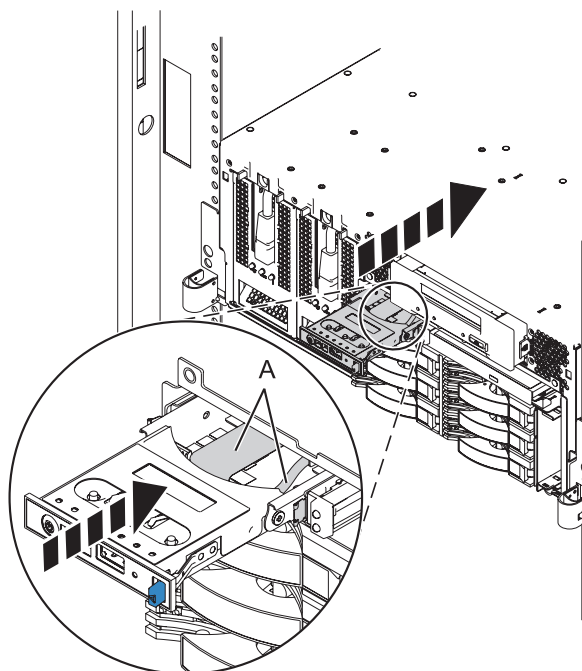
4. Remove the control panel

1. Release the control panel by pressing the release tab (A) to the left.
2. Grasp the edges of the control panel and pull it partially out of the bay.
3. Disconnect the control panel cables (B) from the control panel.
4. Press the release tabs (C) inward and pull the control panel completely out of the bay.



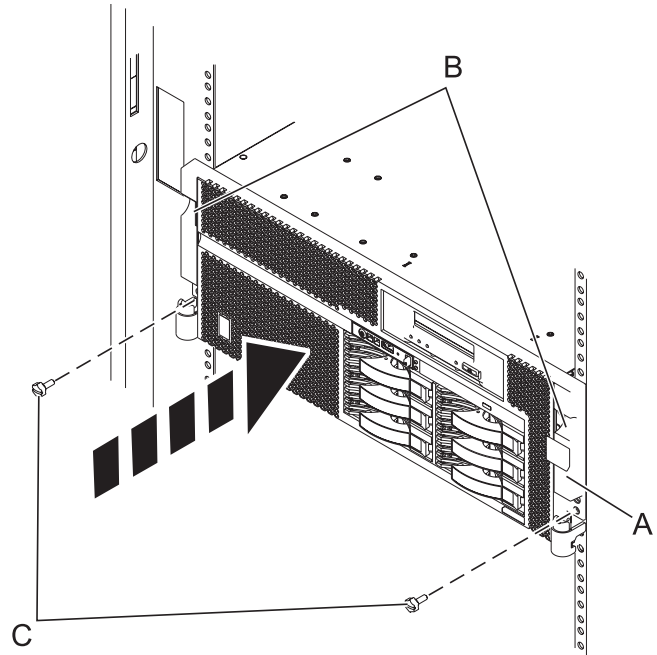
5. Install the control panel

1. Carefully slide the control panel partially into the control panel bay.
2. Connect the control panel cables (A) to the control panel.
3. Continue sliding the control panel into the bay until you feel the control panel lock into place.



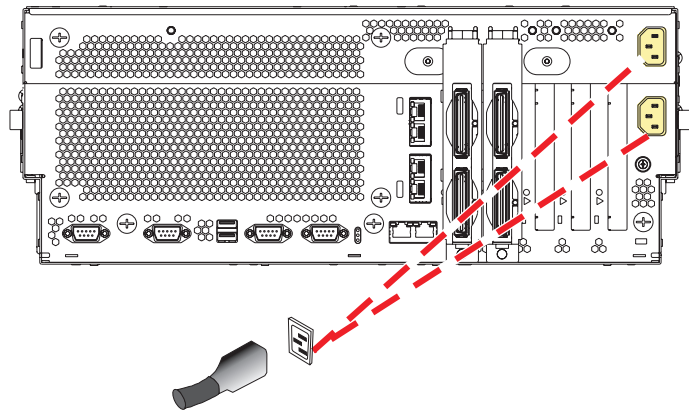
6. Install the front cover

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 following figure. The latches should hold the cover in place.
3. Tighten the thumbscrews.
4. Close the front rack door.



7. Connect the power cords

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



8.

Go to Verifying a repair.

Disk drive

Use this procedure to replace the disk drive.

Your system can be powered off or powered on when you replace the disk drive. Do one of the following:

- If the operating system is not running, or if the disk drive to be replaced is in the AIX or Linux root volume group (rootvg) and it is not protected with either a Redundant Array of Independent Disks (RAID) or mirroring, use the procedure for replacing the disk drive with the power off. The power-off procedures are also known as *nonconcurrent* in the following information.
 - If the operating system is running, and if the disk drive to be replaced is in not the AIX or Linux root volume group (rootvg) and it is protected with either a Redundant Array of Independent Disks (RAID) or mirroring, you can replace a disk drive with the power on. The power-on procedures are also known as *concurrent* in the following information.
-

1.

Do you want to replace the disk drive concurrently with system operations and the unit powered on?

Yes

No

↓

Go to “Replacing the disk drive nonconcurrently” on page 35.

2.

Choose the procedure that is appropriate for the operating system running in the partition that the disk drive resource is assigned to.

For AIX, go to “Replacing the disk drive using AIX.”

For Linux, go to “Replacing the disk drive using Linux” on page 29.

Replacing the disk drive using AIX

Use this procedure to remove and replace a disk drive concurrently using AIX.

1.

Remove the disk drive as a resource:

1. Log in as root user or use CE Login.
2. At the command line, type **diag** and press Enter.
3. Press Enter to continue.
4. On the Function Selection display, select **Task Selection**.
5. Select **Hot Plug Task**.
6. Select SCSI and SCSI RAID Hot Plug Manager.
7. Select **Identify a Device Attached to SCSI Hot Swap Enclosure Device**.
8. Select the disk drive you want to remove and press Enter.

The disk drive slot enters the identify state. The concurrent maintenance light for the slot begins flashing. The following figure shows the locations of the concurrent maintenance lights. Verify that the flashing light corresponds to the location for the disk drive you want to remove, and press Enter.

The disk drive slot exits the identify state.

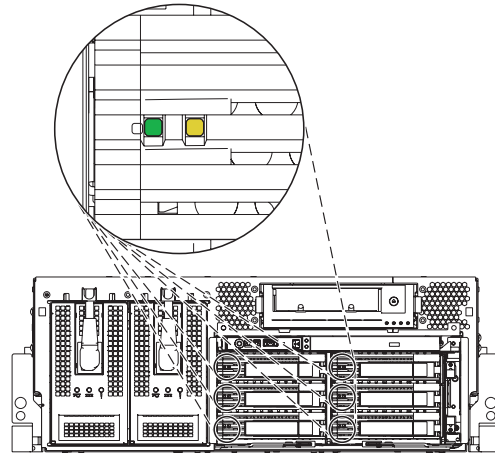
Press **F3** to return to SCSI and SCSI Raid Hot Plug Manager.

9. Select **Replace/Remove a Device Attached to an SCSI Hot Swap Enclosure Device**.

A list of the disk drives that you can remove is shown. If the disk drive you want to remove does not appear on the list, ask your system administrator to put the disk drive in the failed state before continuing with this procedure. For information, see **AIX System Management Guide: Operating System and Devices**.

10. Select the disk drive you want to remove and press Enter.

The disk drive slot enters the remove state and power is removed from the slot. The concurrent maintenance light for the slot begins flashing rapidly.

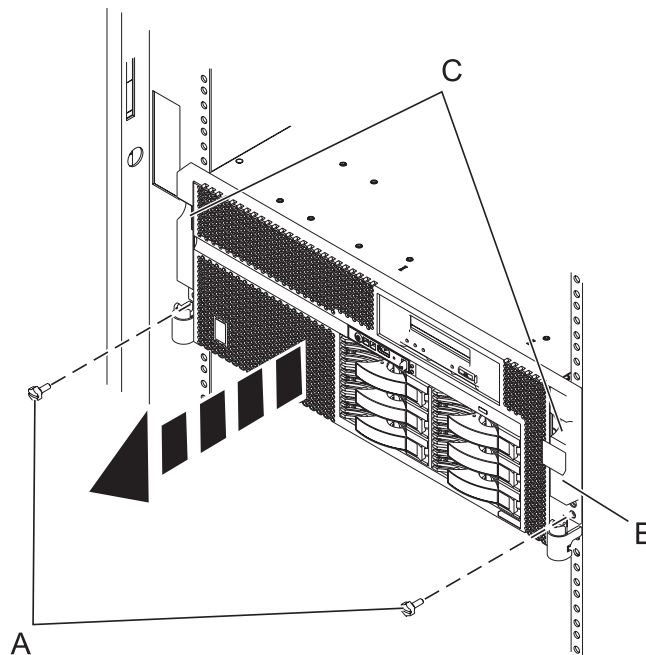


Note: If the disk drive slot is not in the Remove state, contact your next level of support.

2. Remove the front cover

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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

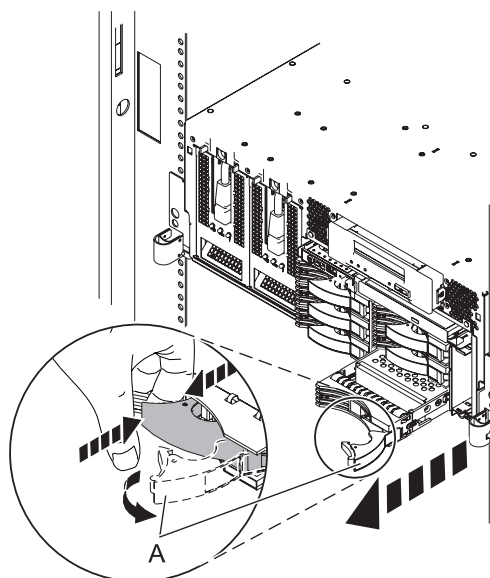


3.

Remove the disk drive:

1. Unlock the disk drive handle (A) and pull the disk drive out toward you as shown.
2. Support the bottom of the disk drive as you slide it out of the system unit. Do not hold the disk drive by the handle.

The concurrent maintenance light for the slot turns off when you remove the disk drive.

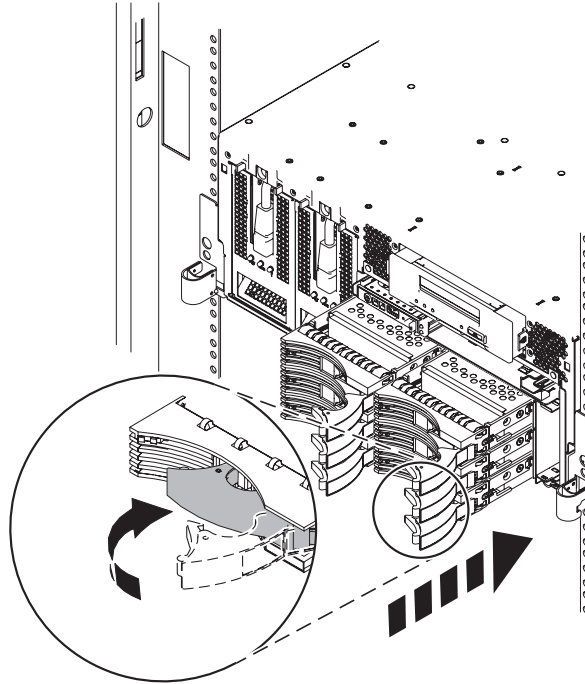


4.

Install the disk drive:

1. Support the bottom of the disk drive as you align it with the guide rails in the system unit. Do not hold the disk drive by the handle.
2. Slide the disk drive into the system until it stops.
3. Push the disk drive handle in until it locks.

Note: When you install a disk drive, ensure that the drive is fully seated and all the way into the system.



5.

Add the new disk drive as a resource:

1. Press Enter.
The disk drive slot exits the remove state and enters the normal state.
2. Exit to the SCSI and SCSI RAID Hot-Plug Manager menu. Press the F3 or ESC 3 key to return.
3. Exit to the Task selection display.
4. Select **Log Repair Action**.
5. Select the disk drive that you replaced and then press Enter.
6. Select **Commit** after you have made your selection and then press Enter.
7. Exit to the command line.

6.

To rebuild data on the replacement disk drive, refer to the information in the **AIX System Management Guide: Operating System and Devices**.

-
7. Go to Verifying a repair. **This completes this procedure.**

Replacing the disk drive using Linux

Use this procedure to replace a disk drive in a location that is controlled by a system or logical partition that is running Linux.

Preparing to remove the disk drive

1. Log in as root user.
2. Type `iprconfig` on the command line of the Linux session and press Enter.
The IBM Power RAID Configuration Utility display is shown.
3. Select **Analyze log**. Press Enter. The Kernel Messages Log display is shown.

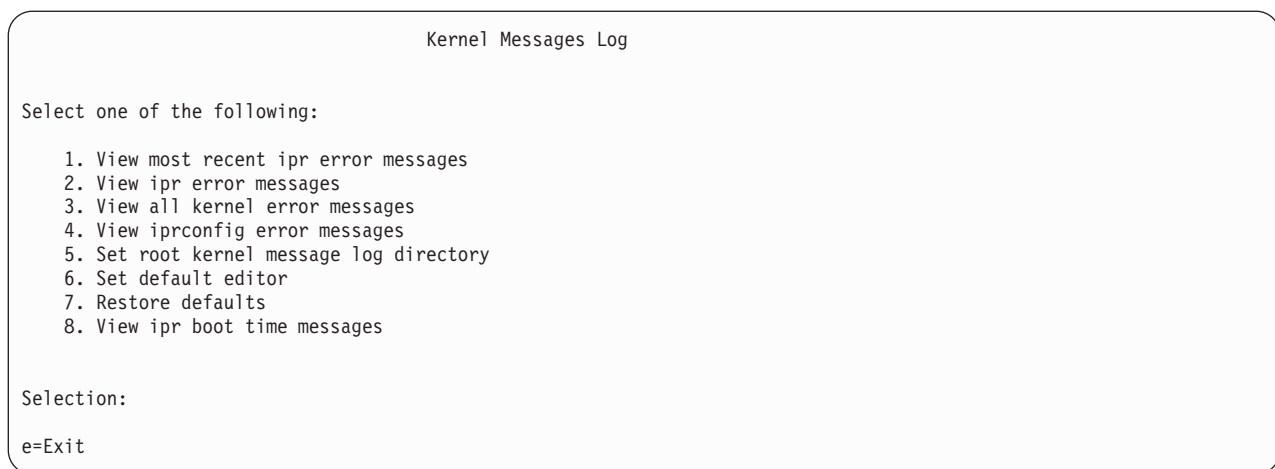


Figure 1. Kernel Messages Log

4. Select **View most recent ipr error messages** from the Kernel Messages Log display. Press Enter.
5. Find the entry in the log for the disk drive you want to replace.
6. Record the location information for the disk drive.

Note: The location information has the form of 2:0:8:0. In this example, 2 is the SCSI host number, 0 is the SCSI bus, 8 is the SCSI target ID, and 0 is the LUN (logical unit).

7. Return to the command line.
8. Type the following:
`ls -ld /sys/class/scsi_host/host#/device`
where # is the SCSI host number. Press Enter.
9. Record the PCI location information.

Note: The PCI location information has the form of 61:01:0:2.

10. Type `iprconfig` on the command line and press Enter.
The IBM Power RAID Configuration Utility display is shown.
11. Select **Display hardware status** from the IBM Power RAID Configuration Utility display. Press Enter.
The Display Hardware Status display is shown.

Display Hardware Status

Type option, press Enter.

1=Display hardware resource information details

OPT	Name	PCI/SCSI Location	Description	Status
		0000:01:01.0.0/	PCI-X SCSI Adapter	Operational
		0000:41:01.0.1/	PCI-X SCSI Adapter	Operational
sda		0000:41:01.0.1/0:3:0	Physical Disk	Active
sdb		0000:41:01.0.1/0:4:0	Physical Disk	Active
sdc		0000:41:01.0.1/0:8:0	Physical Disk	Active
sdd		0000:41:01.0.1/1:3:0	Physical Disk	Active
sde		0000:41:01.0.1/1:4:0	Physical Disk	Active
sdf		0000:41:01.0.1/1:5:0	Physical Disk	Active
		0001:61:01.0.2/	PCI-X SCSI RAID Adapter	Operational
sdg		0001:61:01.0.2/0:3:0	Physical Disk	Active
		0001:61:01.0.2/0:6:0	Advanced Function Disk	Active
sdi		0001:61:01.0.2/0:9:0	Physical Disk	Active
sdh		0001:61:01.0.2/255:0:0	RAID 10 Disk Array	Failed
		0001:61:01.0.2/0:4:0	RAID 10 Array Member	Failed
		0001:61:01.0.2/0:5:0	RAID 10 Array Member	Failed

e=Exit q=Cancel r=Refresh t=Toggle

Figure 2. Example Display Hardware Status

- Look for the disk drive at the PCI location you recorded. The disk drive might have a Failed status.
- If the disk drive you want to replace is unprotected or in use, move the data from the disk drive before continuing with this procedure.

For information, see the *PCI-X SCSI RAID Controller Reference Guide for Linux*.

- Type option 1 (Display hardware resource information details) next to the disk drive you want to replace. Press Enter.

A Disk Hardware Resource Information Details display similar to the following is shown.

Disk Unit Hardware Resource Information Details	
Manufacturer	IBM
Product ID	ST336607LC
Firmware Version	43353048 (C50H)
Serial Number.	00006719
Capacity	36.40 GB
Resource Name.	/dev/sdd
Physical location	
PCI Address.	0001:50:01.0
SCSI Host Number	2
SCSI Channel	0
SCSI Id.	4
SCSI Lun	0
Extended Details	
FRU Number	00P2676
Press Enter to Continue	
e=Exit q=Cancel f=PageDn b=PageUp	

More...

Figure 3. Example Disk Hardware Resource Information Details display

- Record the physical location information.
- Return to the IBM Power RAID Configuration Utility display.

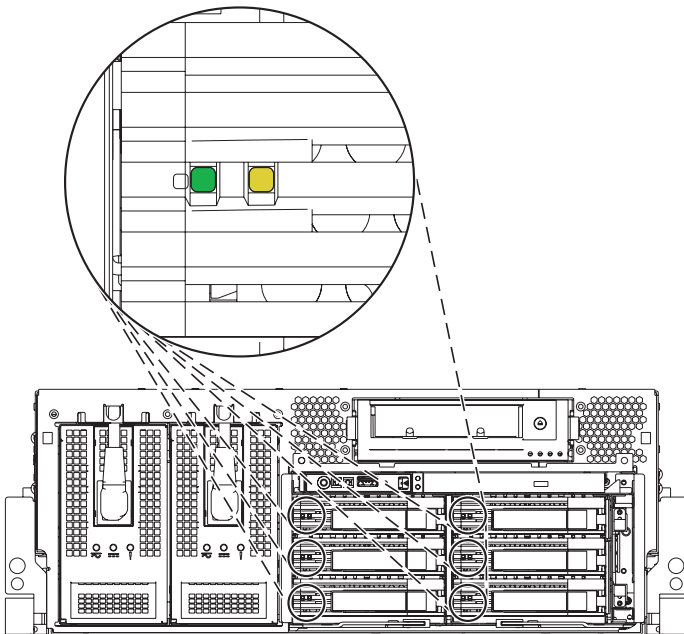
Removing the disk drive

1. From the IBM Power RAID Configuration Utility display, select **Work with disk unit recovery**. Press Enter.
2. From the Work with Disk Unit Recovery display, select **Concurrent remove device**. Press Enter. A Concurrent Device Remove display is shown, similar to the following display.

Choose a single location for remove operations 1=Select			
OPT Name	PCI/SCSI Location	Description	Status
sdc	0000:41:01.0.1/0:8:0	Physical Disk	Active
	0000:41:01.0.1/0:5:		Empty
sdb	0000:41:01.0.1/0:4:0	Physical Disk	Active
sda	0000:41:01.0.1/0:3:0	Physical Disk	Active
	0000:41:01.0.1/1:8:		Empty
sdf	0000:41:01.0.1/1:5:0	Physical Disk	Active
sde	0000:41:01.0.1/1:4:0	Physical Disk	Active
sdd	0000:41:01.0.1/1:3:0	Physical Disk	Active
	0001:61:01.0.2/0:8:		Empty
sdh	0001:61:01.0.2/0:9:0	Physical Disk	Active
sdg	0001:61:01.0.2/0:3:0	Physical Disk	Active

Figure 4. Example Concurrent Device Remove display

3. Type option 1 (Select) next to the location for the disk drive you want to replace. Press Enter.
4. The Verify Device Concurrent Remove display is shown. The concurrent maintenance light turns on for that disk drive slot.



5. On the Verify Device Concurrent Remove display, verify that the selected disk drive is the disk drive you want to replace, then press Enter. The identify light turns on for the disk drive.

Attention: To prevent loss of data, ensure that the disk drive is not in use.

6. The Complete Device Concurrent Remove display is shown.

Attention:

- Attach a wrist strap to an unpainted metal 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 metal surface of the system for a minimum of 5 seconds.
7. Squeeze and pull the handle of the disk drive out toward you before you remove the disk drive as shown in Figure 5. If the handle is not all the way out, the disk drive will not slide out of the system or expansion unit.

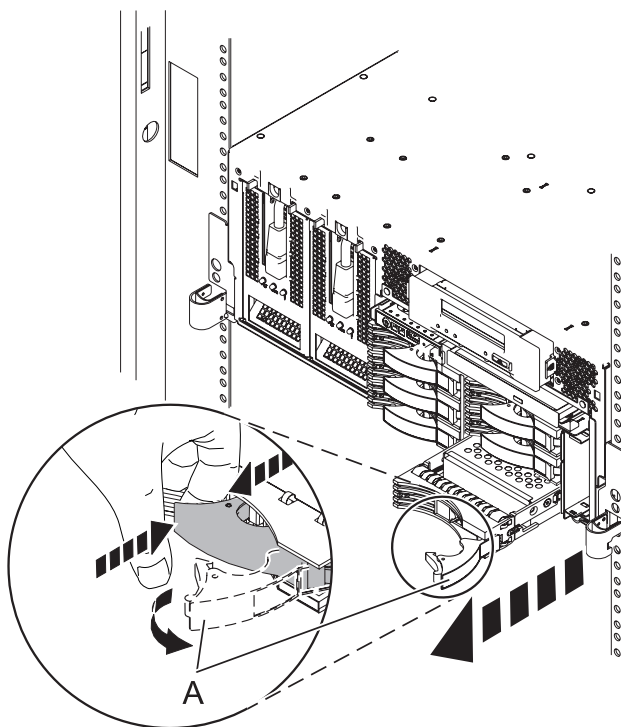


Figure 5. Removing a disk drive from the system unit.

8. Support the bottom of the disk drive as you slide it out of the system or expansion unit. Do not hold the disk drive by the handle.
9. Press Enter on the IBM Power RAID Configuration Utility to indicate that you have removed the disk drive.

Replacing the disk drive

1. Find the package that contains the new disk drive.
Attention: Disk drives are fragile. Handle them with care.
2. Remove the disk drive from its protective package.
3. Unlock the disk drive handle and pull the disk drive out toward you before you install the disk drive. If the handle is not all the way out, the disk drive will not slide into the system or expansion unit.
4. From the IBM Power RAID Configuration Utility display, select **Work with disk unit recovery**. Press Enter.

- From the Work with Disk Unit Recovery display, select **Concurrent add device**. Press Enter.
A Concurrent Device Add display similar to the following is shown.

Concurrent Device Add			
Choose a single location for add operations 1=Select			
OPT	Name	PCI/SCSI Location	Description Status

		0000:41:01.0.1/0:5:	Empty
		0000:41:01.0.1/1:8:	Empty
		0001:61:01.0.2/0:8:	Empty

Figure 6. Example Concurrent Device Add display

- Type option 1 (Select) next to the location from which you removed the disk drive.
The Verify Device Concurrent Add display is shown.
- Press Enter on the Verify Device Concurrent Add display. The Complete Device Concurrent Add display is shown.
- Support the bottom of the disk drive as you align it with the guide rails in the system or expansion unit. Do not hold the disk drive by the handle.
- Slide the disk drive all the way into the system or expansion unit and then lock it in place by pushing in the disk drive handle, as shown in Figure 7.

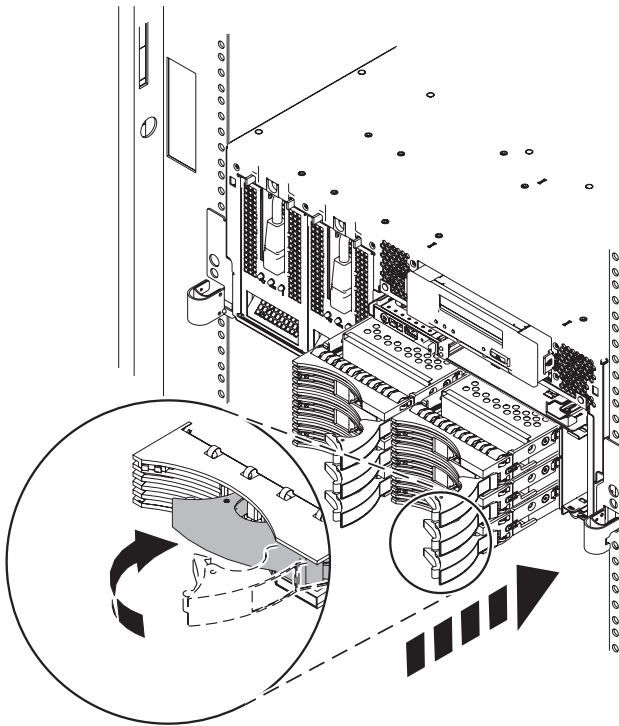


Figure 7. Installing a disk drive in the system unit.

- Press Enter on the Complete Device Concurrent Add display to indicate that the disk drive is installed.
- Rebuild the data on the replacement disk drive. For instructions, go to Rebuild data on a replacement disk drive using Linux.
- Go to Verifying a repair. **This completes this procedure.**

Replacing the disk drive nonconcurrently

Use this procedure to remove and replace a disk drive nonconcurrently.

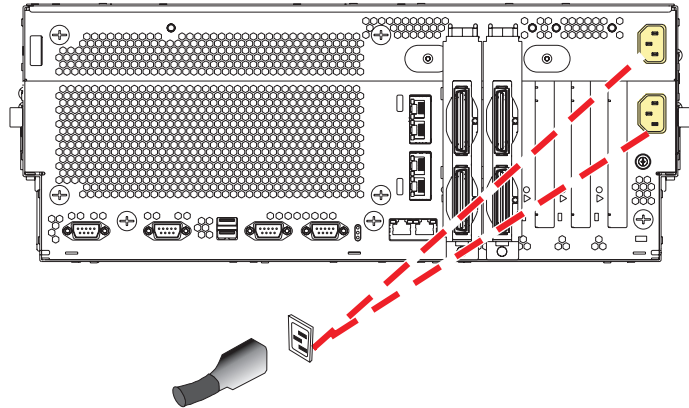
1. Power off the system and remove the power cords

The component will not be serviced concurrently.

If this system is powered on, power it off before continuing.

If possible, shut down any running applications and the operating system before powering off the system.

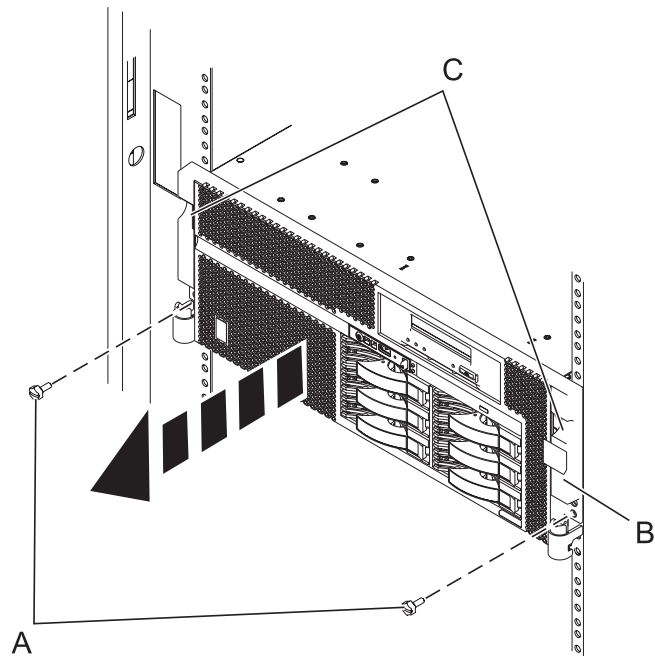
Once the system is powered off, remove all power cords from all of the power supplies.



2. Remove the front cover

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

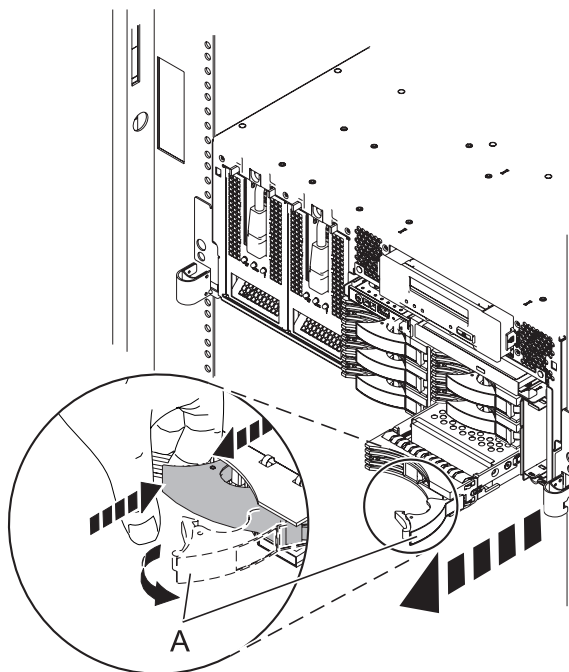
1. Open the front rack door.
2. Remove the two thumbscrews (A) that secure the system unit (B) to the rack.
3. Push the cover release latches (C) in the direction of the arrows to release the cover from the system unit.
4. Pull the cover out and away from the system unit.



3.

Remove the disk drive:

1. Unlock the disk drive handle (**A**) and pull the disk drive out toward you as shown.
2. Support the bottom of the disk drive as you slide it out of the system or expansion unit. Do not hold the disk drive by the handle.

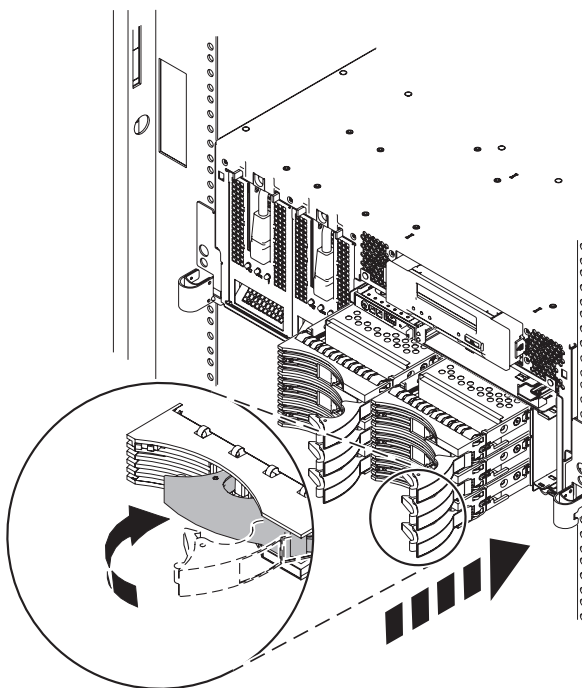


4.

Install the disk drive:

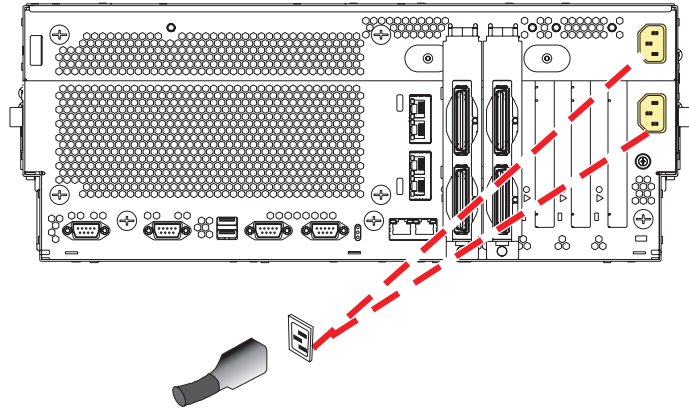
1. Support the bottom of the disk drive as you align it with the guide rails in the system unit. Do not hold the disk drive by the handle.
2. Slide the disk drive into the system until it stops.
3. Push the disk drive handle in until it locks.

Note: When you install a disk drive, ensure that the drive is fully seated and all the way into the system.



5.

If you removed the power cords, reinstall the power cords for all of the power supplies.



6.

Go to Verifying a repair. **This completes this procedure.**

Rebuilding data on a replacement disk drive using Linux

Use this procedure to rebuild data on a replacement disk drive.

To rebuild data on the replacement disk drive, complete the steps listed here.

For an unprotected disk drive

If the disk drive you are replacing is in a RAID Level 0 disk array or in a failed RAID Level 5 or RAID Level 10 disk array, perform these tasks:

1. Re-create the disk array.
2. Re-create the file systems on the disk array.
3. Copy the data back to the restored disk array from your backup media.

For information on these tasks, see the *PCI-X SCSI RAID Controller Reference Guide for Linux*, SA23-1327.

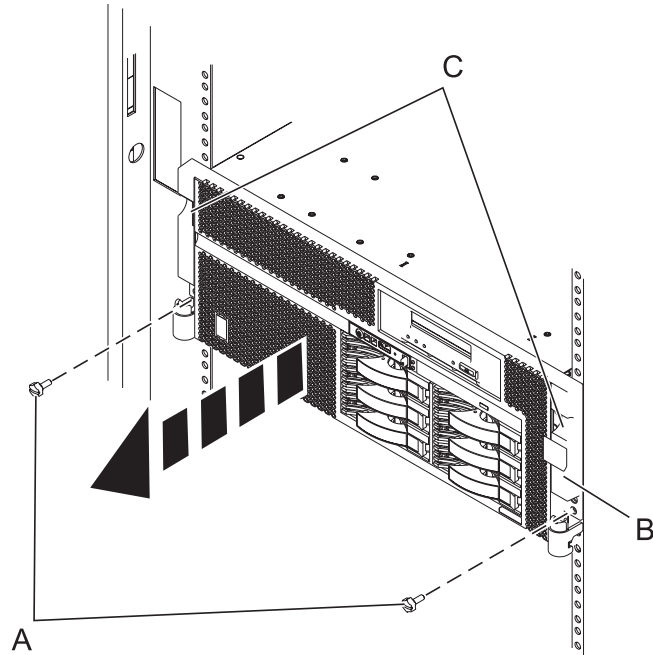
Replacing the disk drive using IBM i

Use this procedure to remove and replace a disk drive concurrently with IBM i.

- 1.

Access the unit by:

1. Open the front rack door.
2. Loosen the thumbscrew (A) on the right side of the cover.
3. Slide the cover to the right and remove it from the system unit slot (B).



2.

To recover any data that might be lost when a disk drive is replaced you must know if the disk drive has data protection.

Do you know the protection status of the disk drive to be removed?

No: Continue with the next step.

Yes: If the disk drive is mirrored, record the status of both disk drives in the mirrored pair and go to step 6 on page 39. If the disk drive is parity protected, go to step 9 on page 40.

3.

Determine the protection status of the disk drive to be removed:

1. Sign on the operator console with at least service level authority.
2. Type `strsst` on the command line of the IBM i session and press Enter.
3. Type your service tools user ID and service tools password on the Start Service Tools (STRSST) Sign On display. Press Enter.
4. Select **Work with disk units** from the System Service Tools (SST) display. Press Enter.
5. Select **Display Disk Configuration** from the Work with Disk Units display. Press Enter.
6. Select **Display Disk Configuration Status** from the Display Disk Configuration display. Press Enter.
A list of each auxiliary storage pool (ASP) displays, showing the disk drives that are members of the ASPs..
7. Is the status of the failing disk drive **Mirrored**?

No: Continue with the next step.

Yes: Record the status of both disk drives in the mirrored pair and continue at step 6 on page 39.

4.

Determine if the failing disk drive is parity protected:

Note: An ASP with a status of Unprotected might contain disk drives that are device parity protected.

Check the status of the failing disk drive for one of the following:

DPY/Active
DPY/Failed
DPY/HDW Failure
DPY/Degraded
DPY/Power Loss
DPY/Not Ready
DPY/Unknown

If the status of the failing disk drive and all other disk drives in the array have a status listed above, the failing disk drive is parity protected.

Is the failing disk drive parity protected?

Yes: Go to step 9 on page 40.

No: Continue with the next step.

5.

Perform a backup of the data in the failing ASP.

Note: This is a customer task. Refer to the system's operations information for instructions.

Go to step 9 on page 40.

6.

Does the disk drive you are replacing have a status of Suspended?

Yes: Go to step 9 on page 40.

No: Check the status of the disk drive that is mirrored to the disk drive you are replacing. If it is Suspended, go to step 8. If it is Active, continue with the next step.

7.

Suspend the disk drive that you are replacing by performing the following:

1. Press F3 from the Display Disk Configuration display to return to the Work with Disk Units display.
 2. Select Work with Disk Unit Recovery from the Work with Disk Units display and press Enter.
 3. Select Suspend mirrored protection from the Work with Disk Unit Recovery display and press Enter.
 4. Select the option to suspend the disk drive that you are replacing from the Suspend Mirrored Protection display and press Enter.
 5. Go to step 9 on page 40
-

8.

The suspended mirrored pair of the failing drive has also failed and must be replaced.

Note: Performing a backup is a customer task. Refer to the system's operations information for instructions.

Perform a backup of the data in the failing ASP.

Go to step 9 to replace the failing mirrored disk.

Return to the beginning of this procedure to replace the disk that you originally intended to replace.

9.

Select Device Concurrent Maintenance from the Hardware Service Manager display. Press Enter. The Device Concurrent Maintenance display is displayed.

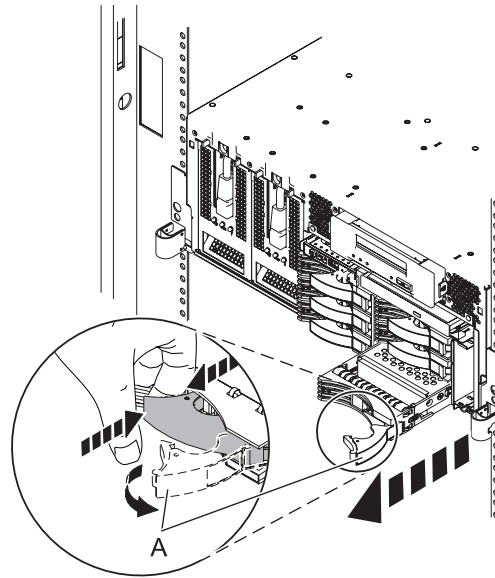
1. Enter the location code of the disk drive being replaced in the form of *U787A.001.AAAXXXX-P3-D4*.
 2. Select option 1 (Remove device) for the **Action to be performed**.
 3. Set the time delay for one minute: 01. **Important:** Do not press Enter at this time.
 4. Locate the concurrent maintenance light that corresponds to the position of the disk drive that you are replacing
 5. **Important:** When you press Enter, after a one minute delay, this light comes on and begins to blink rapidly. You then have nine seconds to remove the disk drive.
 6. Press Enter on the console.
 7. When the light blinks rapidly, perform the next step to remove the disk drive within 9 seconds.
-

10.

Remove the disk drive by:

1. Unlock the disk drive handle by squeezing it and pulling it out toward you as shown.
2. Support the bottom of the disk drive as you slide it out of the system or expansion unit. Do not hold the disk drive by the handle.

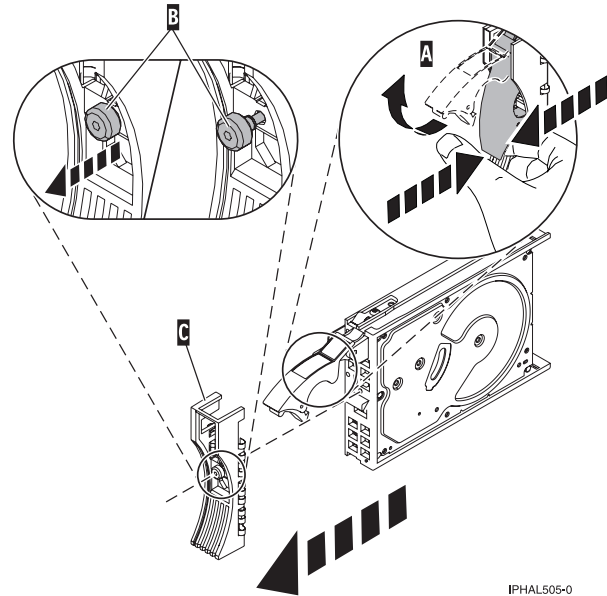
The concurrent maintenance light for the slot turns off when you remove the disk drive.



11.

Loosen and pull out on the thumbscrew (B) to release the disk-drive bezel (C) from the disk drive, as shown in the graphic.

Continue with the next step.

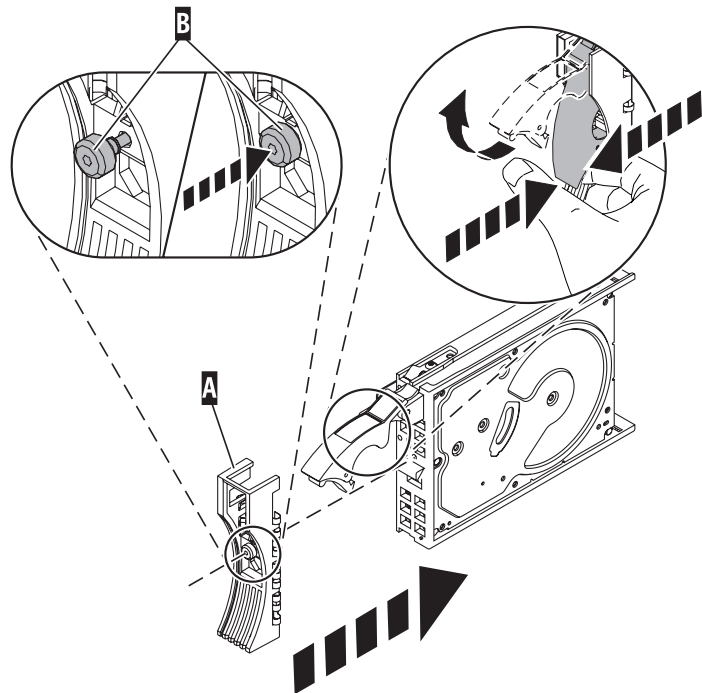


IPHAL505-0

12.

Install the bezel on the new disk drive:

1. Find the package that contains the new disk drive.
Attention: Disk drives are fragile. Handle with care.
2. Remove the disk drive from its static protective package.
3. Unlock the handle of the replacement disk drive by squeezing and pulling it out toward you. If the handle is not all the way out, the disk drive will not slide into the system.
4. Attach the disk drive bezel (A) to the replacement disk drive as shown.
5. Press in and then tighten the thumbscrew B to secure the bezel to the disk drive.



13.

1. Return to the console and wait until the Concurrent Maintenance Results display is shown. Press F12.
 2. The physical locations you entered in step 6 of this procedure might still appear on the display. If not, retype the physical location where you will be installing the new disk drive.
 3. Select option 2 (Install device) for the **Action to be performed**.
 4. Set the time delay for one minute: 01. **Important:** Do not press Enter at this time.
 5. Locate the concurrent maintenance light that corresponds to the position of the disk drive that you are replacing
 6. **Important:** When you press Enter, after a one-minute delay, this light comes on and begins to blink rapidly. You then have nine seconds to install the disk drive.
 7. Continue with the next step.
-

14.

Install the disk drive:

1. Support the bottom of the disk drive as you align it with the guide rails in the system unit. Do not hold the disk drive by the handle.
 2. Slide the disk drive into the system until it stops.
 3. Press Enter on the console.
 4. When the light blinks rapidly, perform the next step to install the disk drive within 9 seconds.
 5. Push the disk drive handle in until it locks.
Note: It is important to ensure that when installing a disk drive, that the drive is fully seated and all the way into the system.
 6. Continue with the next step.
-

15.

1. If you removed a front cover, install the front cover
 2. Install or close the system, expansion unit or rack front door.
 3. Return to the console and wait until the Concurrent Maintenance Results display is shown. Press Enter.
 4. If you return to the Service Action Log display, exit the service action log.
 5. When the Hardware Service Manager display is shown, press F3.
 6. Continue with the next step.
-

16.

Rebuild the data on the replacement disk drive by:

1. If necessary, start System Service Tools (SST) by typing strsst on the command line of the IBM i session and pressing Enter.
2. Type your service tools user ID and service tools password on the Start Service Tools (STRSST) Sign On display. Press Enter. **Note:** The service tools password is case sensitive.
3. Select **Work with disk units** from the Start System Service Tools (SST) display. Press Enter.
4. Select **Work with disk unit recovery** from the Work with Disk Units display. Press Enter.

Was the failing disk drive mirrored?

Yes: Go to step 19 on page 43.

No: Continue with the next step.

17.

Was the failing disk drive parity protected?

Yes: Go to step 19 on page 43.

No: Continue with the next step.

18.

Restore the data on the replacement disk drive from the latest backup available.

Note: Performing a restore is a customer task. Refer to the system's operations information for instructions.

19.

1. Select **Rebuild disk unit data** on the Work with Disk unit recovery display. Press Enter.
 2. Select 1 to rebuild the disk drive displayed (the disk drive displayed is the disk drive that you removed) on the Rebuild Disk Unit Data display. Press Enter.
 3. Press Enter on the Confirm Rebuild Disk Unit Data display. The rebuild process might take several minutes to complete.
 4. Press F5 to refresh the display until the **Percent complete** shows 5%.
 5. When the display shows at least 5% complete, you can either continue to monitor this display to completion, or press F3 (Exit) to return to the Work with disk units display.
 6. Press F3 (Exit) to return to the System service tools display.
 7. Press F3 (Exit) to return to the Exit SST display and press Enter.
-

20.

1. Select System Service Tools (SST).
If you cannot get to SST, select DST (see Dedicated service tools).
Note: Do not IPL the system to get to DST.
 2. Select **Work with disk units > Display disk configuration > Display non-configured units**.
Note: It can take up to 5 minutes for the IOP to report the device to the system. If the disk unit you just exchanged does not appear as a non-configured unit on the display, wait a few minutes. Then, press F5 to refresh the display.
 3. When the disk unit you just exchanged appears as a non-configured unit on the display, continue with the next step.
 4. Format and initialize the disk unit by performing the following steps:
 - a. From the Service Tools display, select **Work with disk units > Work with disk unit recovery > Disk unit problem recovery procedures > Initialize and format disk unit**.
 - b. On the display, select the disk unit that you just installed.
 - c. Initialize and format the disk unit. When the new disk unit is initialized and formatted, the display shows that the status is complete (this may take 30 minutes or longer).
 5. Perform the following steps:
 - a. Return to the Work with Disk Unit Recovery display and select Replace configured unit.
 - b. On the Select Configured Unit to Replace display, select the configured disk unit to exchange.
 - c. On the Select Replacement Unit display, select the replacement disk unit.
-

21.

1. Select **Replace configured unit** on the Work with Disk unit recovery display. Press Enter.
 2. Select the configured disk drive that you are exchanging (suspended drive) on the Select Configured Unit to Replace display. Press Enter.
 3. Select the disk drive that you just installed on the Select Replacement Unit display. This drive has a non-configured status.
Note: In some cases, it might take several minutes for a new disk drive to display. Repeat these steps until the new drive is shown.
Press Enter.
 4. Press Enter on the Confirm Replace of Configured Unit display to confirm your choice for replacement.
The replacement process might take several minutes to complete.
When the process is complete, the Work with Disk unit recovery display is shown.
 5. Press F3 (Exit) to return to the Work with disk units display.
 6. Select **Display disk configuration** on the Work with disk units display.
 7. Select **Display disk configuration status** on the Display Disk Configuration display.
Mirrored status shows Resuming. When complete, the mirrored status shows Active. This process might take several minutes to complete. You can either monitor this display to completion, or press F3 (Exit) three times, and then press Enter to return to the main menu.
-

22.

To rebuild data on the replacement disk drive, refer to the information for the controller to which the disk drive is attached.

- If the disk drive is attached to a PCI-X SCSI RAID controller, see the PCI-X SCSI RAID Controller Reference Guide for AIX.
- If the disk drive is attached to a PCI SCSI RAID adapter (feature code 2498), see the PCI 4-Channel Ultra3 SCSI RAID Adapter Reference Guide.

For more information, see the AIX System Management Guide: Operating System and Devices.

23. Go to Verifying a repair. **This completes this procedure.**

Disk unit backplane

Use this procedure to service the disk unit backplane.

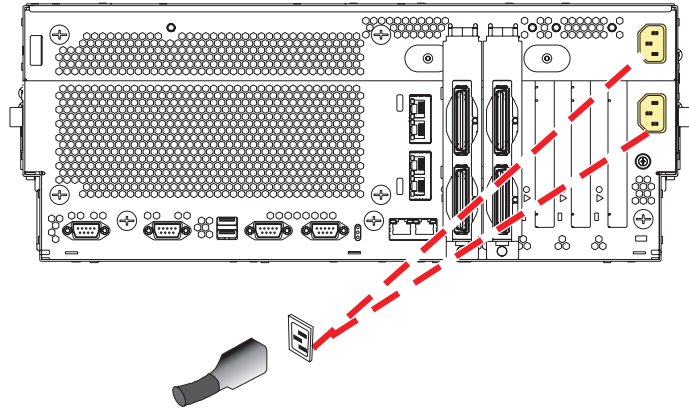
Note: If your system supports internal DASD sharing, see Internal DASD sharing on model 8204-E8A, 8203-E4A, 9407-M15, 9408-M25, or 9409-M50.

1. Power off the unit

Power should be removed from the unit containing the disk unit backplane. If this unit is powered on, power it off now.

2. Disconnect the power cords

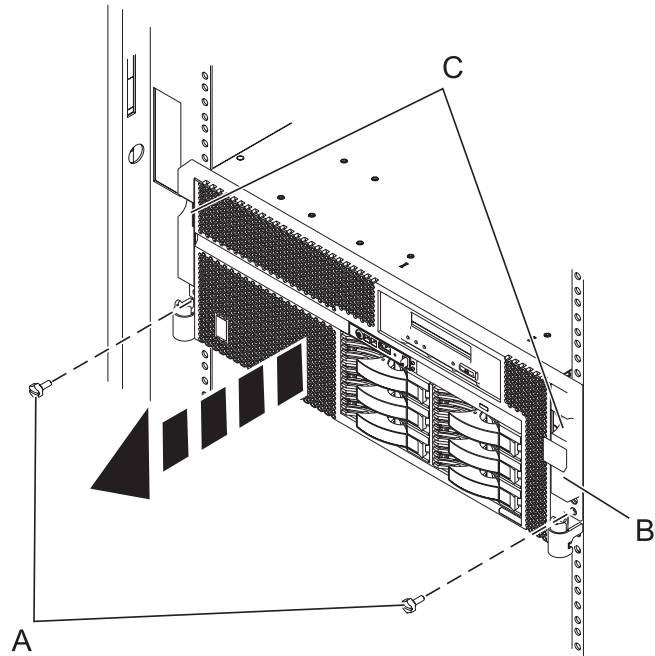
Disconnect all power cords from the unit you are servicing.



3. Remove the front cover

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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

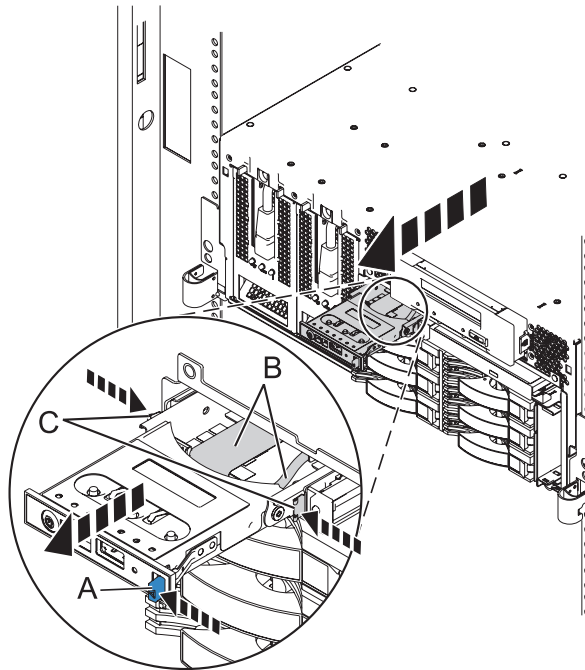


4. Disconnect the external cables

Label and disconnect the external cables connected to the FRU you are servicing.

5. Remove the control panel

1. Release the control panel by pressing the release tab (A) to the left.
2. Grasp the edges of the control panel and pull it partially out of the bay.
3. Disconnect the control panel cables (B) from the control panel.
4. Press the release tabs (C) inward and pull the control panel completely out of the bay.

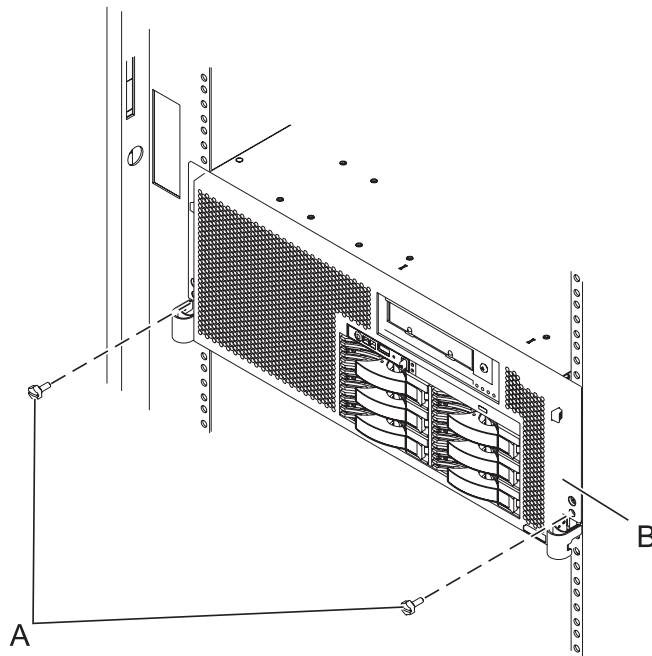


6. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

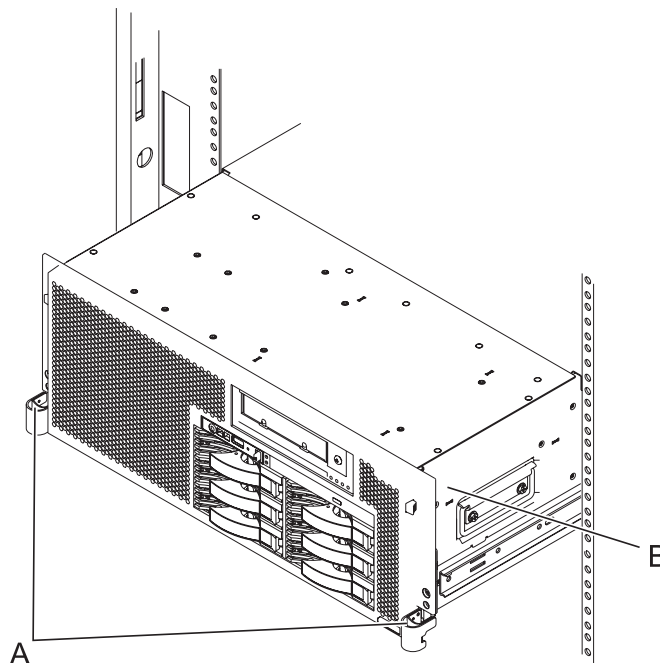


7. Place into service position (continued)

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.

Notes:

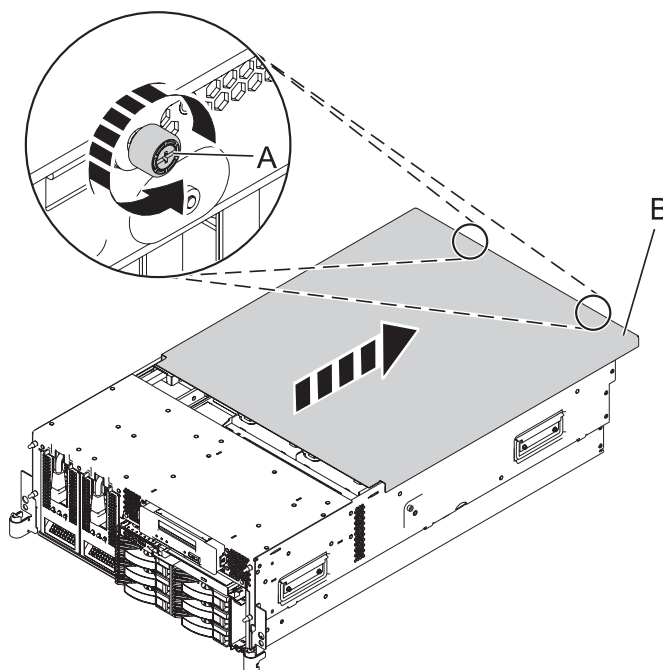
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



8. Remove the service access cover

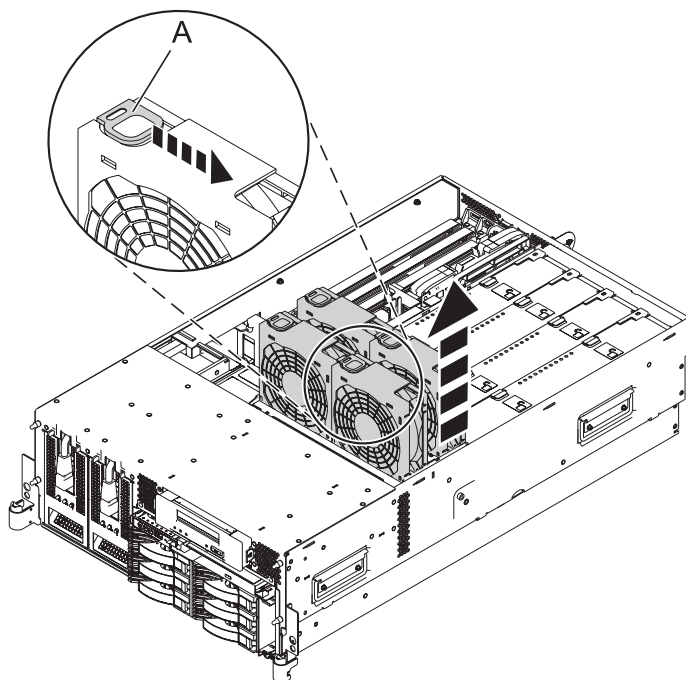
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



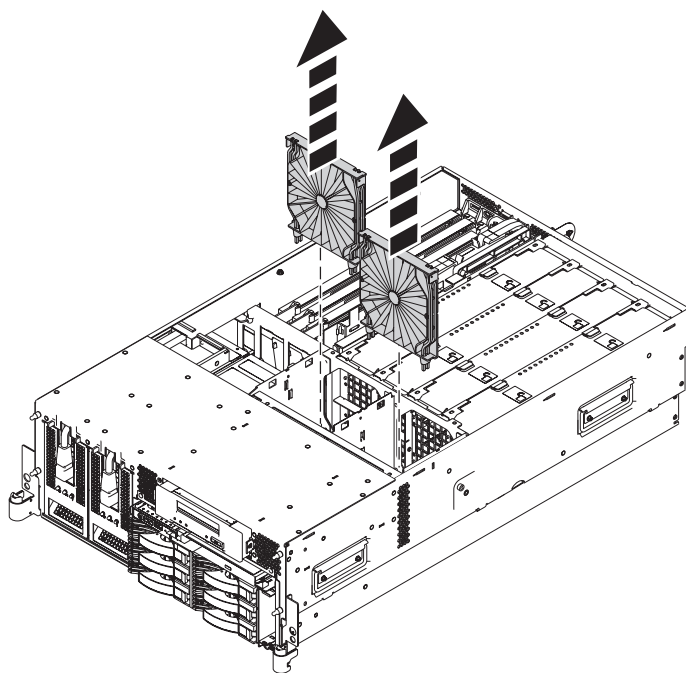
9. Remove the fans

1. While squeezing the latch (A), reach through the hole of the fan and pull the fan out of the fan cage.
2. Repeat these steps until all system fans are removed from the fan cage.



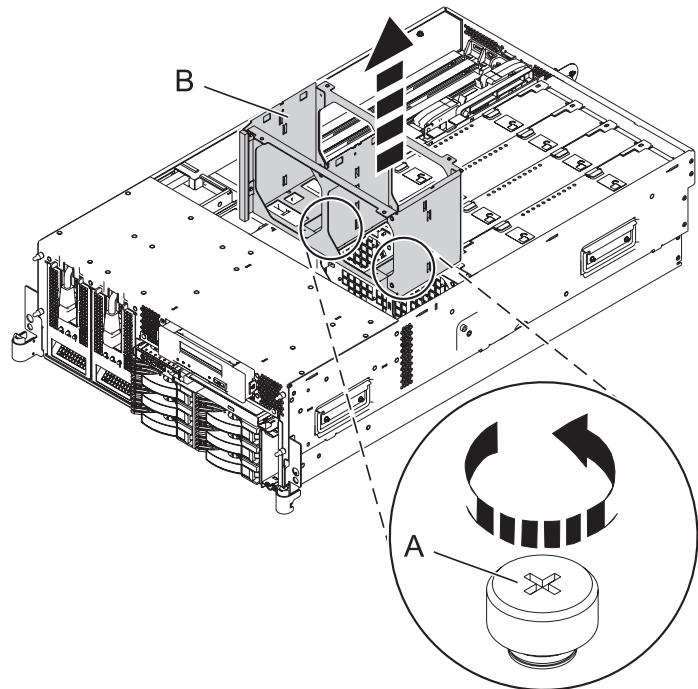
10. Remove the air baffles

Grasp the air baffles and pull them out of the fan cage.



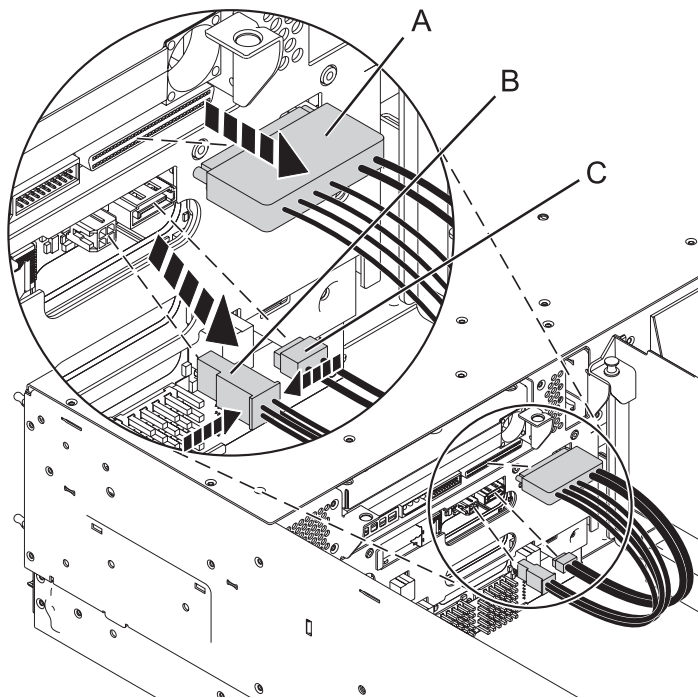
11. Remove the fan cage

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.



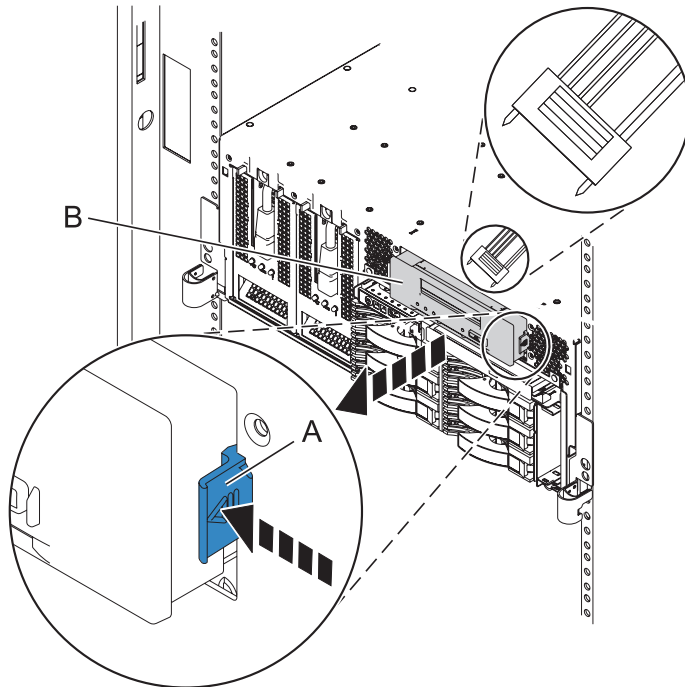
12. Disconnect the cables, if any, from the back of the disk drive backplane

1. Media device cable connector (**A**) can remain connected.
2. Squeeze the media device cable connectors (**B**) and (**C**) as shown and disconnect them from their connector sockets on the disk unit backplane.
Note: Some systems might have additional cables attached to the disk unit backplane; not all cabling options appear in the illustration.
3. If there are other cables connected to the disk unit backplane, disconnect them from their connector sockets on the disk unit backplane, noting their attachment points.



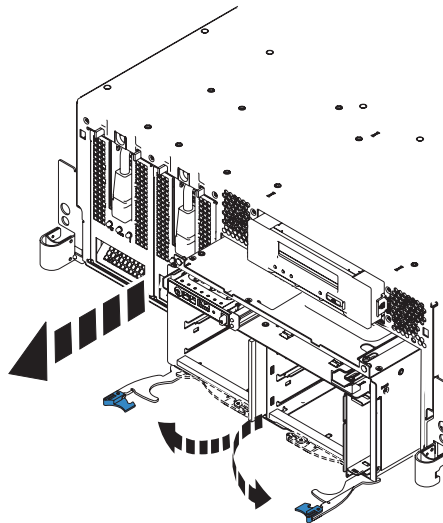
13. Remove the media device

1. While pushing the media device release latches **(A)**, grasp the device **(B)** and begin to pull it out of the system unit.
2. Disconnect the cable attached to the back of the media device.
3. Finish pulling the media device out of the system unit.



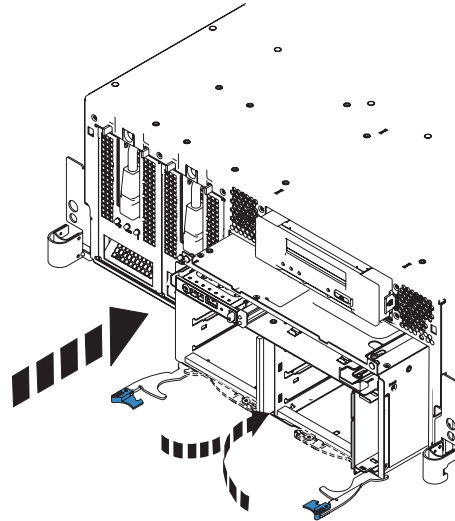
14. Remove the disk unit cage

1. Rotate the handles outward in the direction shown to release the disk unit cage.
2. Slide the disk unit cage out of the system unit.



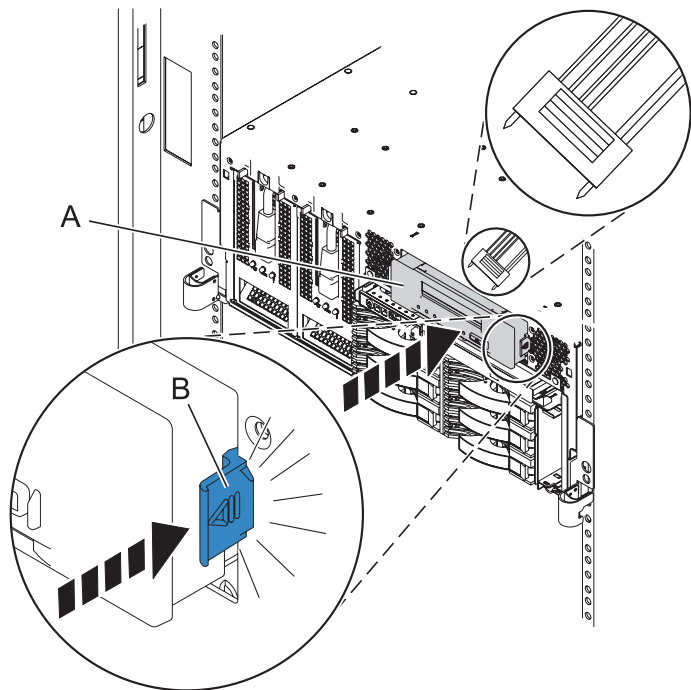
15. Install the disk unit cage

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.



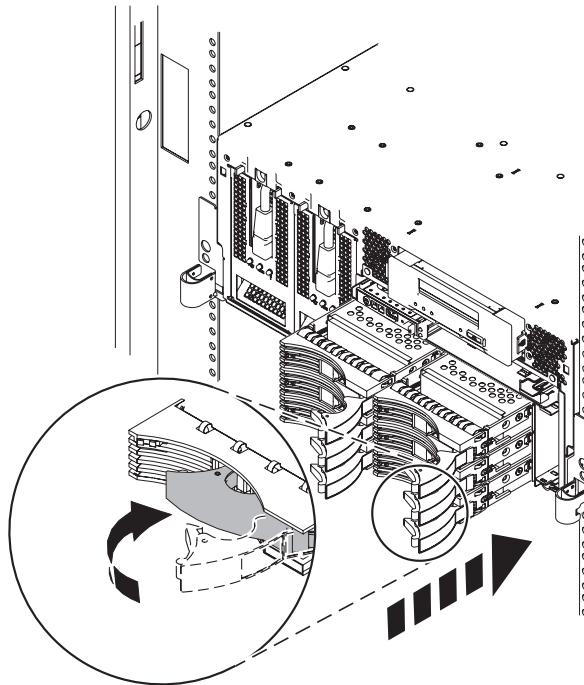
16. Install the media device

1. Connect the cable to the back of the media device (A).
2. Push the media device (A) into the system unit until you feel the latches (B) lock.



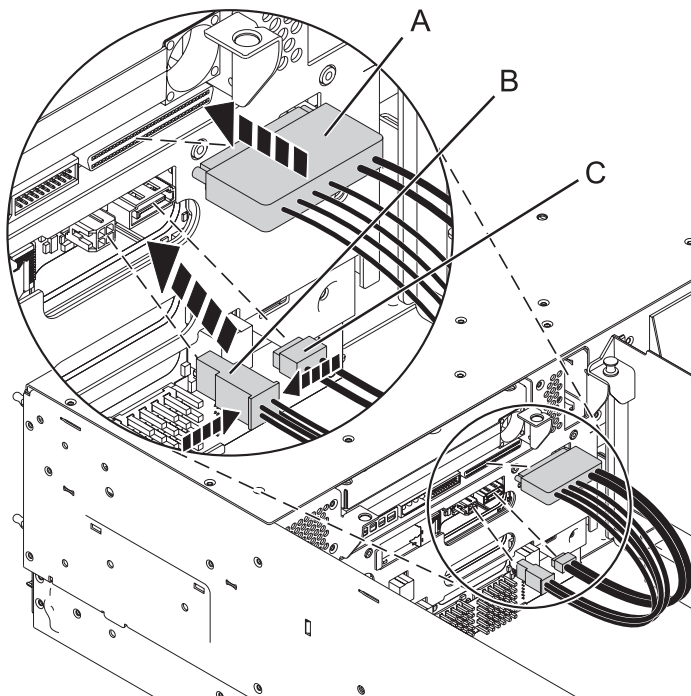
17. Install the disk units and fillers

1. Slide the disk units back into the disk unit cage.
2. Push in the handles of each disk unit to lock them into place.
3. Repeat these steps for any disk unit fillers that are present.



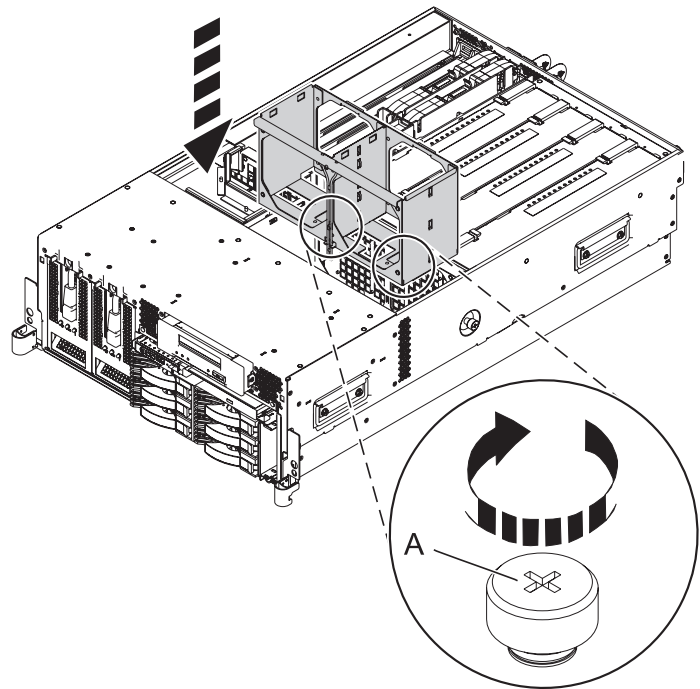
18. Connect the cables, if any, to the back of the disk unit backplane

1. Media device cable (A) does not need to be touched.
2. Connect the media device cables (B) and (C) to their connectors on the disk unit backplane.
3. Reconnect any other cables that were detached previously. The illustration does not contain all cabling options.



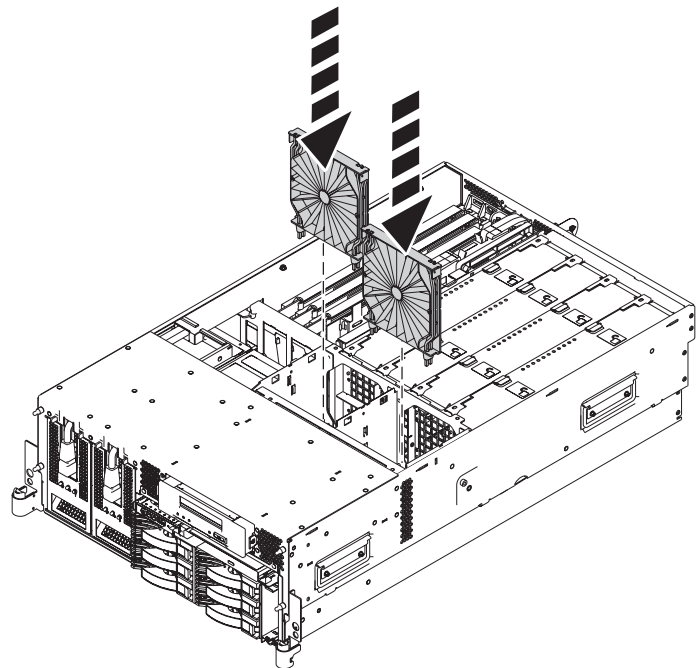
19. Install the fan cage

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.



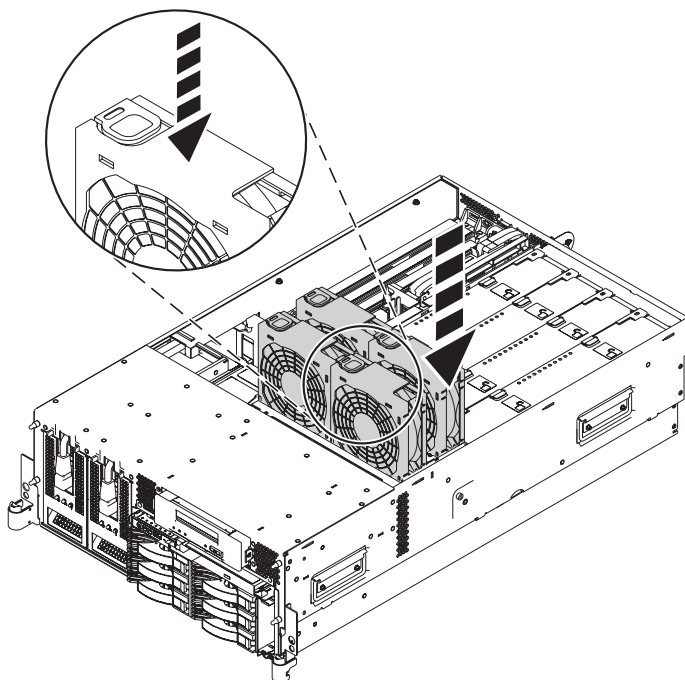
20. Install the air baffles

1. Lower the air baffles into their location in the fan cage.
2. Push down on the air baffles until they lock into place.



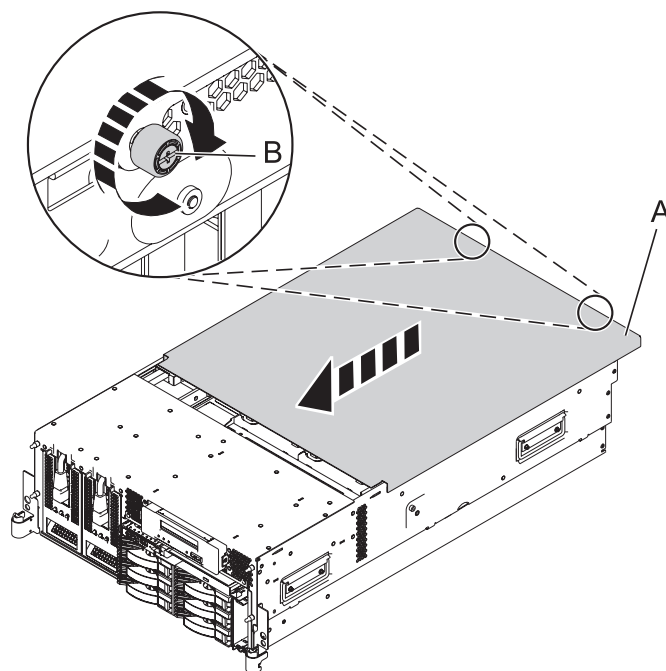
21. Install the fans

1. Lower the fan into its location in the fan cage.
2. Push down on the fan until it locks into place.
3. Repeat these steps until all system fans are installed.



22. Install the service access cover

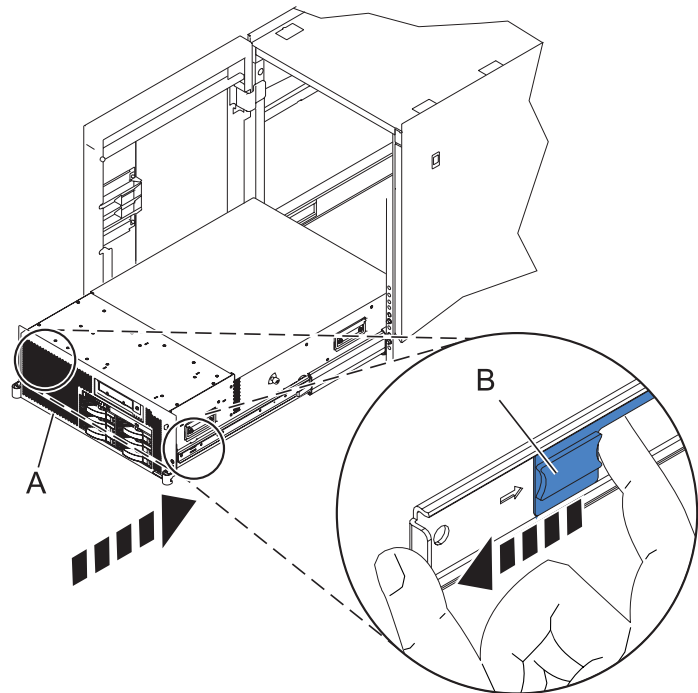
1. Place the service access cover **(A)** on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



23. Place into operating position

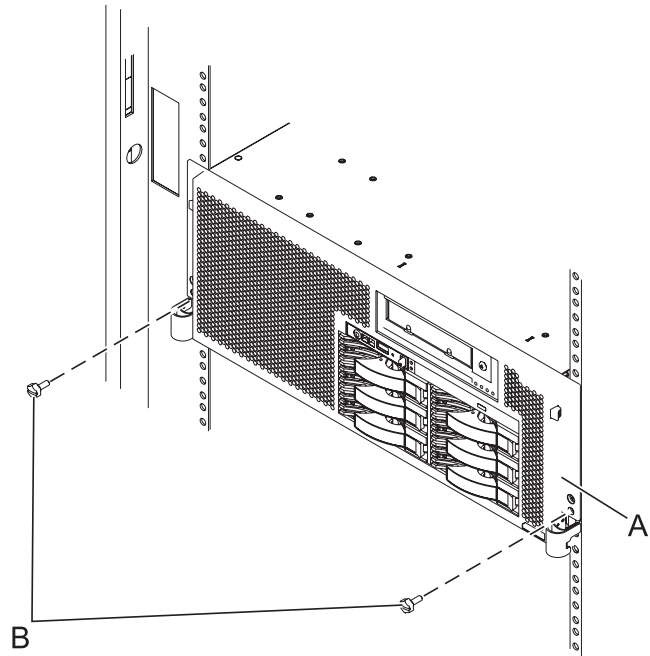
1. To unlock the rail safety latches (**B**), slide the latches towards the front of the system.
2. Push the system unit (**A**) back into the rack until both system-unit release latches have locked into position.

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



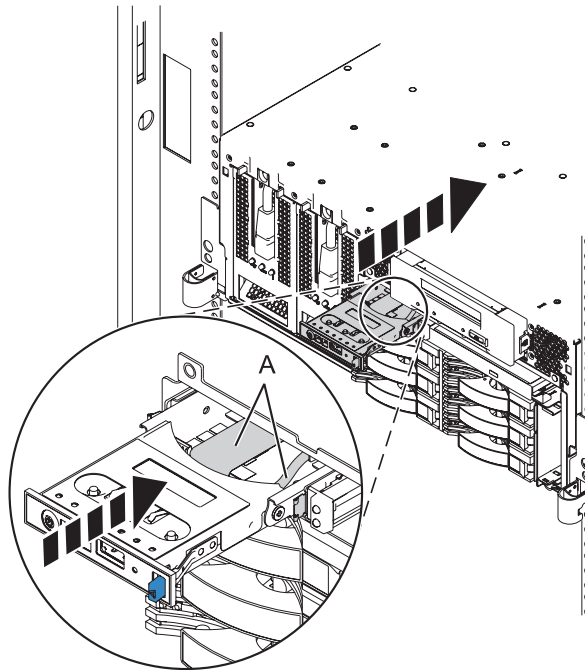
24. Place into operating position (continued)

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



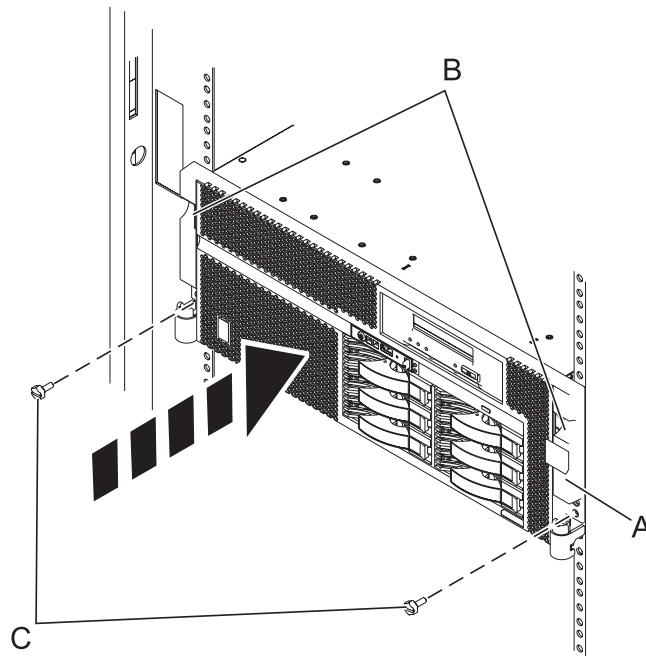
25. Install the control panel

1. Carefully slide the control panel partially into the control panel bay.
2. Connect the control panel cables (A) to the control panel.
3. Continue sliding the control panel into the bay until you feel the control panel lock into place.



26. 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 following figure. The latches should hold the cover in place.
3. Tighten the thumbscrews.
4. Close the front rack door.

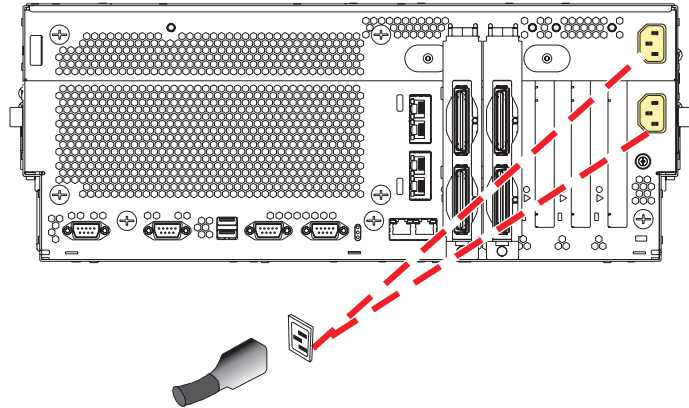


27. Reconnect the external cables

Reconnect the external cables you previously removed, to the FRU you are servicing.

28. Connect the power cords

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



29.

Go to Verifying a repair.

External cables

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

Note: When the 8204-E8A is attached to a 7314-G30 the following conditions apply.

- If the system firmware levels are equal to or less than EL320_040_031, the system must be powered off before adding or removing 12X channel cables.
- If the system firmware levels are greater than EL320_040_031, the 12X channel cables can be added or removed concurrently by following normal maintenance procedures.

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 the location where the cable is to be installed.

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

3.

Go to Verifying a repair.

Ethernet card

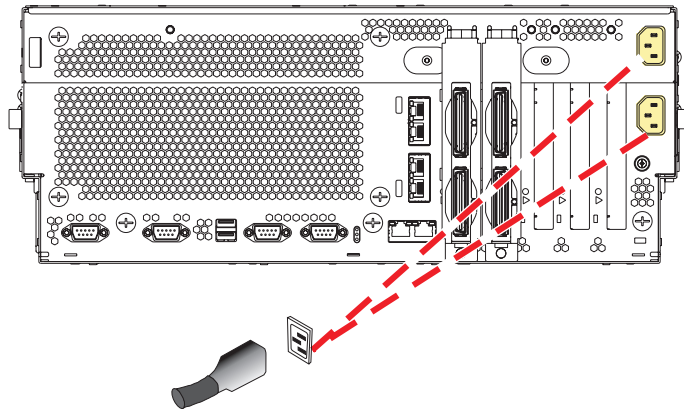
Use this procedure to service the ethernet card.

1. Power off the unit

Power should be removed from the unit containing the Ethernet card. If this unit is powered on, power it off now.

2. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.



3. Disconnect the external cables

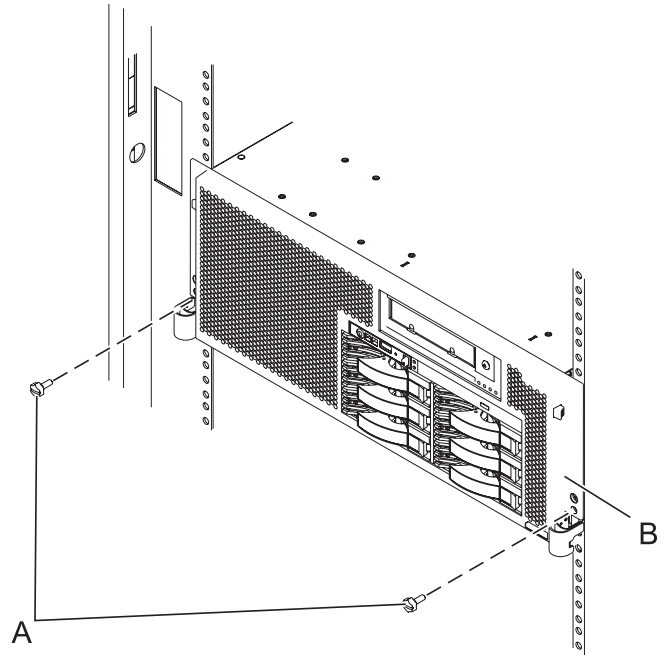
Label and disconnect the external cables connected to the FRU you are servicing.

4. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

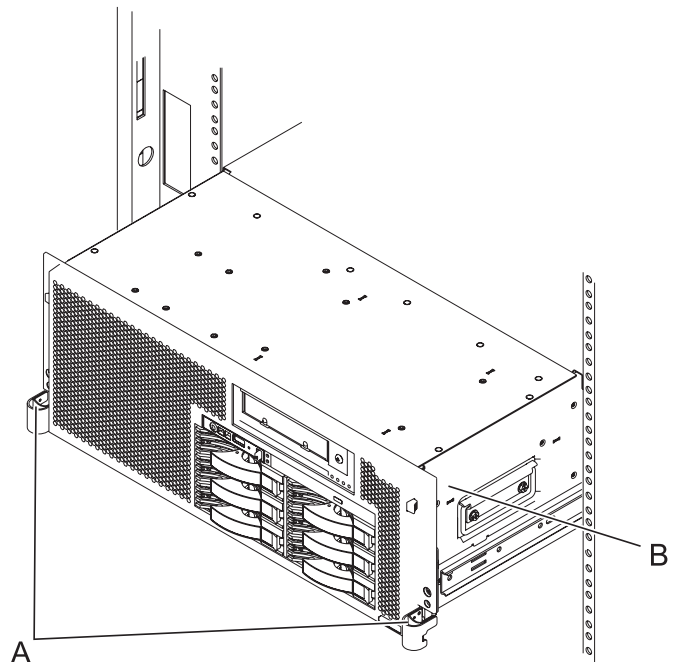


5. Place into service position (continued)

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.

Notes:

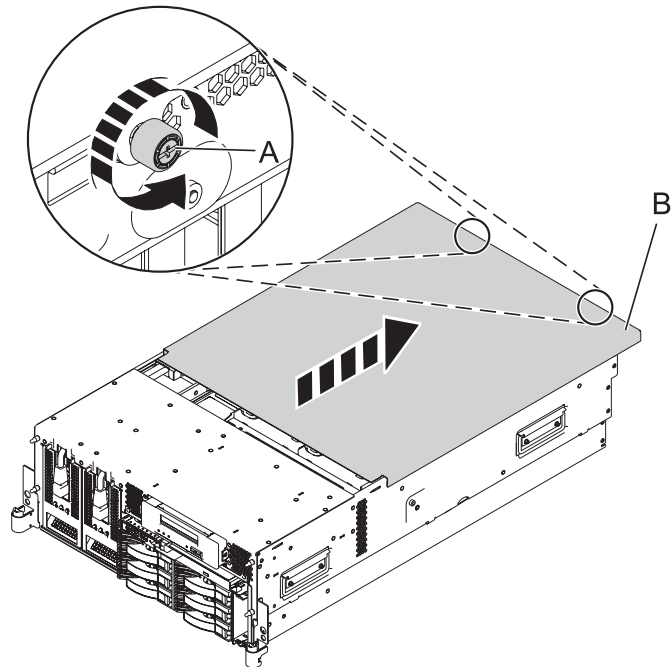
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



6. Remove the service access cover

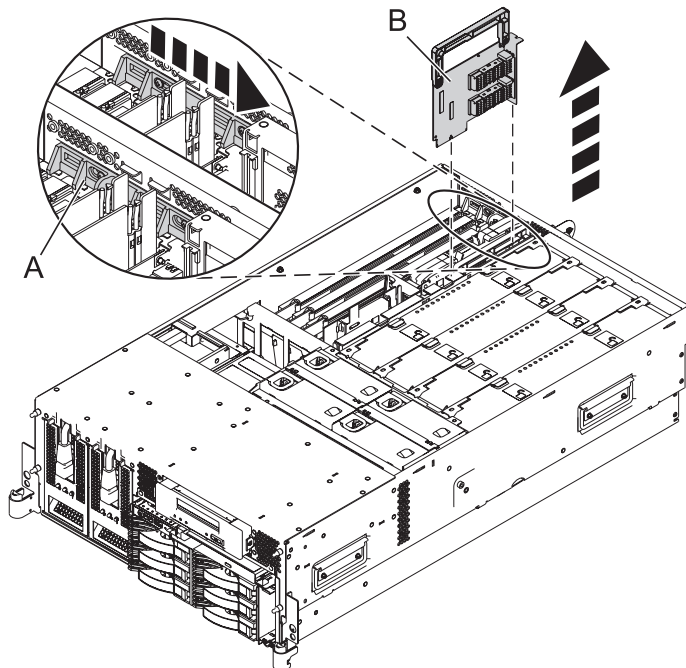
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



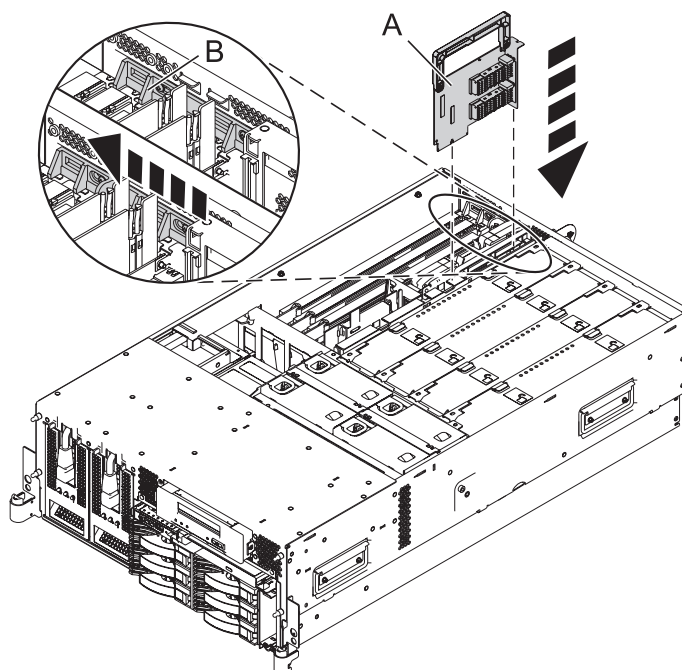
7. Remove the Ethernet card

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.



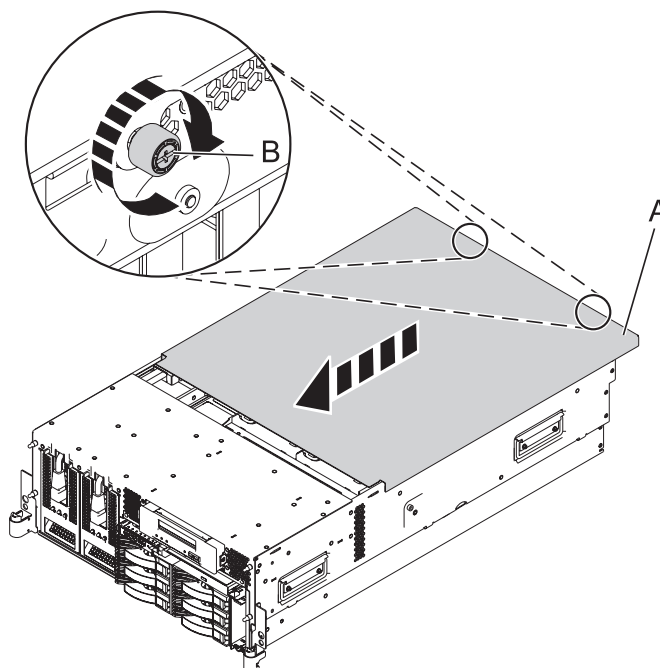
8. Install the Ethernet card

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.



9. Install the service access cover

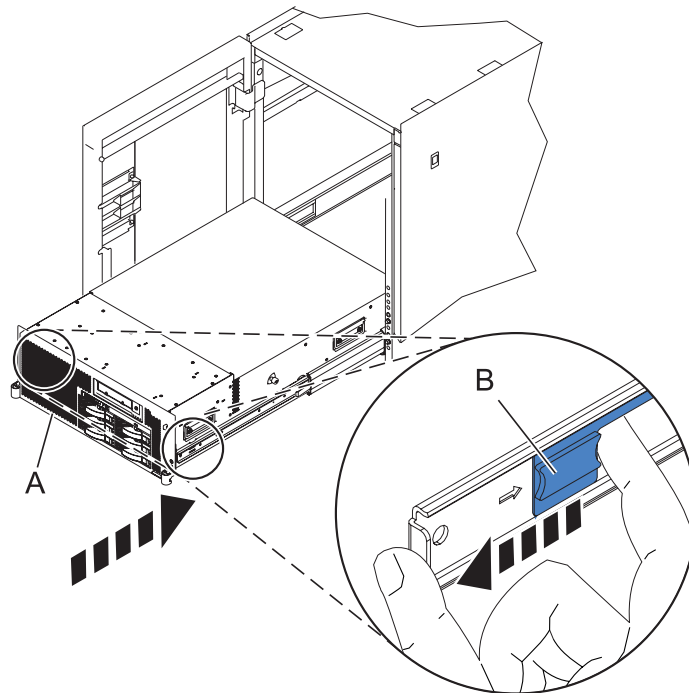
1. Place the service access cover **(A)** on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



10. Place into operating position

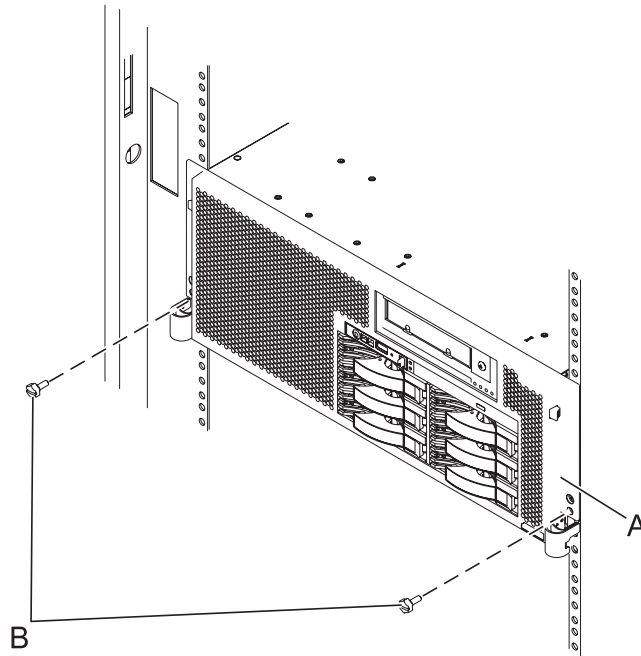
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



11. Place into operating position (continued)

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

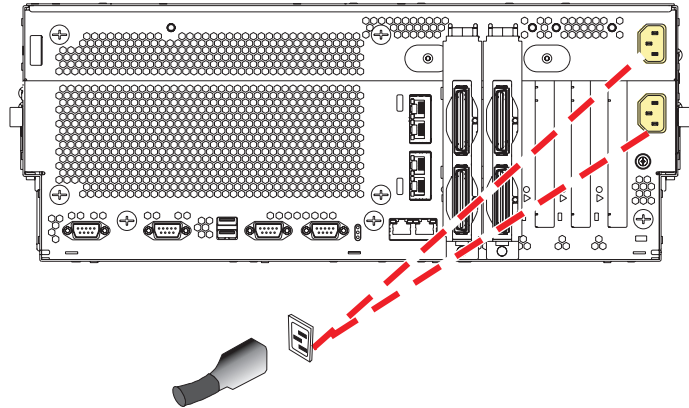


12. Reconnect the external cables

Reconnect the external cables you previously removed, to the FRU you are servicing.

13. Connect the power cords

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



14.

Go to Verifying a repair.

Fan

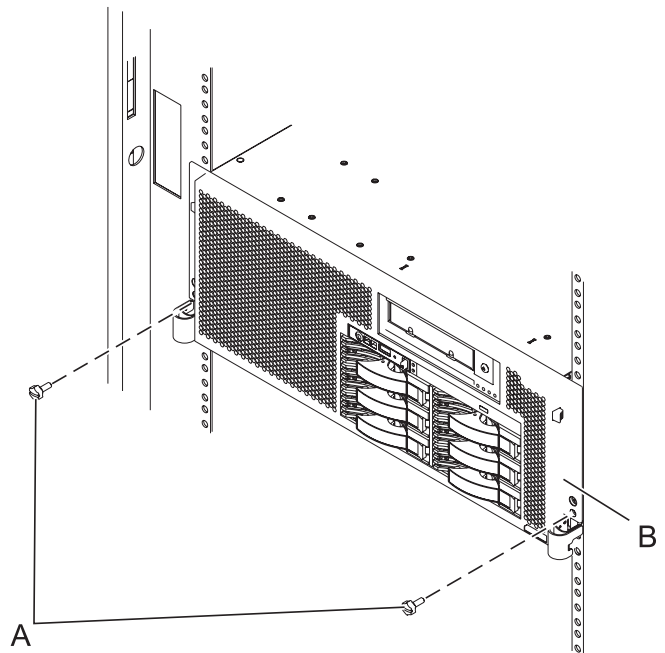
Use this procedure to service the fan.

1. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

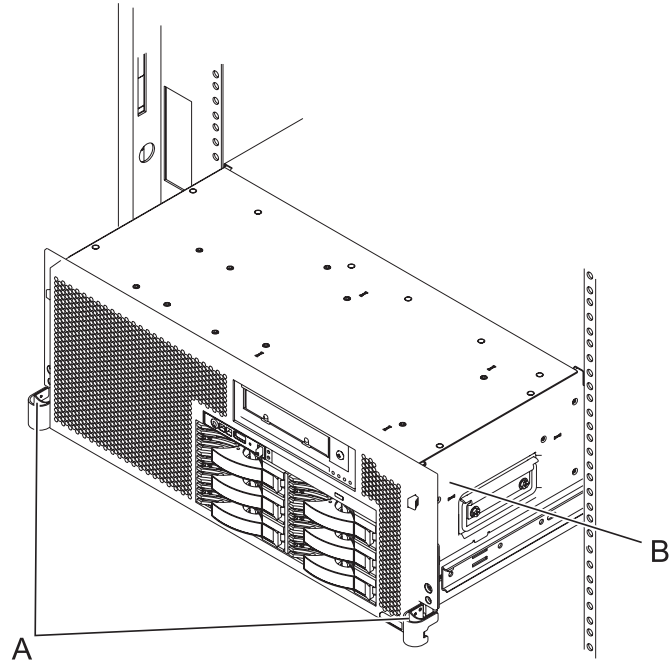


2. Place into service position (continued)

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.

Notes:

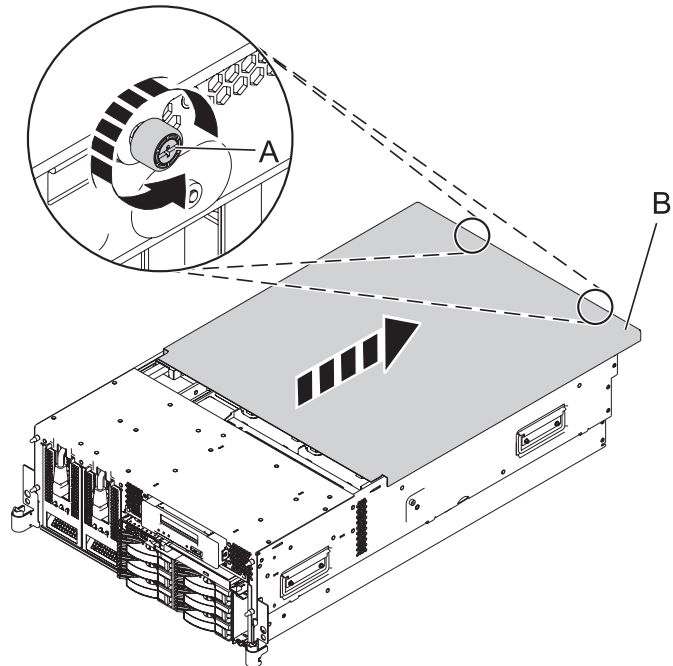
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



3. Remove the service access cover

1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back 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.



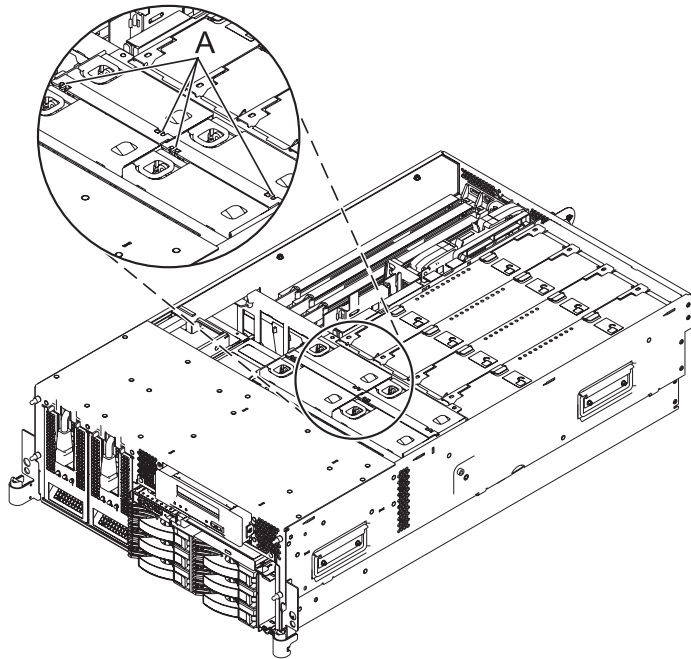
4. Determine if the repair can continue concurrently

You must determine if the repair can continue concurrently.

To continue the repair concurrently, the following conditions must be true:

- Air moving devices (AMDs) must already be installed at the other locations.
- Each of these AMD units has a green LED and an amber LED. The LEDs (**A**) must be set as follows:
 - Green - on
 - Amber - off

If any of the conditions are not true, the repair can continue only after powering off the unit containing the FRU that is being repaired. If the unit is already powered off, you may proceed with a nonconcurrent repair.



5.

Select an action

Nonconcurrent repair.
Power off the unit
and continue the
repair.

↓

Concurrent repair.
Continue the repair
with unit power on.

Go to step 8 on page
66.

Delay the repair.

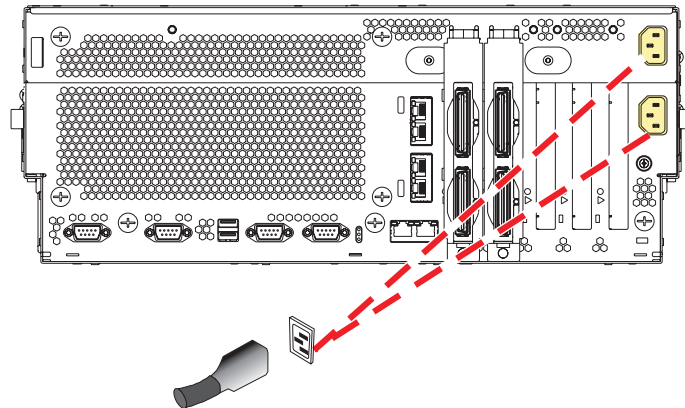
This ends the procedure.

6. Power off the unit

Power should be removed from the unit containing the fan. If this unit is powered on, power it off now.

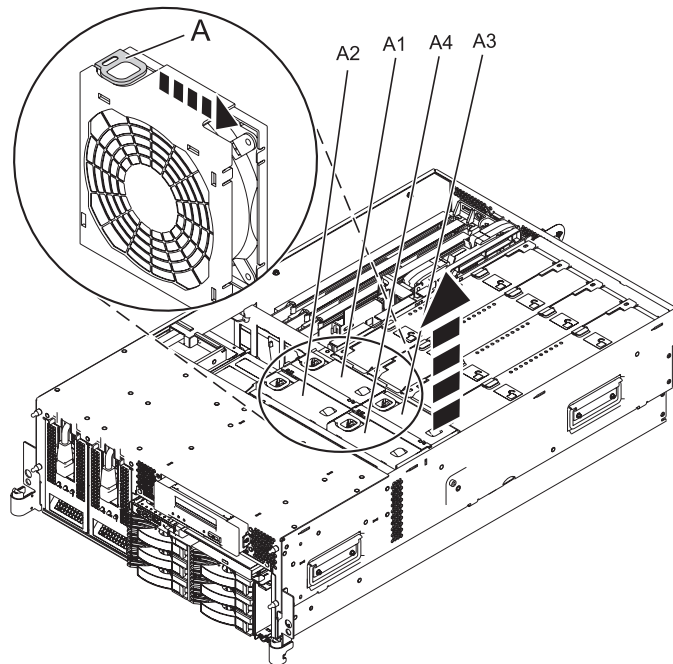
7. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.



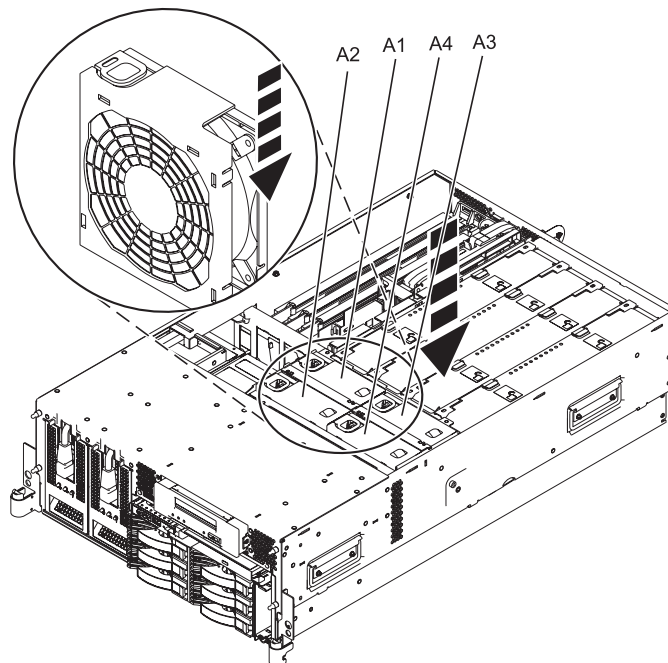
8. Remove the fan

1. Locate the failing system fan to be replaced.
2. While squeezing the latch **(A)**, reach through the hole of the failing fan and pull the fan out of the fan cage.



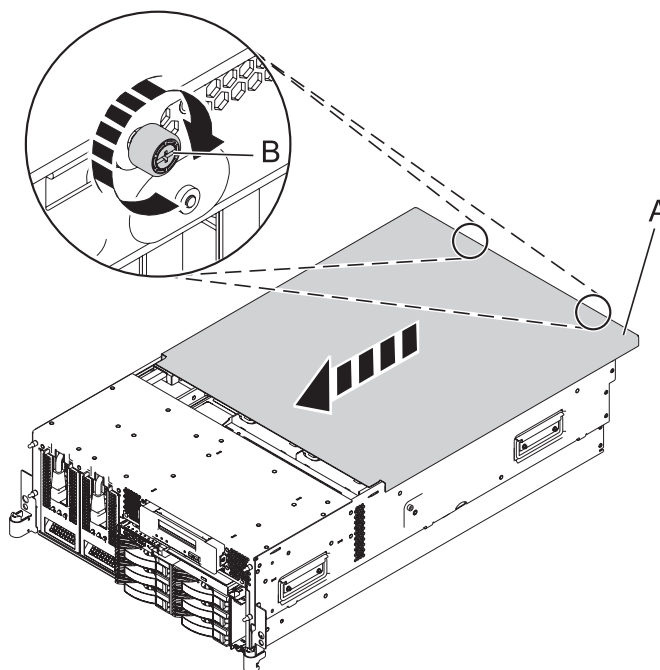
9. Install the fan

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



10. Install the service access cover

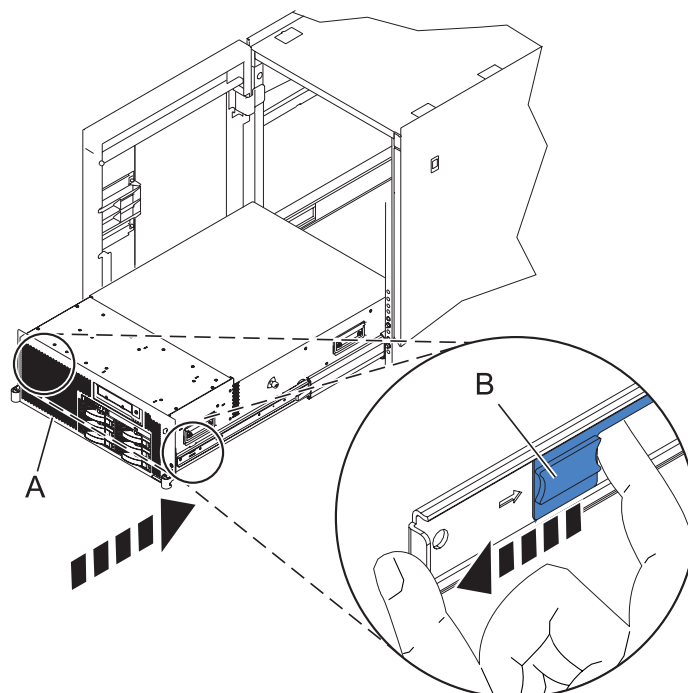
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



11. Place into operating position

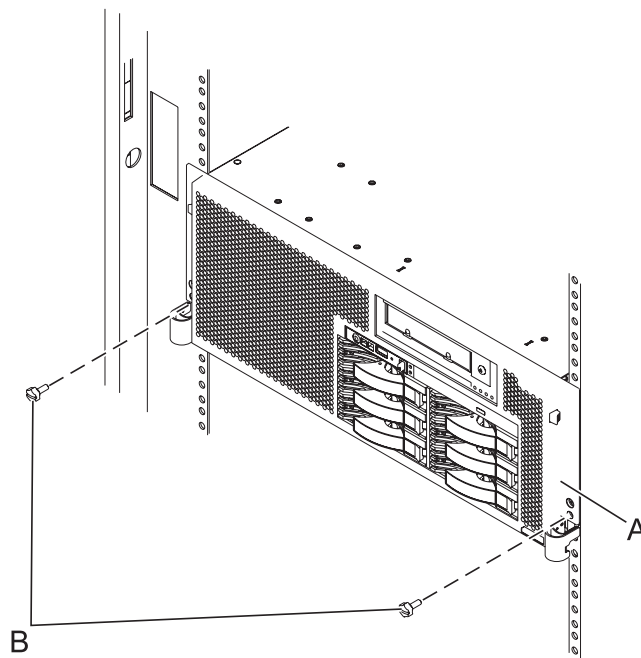
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



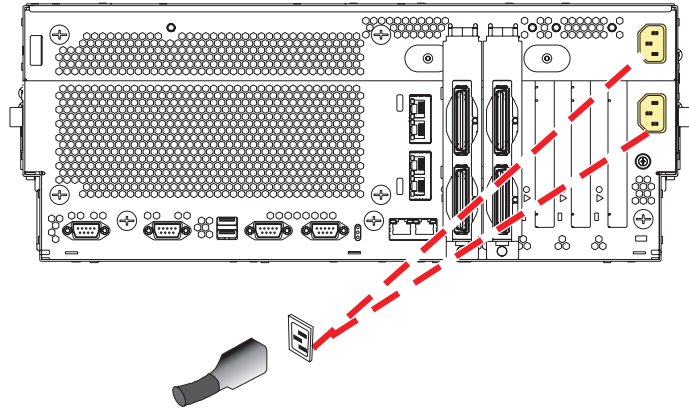
12. Place into operating position (continued)

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



13. Connect the power cords

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



14.

Go to Verifying a repair.

GX adapter

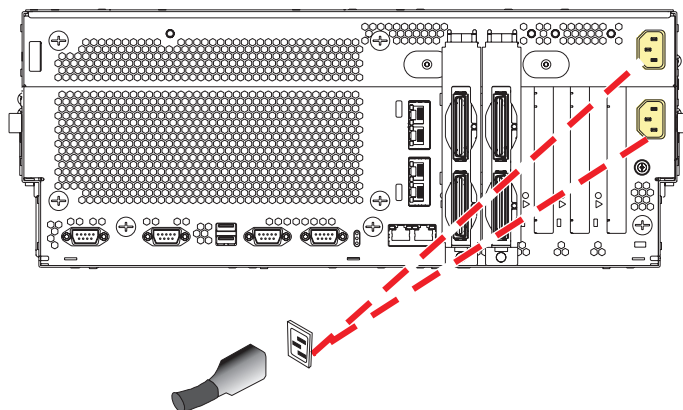
Use this procedure to service the GX adapter.

1. Power off the unit

Power should be removed from the unit containing the GX adapter card. If this unit is powered on, power it off now.

2. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.



3. Disconnect the external cables

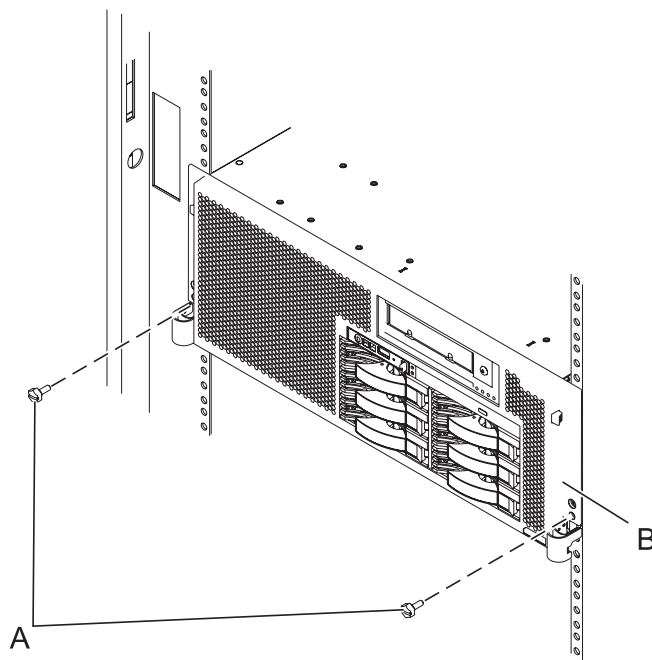
Label and disconnect the external cables connected to the FRU you are servicing.

4. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

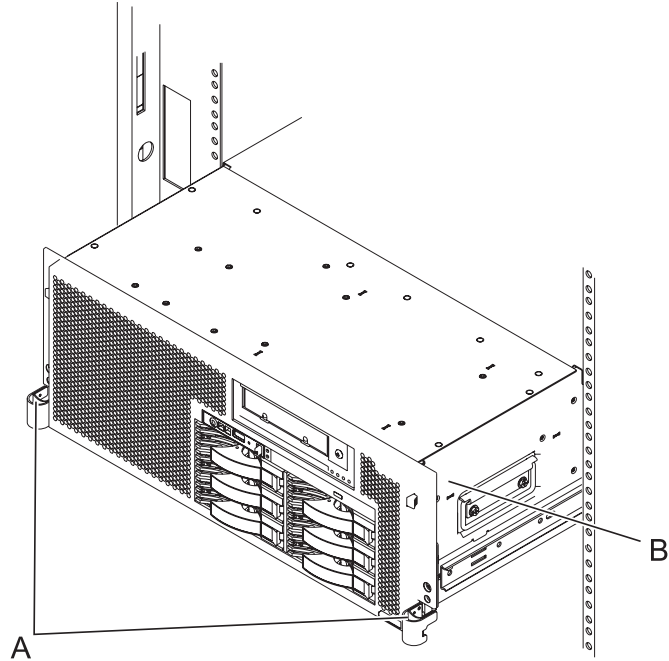


5. Place into service position (continued)

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.

Notes:

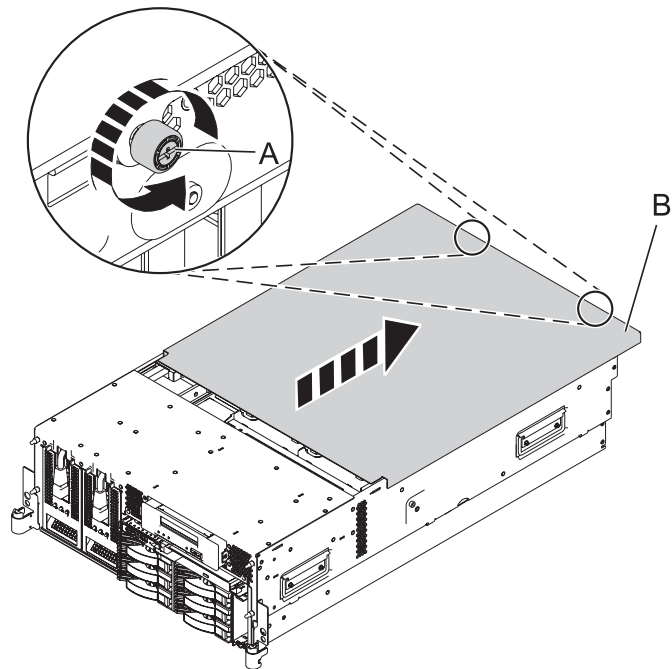
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



6. Remove the service access cover

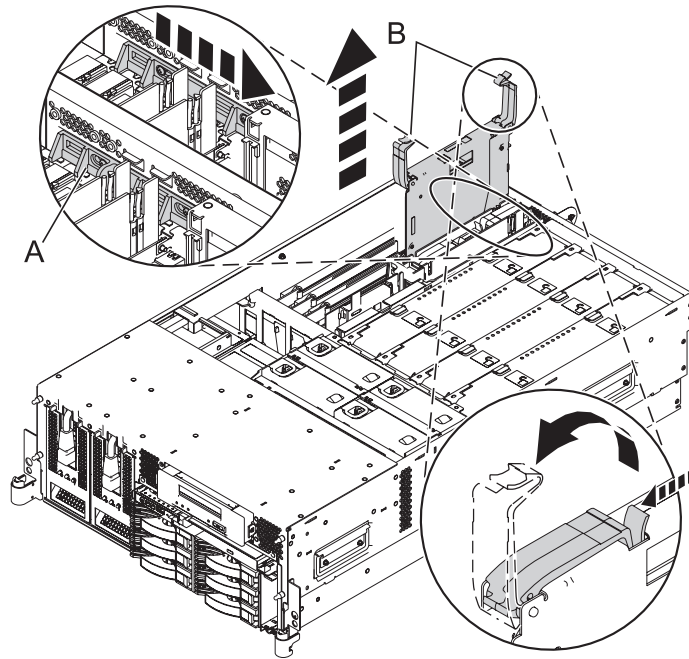
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



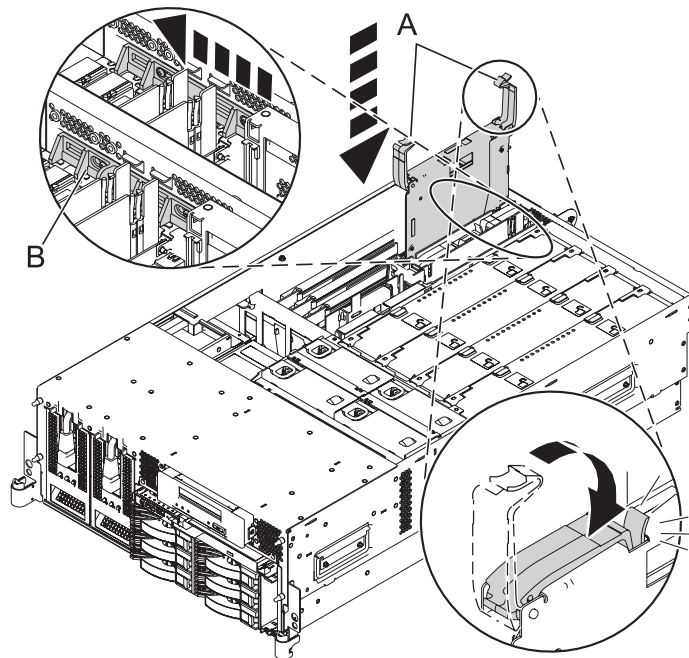
7. Remove the GX adapter card

1. Slide the adapter latch **(A)** in the direction shown to release the adapter card.
2. Squeeze the latches **(B)** to release them from the adapter card and rotate them in the direction shown.
3. Gently pull the adapter card straight out of the system.



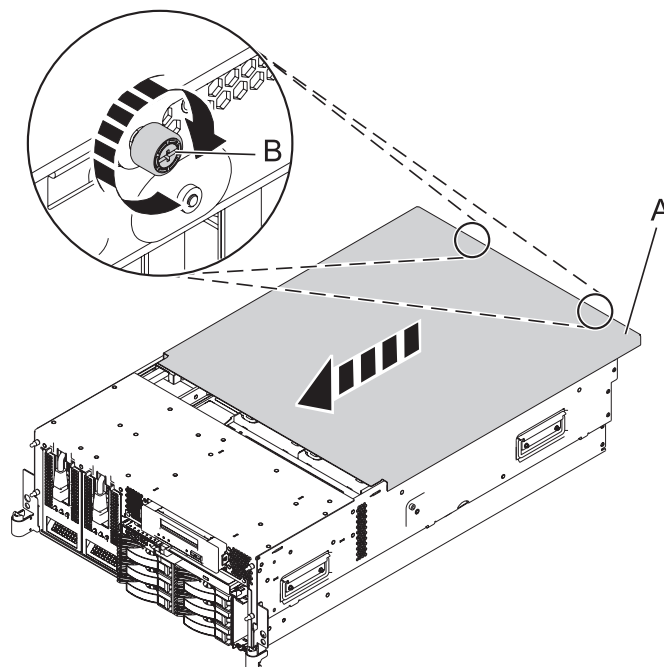
8. Install the GX adapter card

1. Align the adapter card with the expansion slot and its connector on the system backplane.
2. With the latches **(A)** in the open position, gently push the adapter card 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 card.



9. Install the service access cover

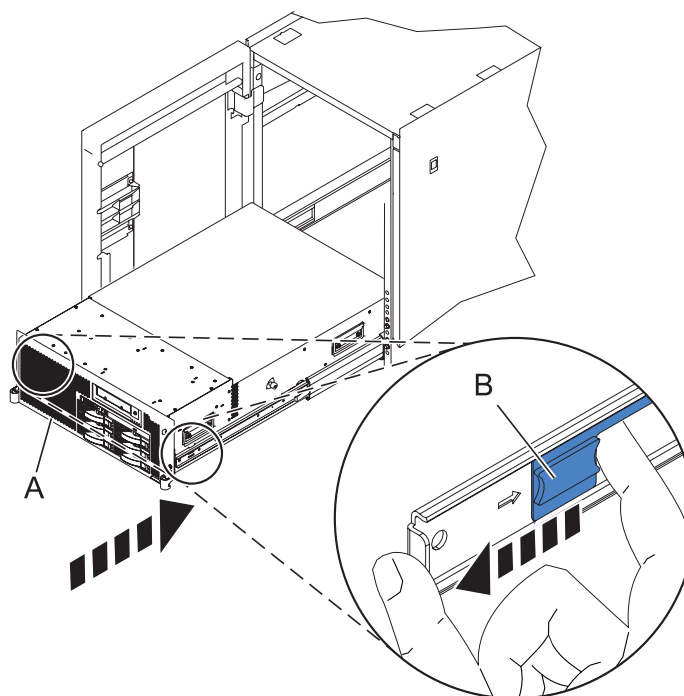
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



10. Place into operating position

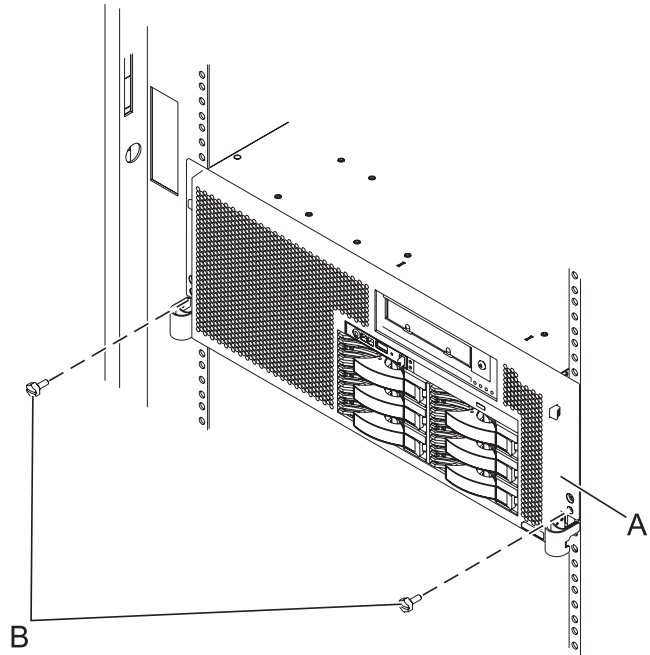
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



11. Place into operating position (continued)

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

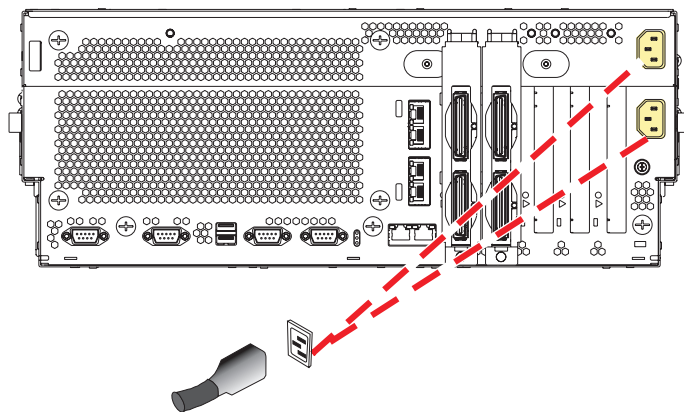


12. Reconnect the external cables

Reconnect the external cables you previously removed, to the FRU you are servicing.

13. Connect the power cords

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



14.

Go to Verifying a repair.

Media device

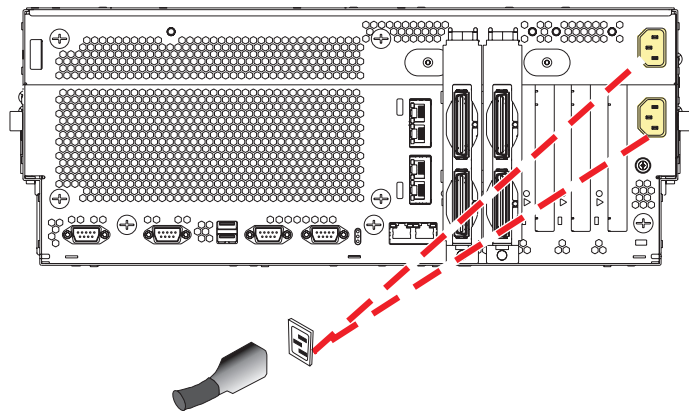
Use this procedure to service the media device.

1. Power off the unit

Power should be removed from the unit containing the media device. If this unit is powered on, power it off now.

2. Disconnect the power cords

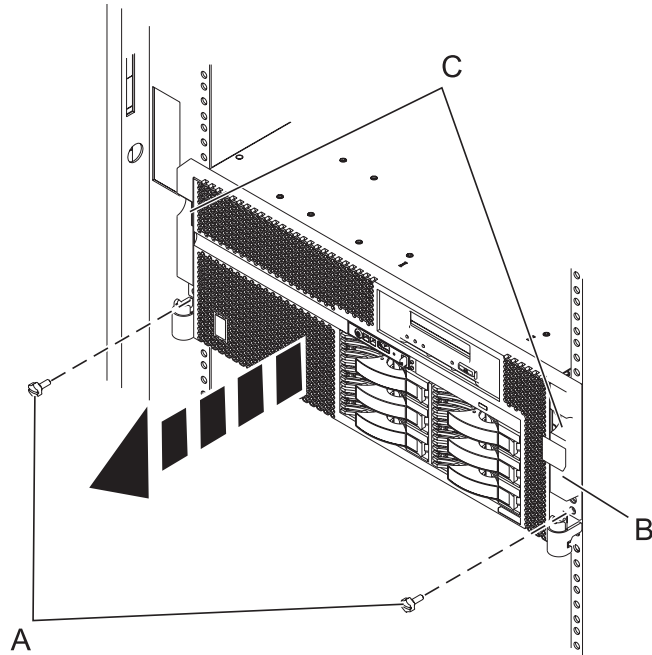
Disconnect all power cords from the unit you are servicing.



3. Remove the front cover

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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

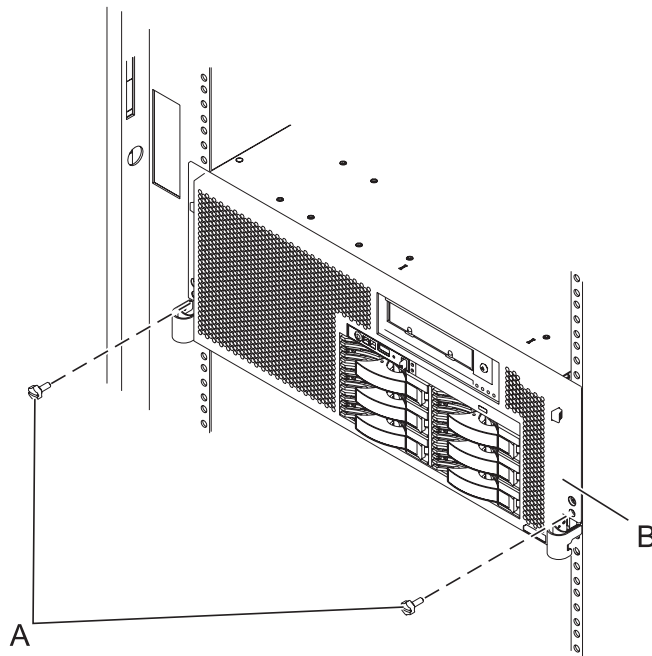


4. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

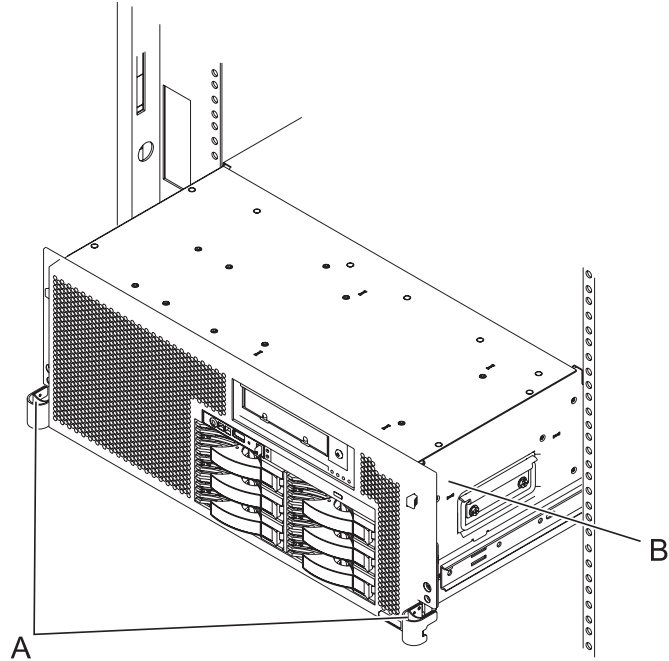


5. Place into service position (continued)

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.

Notes:

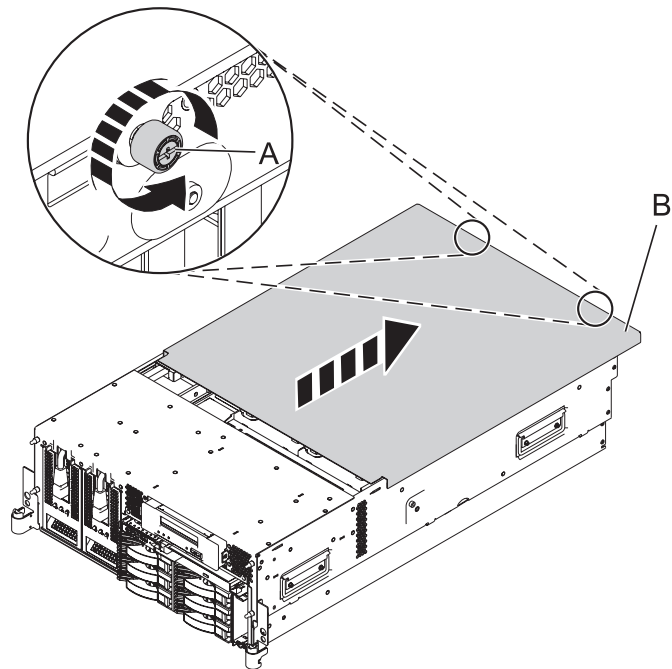
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



6. Remove the service access cover

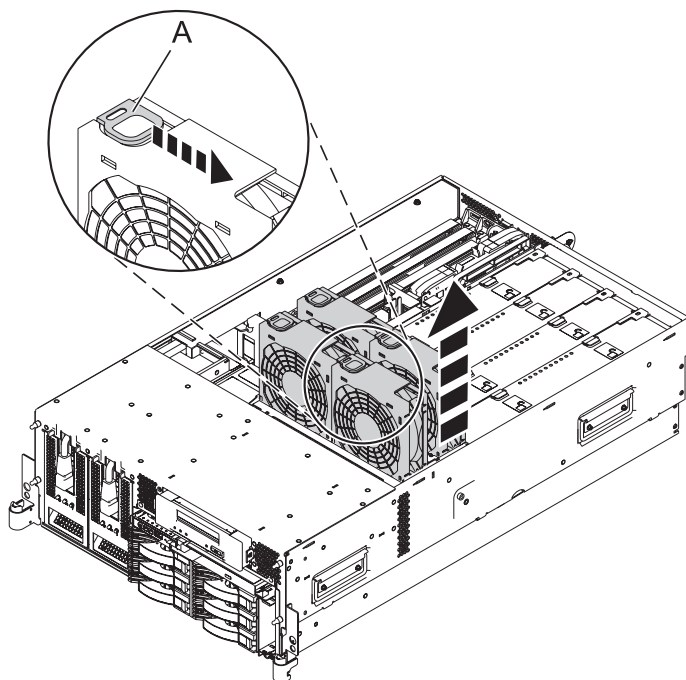
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



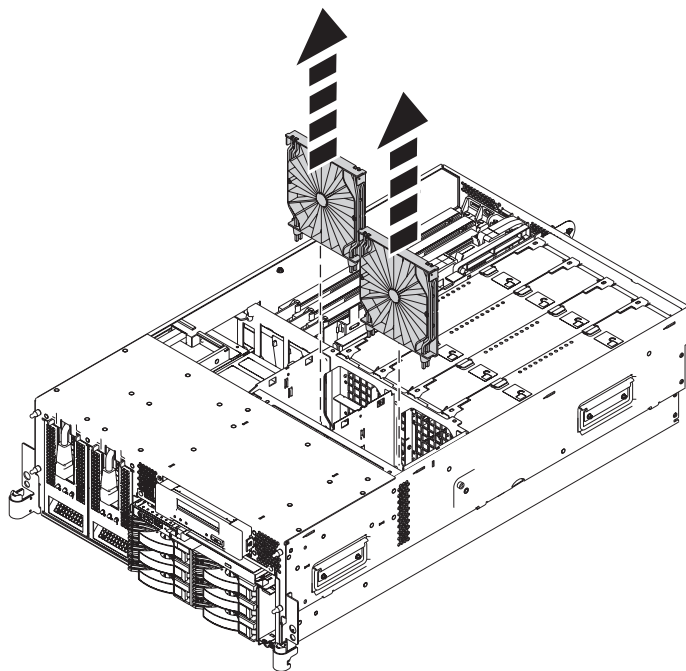
7. Remove the fans

1. While squeezing the latch (A), reach through the hole of the fan and pull the fan out of the fan cage.
2. Repeat these steps until all system fans are removed from the fan cage.



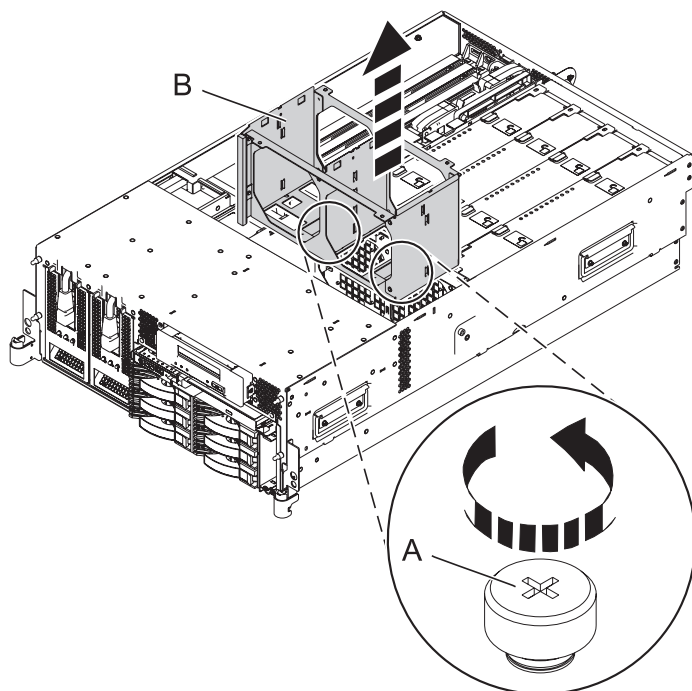
8. Remove the air baffles

Grasp the air baffles and pull them out of the fan cage.



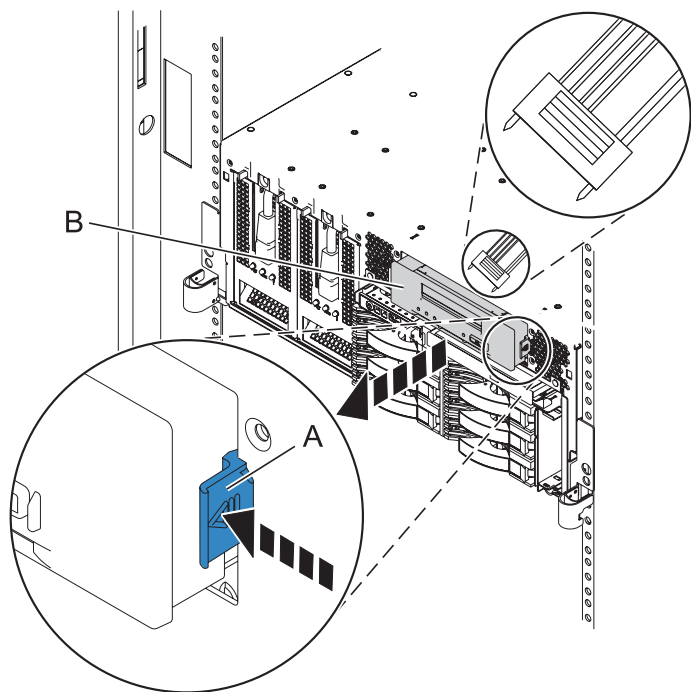
9. Remove the fan cage

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.



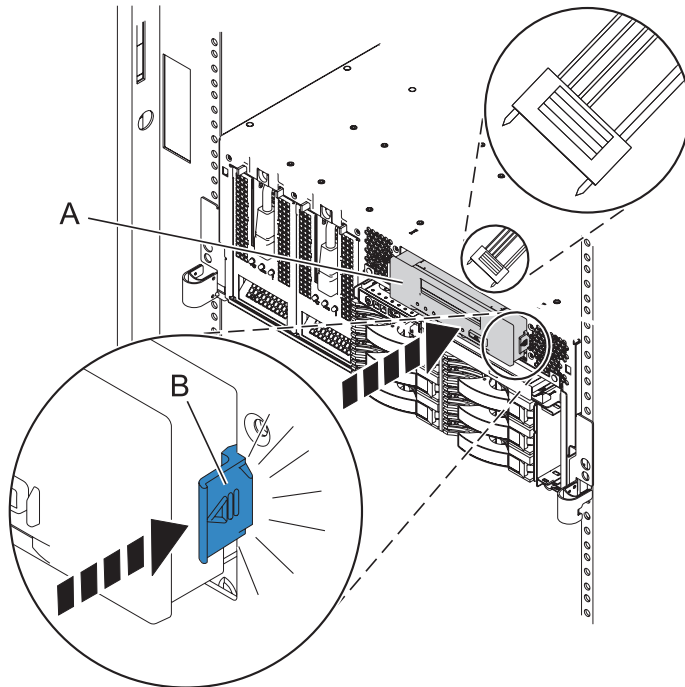
10. Remove the media device

1. While pushing the media device release latches (A), grasp the device (B) and begin to pull it out of the system unit.
2. Disconnect the cable attached to the back of the media device.
3. Finish pulling the media device out of the system unit.



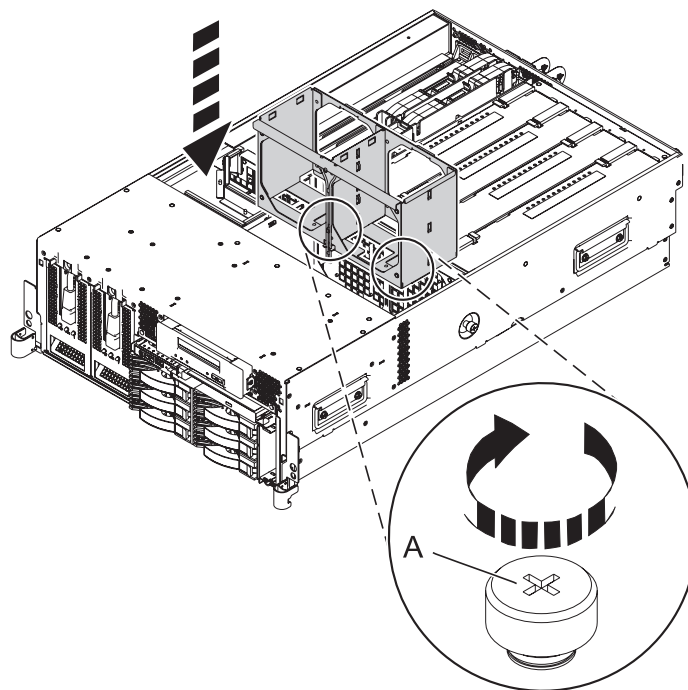
11. Install the media device

1. Connect the cable to the back of the media device **(A)**.
2. Push the media device **(A)** into the system unit until you feel the latches **(B)** lock.



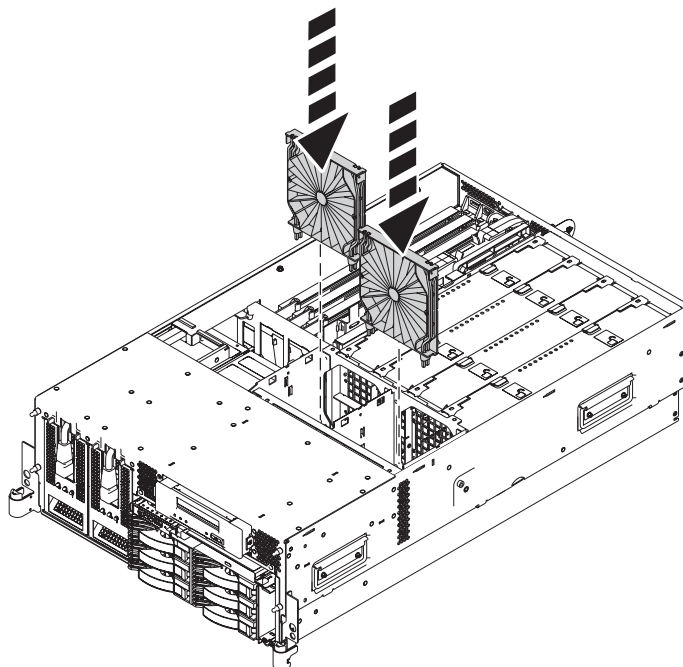
12. Install the fan cage

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.



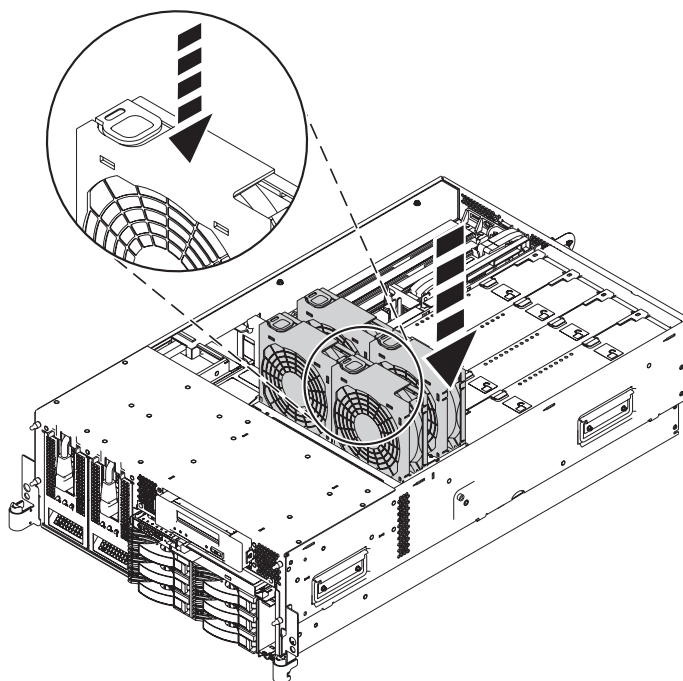
13. Install the air baffles

1. Lower the air baffles into their location in the fan cage.
2. Push down on the air baffles until they lock into place.



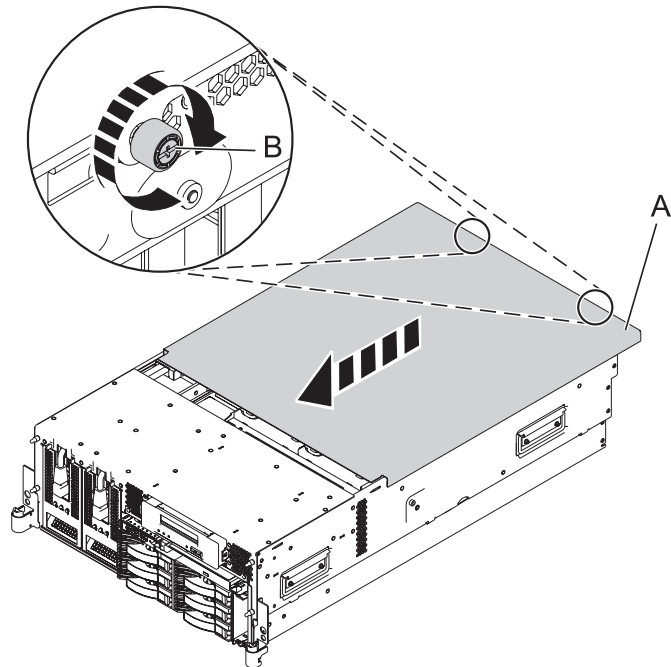
14. Install the fans

1. Lower the fan into its location in the fan cage.
2. Push down on the fan until it locks into place.
3. Repeat these steps until all system fans are installed.



15. Install the service access cover

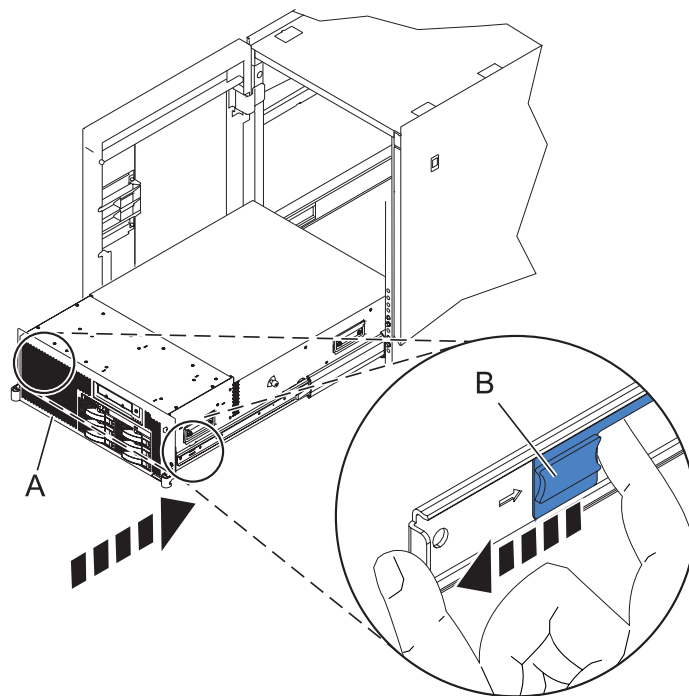
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



16. Place into operating position

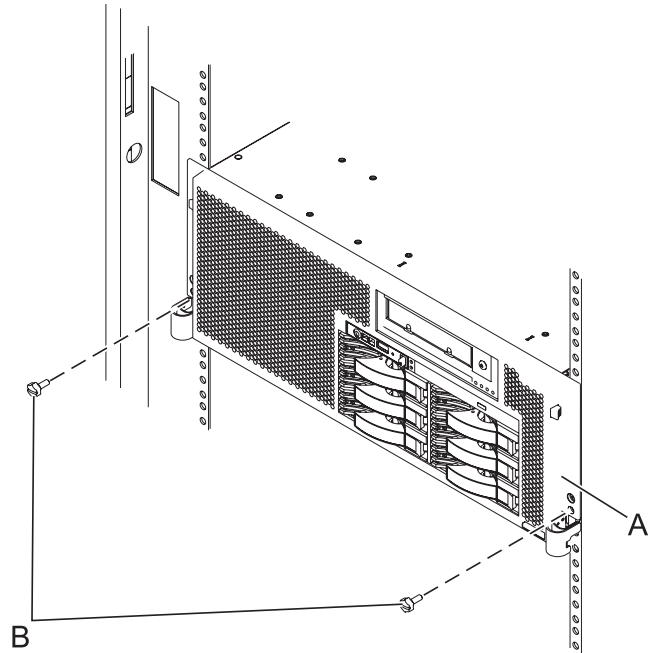
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



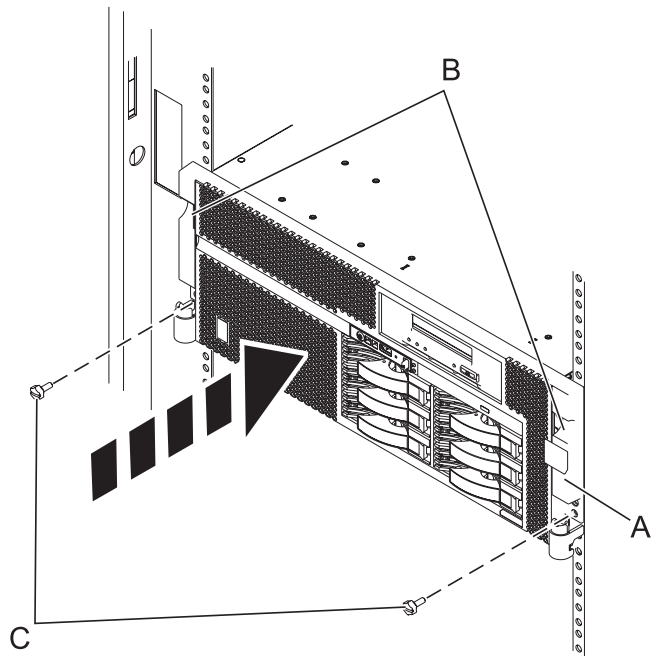
17. Place into operating position (continued)

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



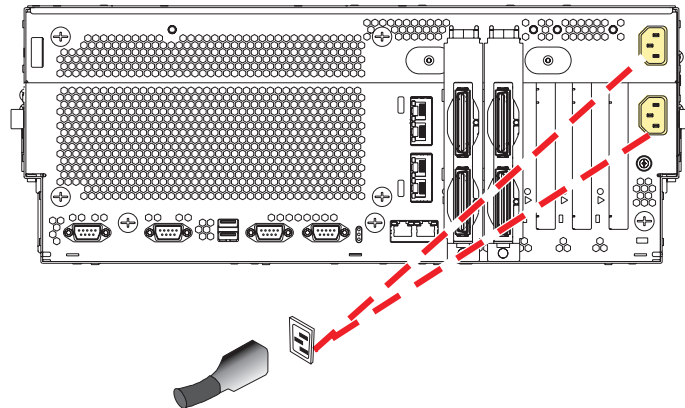
18. Install the front cover

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 following figure. The latches should hold the cover in place.
3. Tighten the thumbscrews.
4. Close the front rack door.



19. Connect the power cords

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



20.

Go to Verifying a repair.

Memory DIMM

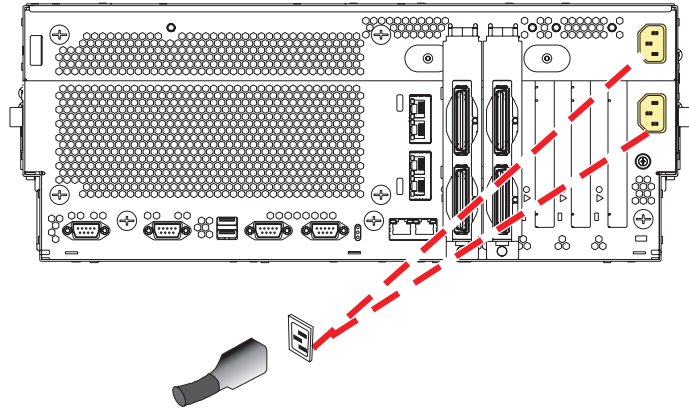
Use this procedure to service a memory DIMM.

1. Power off the unit

Power should be removed from the unit containing the memory DIMM. If this unit is powered on, power it off now.

2. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

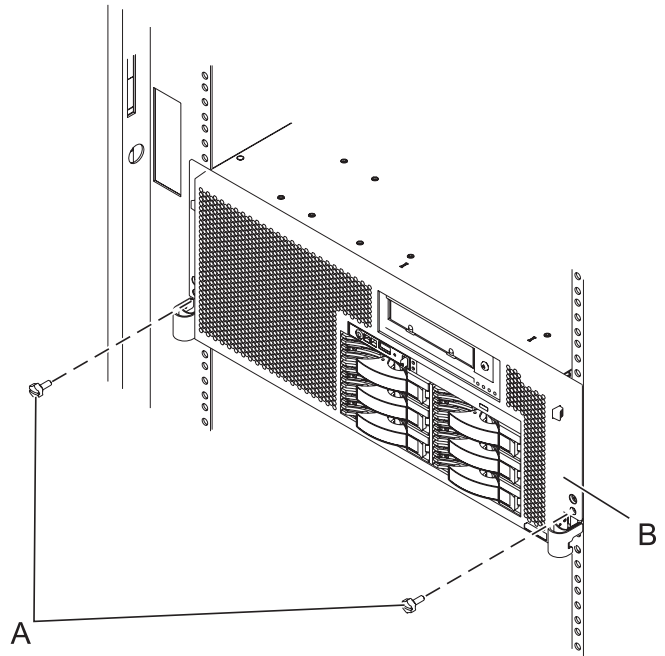


3. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

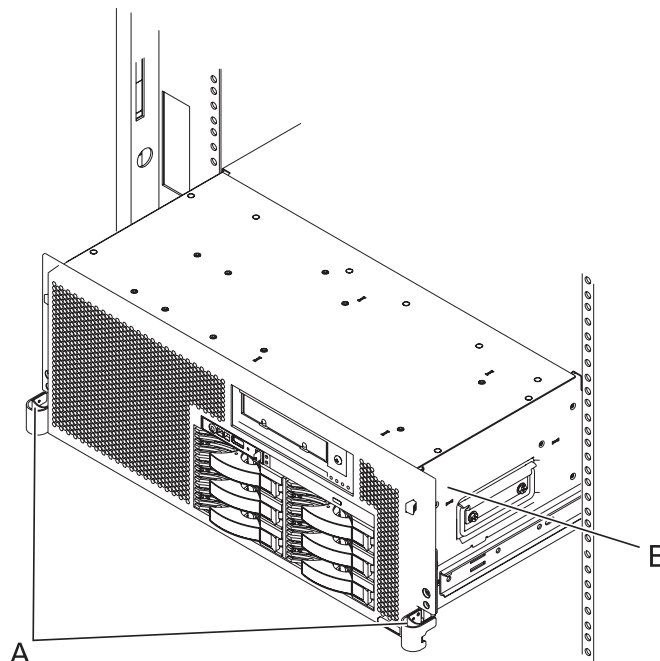


4. Place into service position (continued)

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.

Notes:

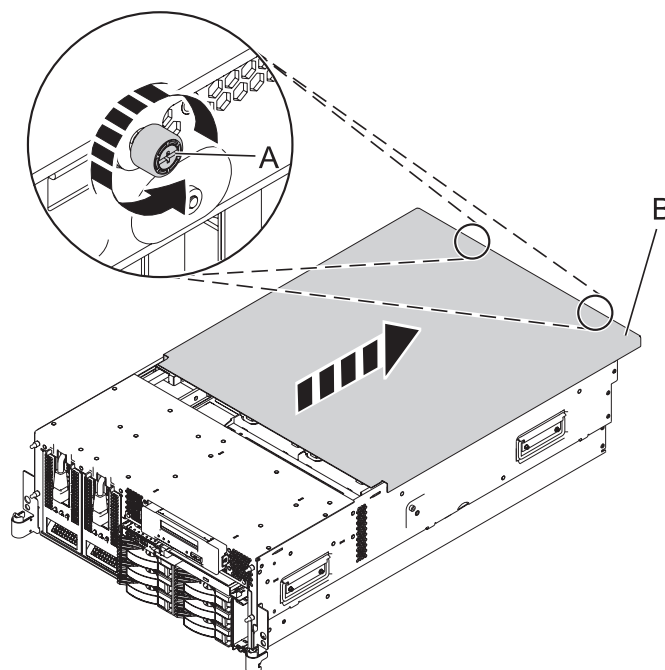
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



5. Remove the service access cover

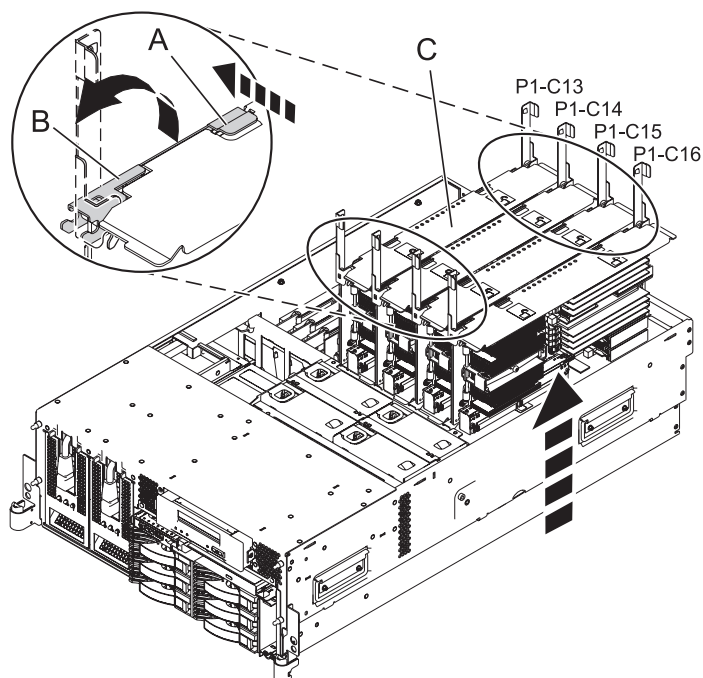
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



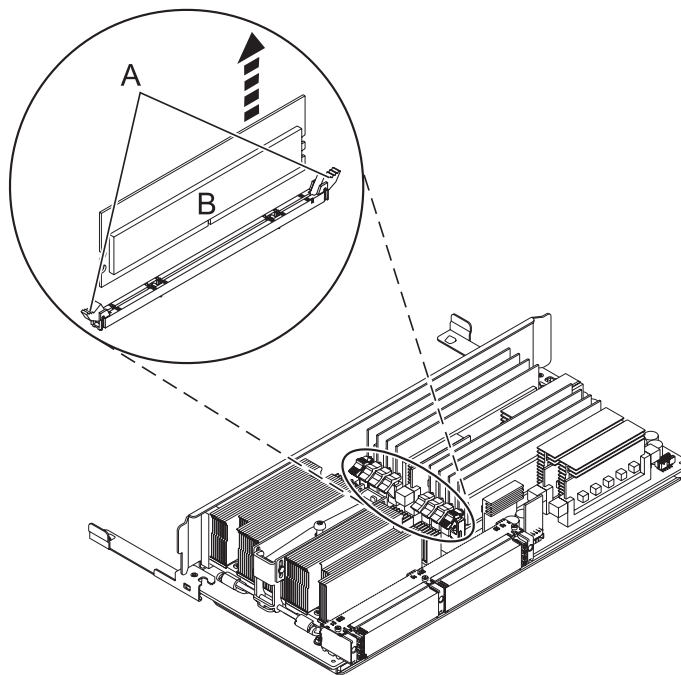
6. Remove the system processor assembly

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.



7. Remove the memory DIMM

1. Remove the memory DIMM by pushing the tabs (A) out and then down. The tabs' lever action forces the memory DIMM out of the connector.
2. Pull the memory DIMM (B) out of the connector.

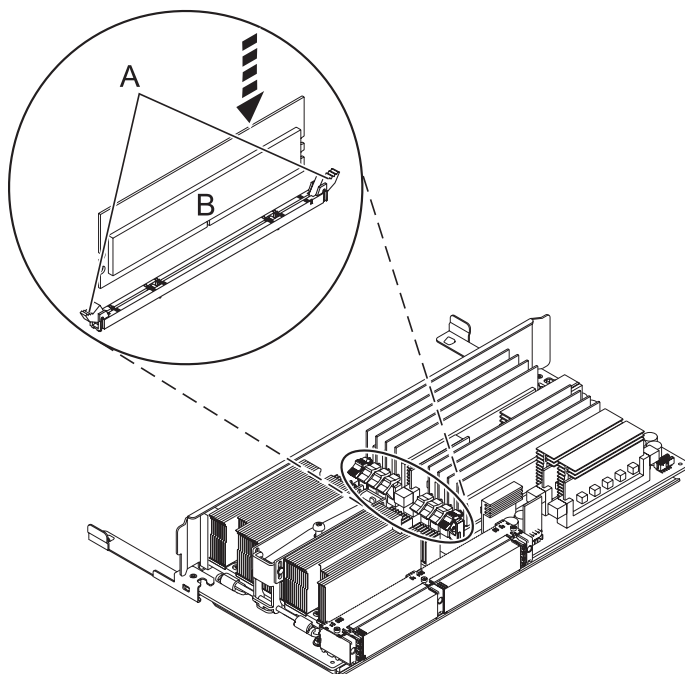


8. Install the memory DIMM

1. Ensure that the connector locking tabs (A) are pushed out in the unlocked position before installing a new memory DIMM.

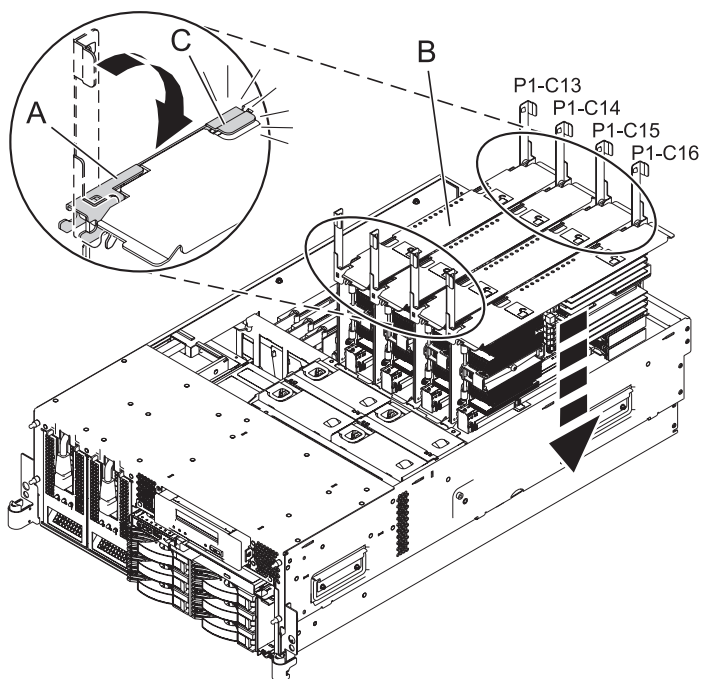
Attention: Memory DIMMs are keyed to prevent a DIMM from being installed improperly. Note the locations of the key tabs within the DIMM connector before attempting to install the DIMM.

2. Carefully grasp the memory DIMM (B) along two edges and align the connector.
3. Insert the memory DIMM firmly into the connector.
4. Secure the memory DIMM by pushing in the locking tabs (A).



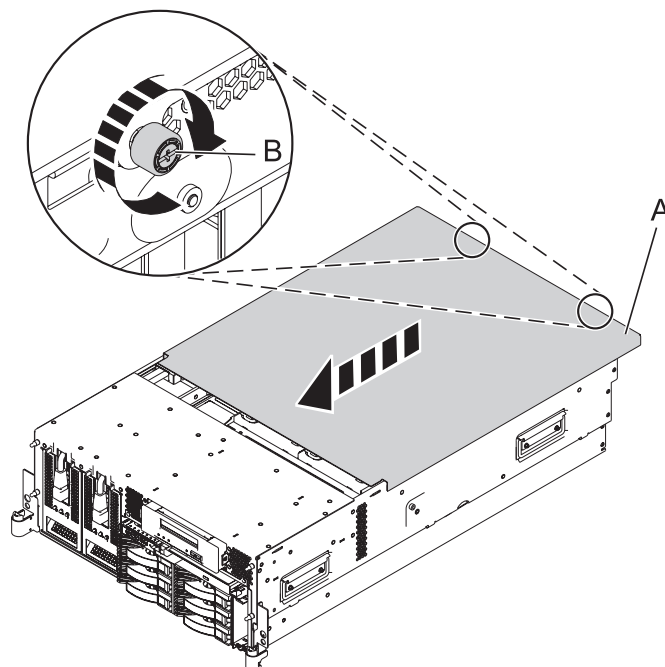
9. Install the system processor assembly

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).



10. Install the service access cover

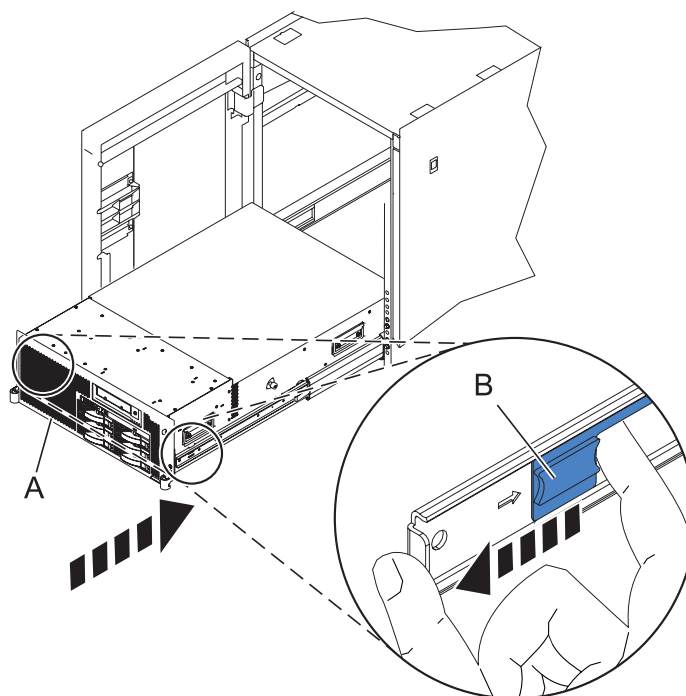
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



11. Place into operating position

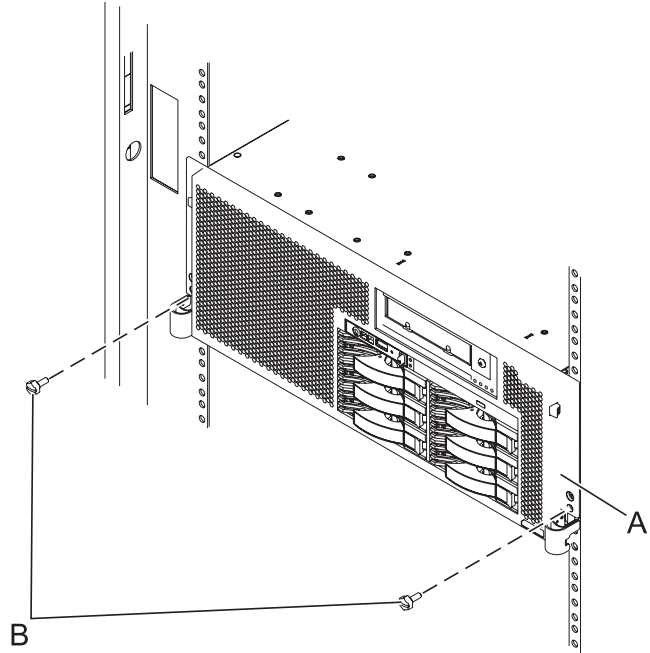
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



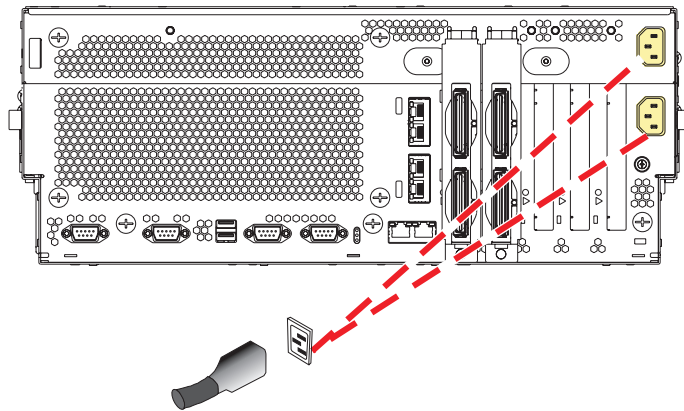
12. Place into operating position (continued)

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



13. Connect the power cords

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



14.

Go to Verifying a repair.

PCI adapter

Use this procedure to service the PCI adapter.

1.

You may service the PCI adapter concurrently or nonconcurrently. For information on removing and replacing PCI adapters with the power either on or off, see the Model 8204-E8A or 9409-M50 PCI adapters topic in PCI Adapters.

If you are servicing the PCI adapter concurrently, continue with step 4. Otherwise, continue with the next step.

For more information on OS specific concurrent replacement procedures, see the following links:

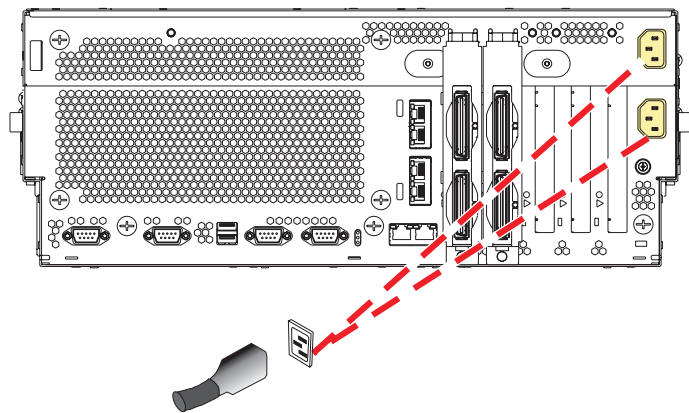
- Removing and replacing a PCI adapter in the 8204-E8A or 9409-M50 server, with the power on in AIX
 - Replacing a PCI adapter in the 8204-E8A or 9409-M50 server, with the power on in IBM i
 - Replacing a PCI adapter in the 8204-E8A or 9409-M50 server, with the power on in Linux
-

2. Power off the unit

Power should be removed from the unit containing the PCI card. If this unit is powered on, power it off now.

3. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.



4. Disconnect the external cables

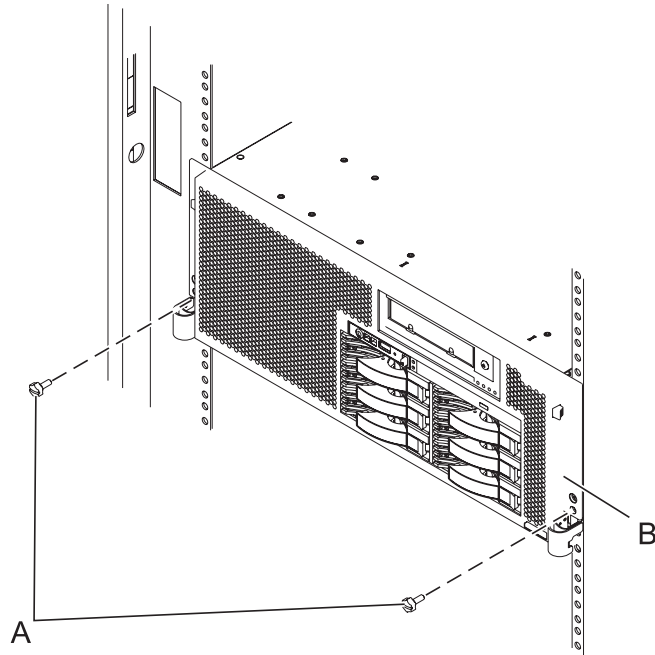
Label and disconnect the external cables connected to the FRU you are servicing.

5. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

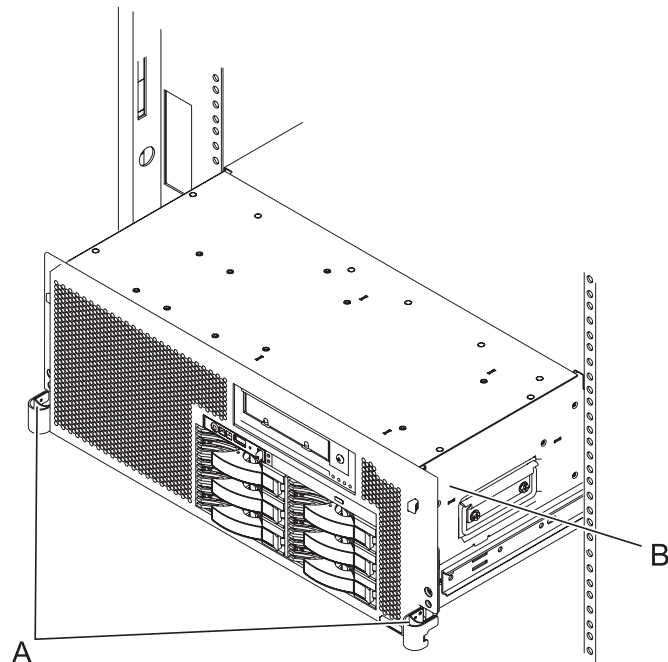


6. Place into service position (continued)

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.

Notes:

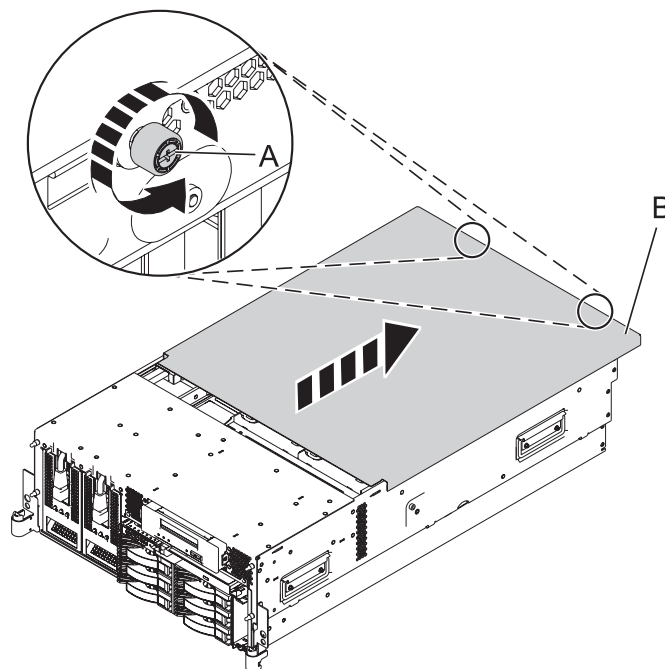
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



7. Remove the service access cover

1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back 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.

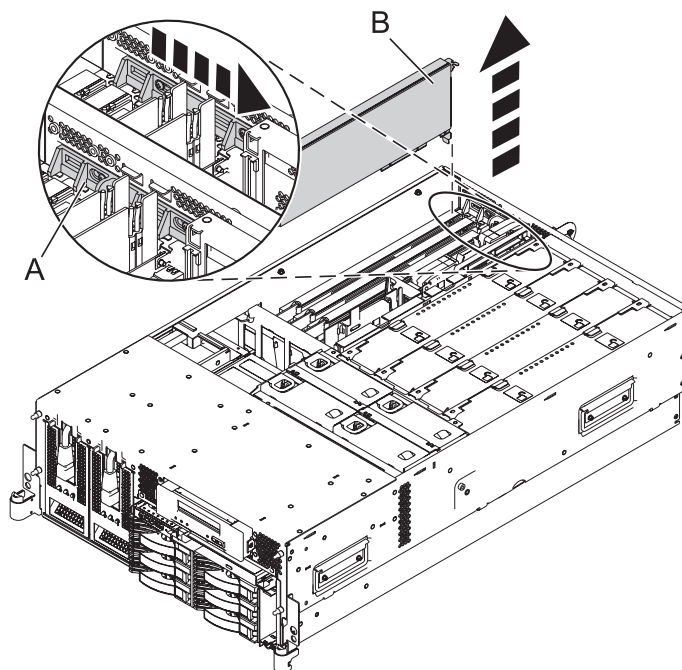


8. Remove the PCI card

1. Slide the adapter latch (A) in the direction shown to release the adapter (B).

Attention: Your model might have a tab that must be pressed and an adapter latch that must be lifted before the latch will slide.

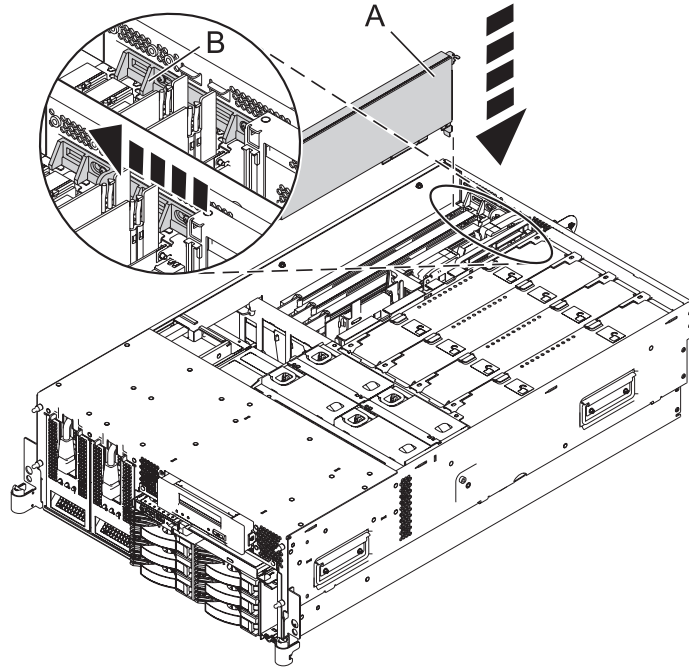
2. Carefully grasp the PCI adapter by its top edge or upper corners, and pull the adapter straight out of its connector on the system backplane.



9. Install the PCI adapter

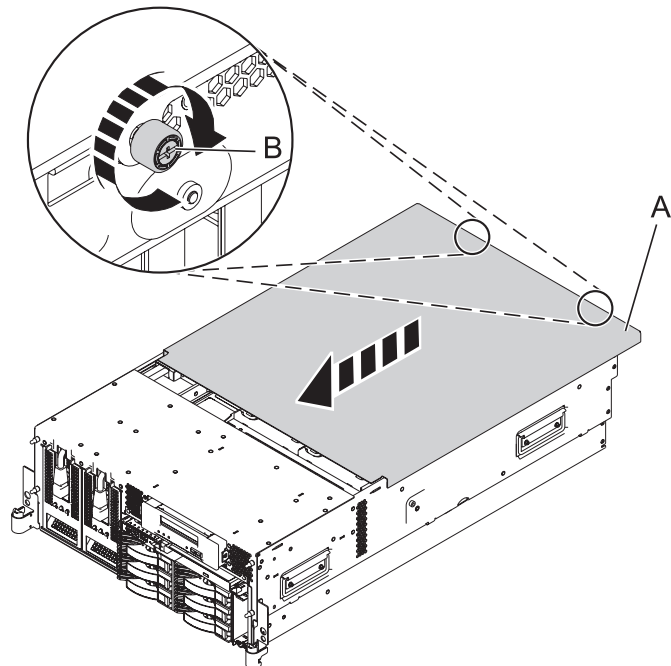
1. Place the adapter, component-side up, on a flat, static-protective surface.
2. Set any jumpers or switches on the adapter as instructed by the adapter's manufacturer.
3. Carefully grasp the adapter (**A**) by its top edge, and align the adapter with the expansion slot and its connector on the system backplane.
4. Press the adapter firmly into its connector.
5. Slide the adapter latch (**B**) back into place in the direction shown to secure the adapter.

Attention: Your model might have a latch that swings down and a tab that must be engaged after sliding the adapter latch.



10. Install the service access cover

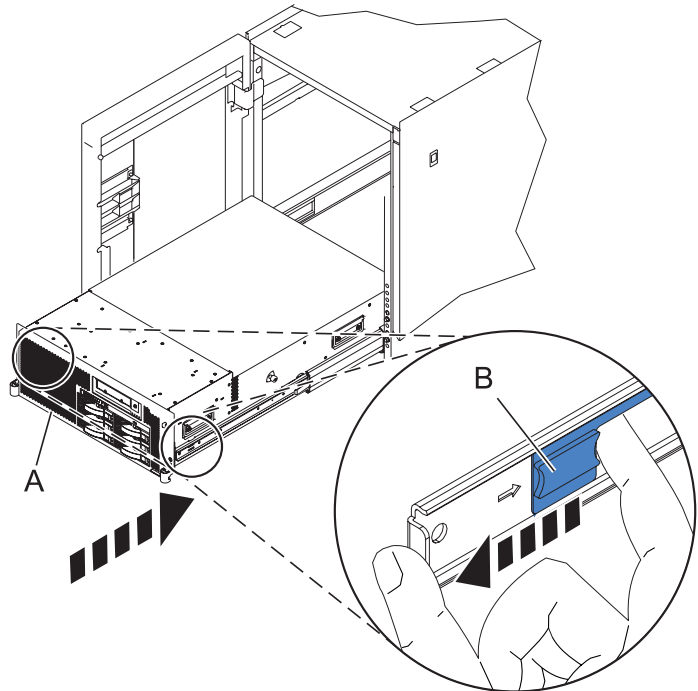
1. Place the service access cover (**A**) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



11. Place into operating position

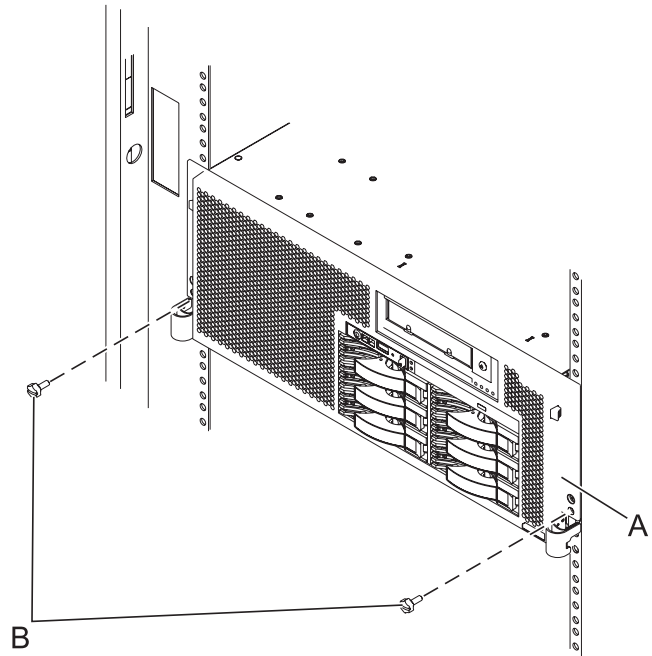
1. To unlock the rail safety latches (**B**), slide the latches towards the front of the system.
2. Push the system unit (**A**) back into the rack until both system-unit release latches have locked into position.

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



12. Place into operating position (continued)

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

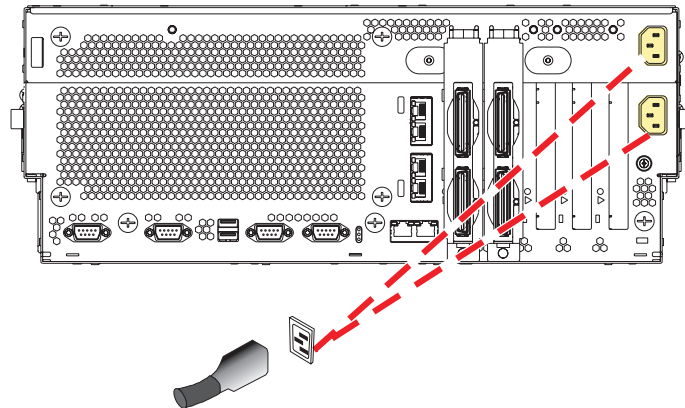


13. Reconnect the external cables

Reconnect the external cables you previously removed, to the FRU you are servicing.

14. Connect the power cords

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



15.

Go to Verifying a repair .

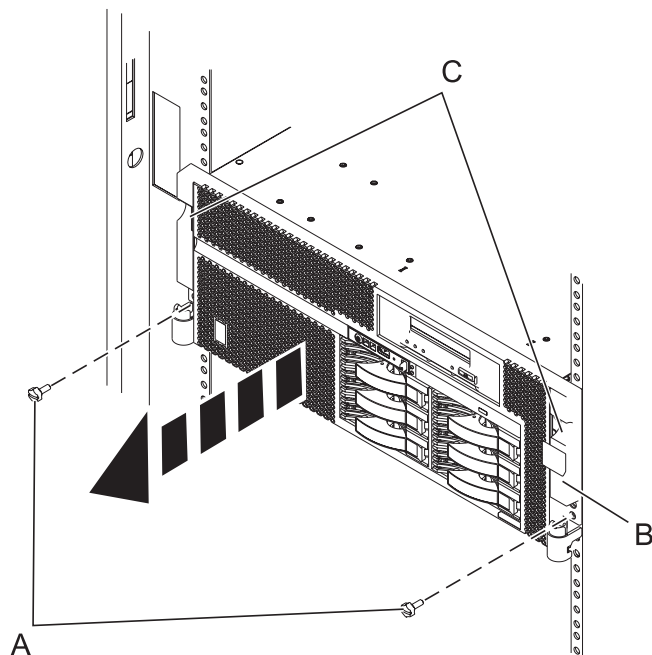
Power supply

Use this procedure to service the power supply.

1. Remove the front cover

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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

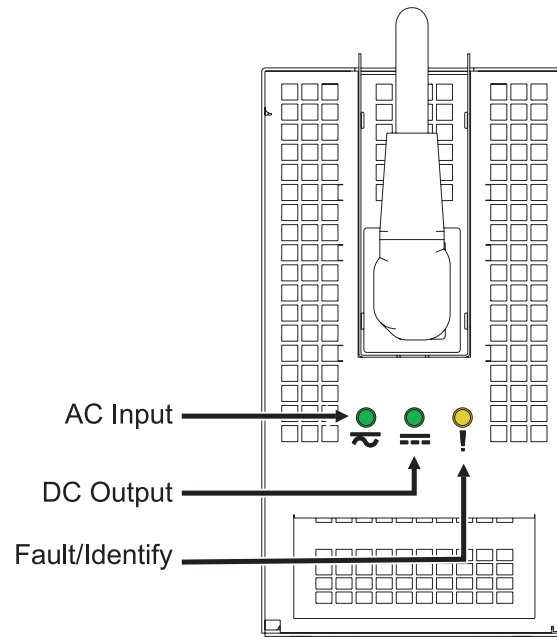


2. Determine if the repair can continue concurrently

You must determine if the repair can continue concurrently. To continue the repair concurrently, the following conditions must be true:

- Another power supply must already be installed.
- This power supply has three LEDs. The LEDs must be set as follows:
 - AC Input - on, not blinking
 - DC Output - on, not blinking
 - Fault/Identify - off

If any of the conditions are not true, the repair can continue only after powering off the unit containing the FRU that is being repaired. If the unit is already powered off, you may proceed with a nonconcurrent repair.



3.

Select an action:

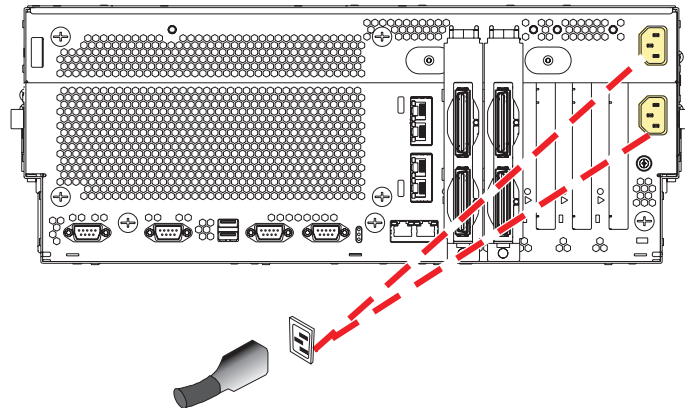
Nonconcurrent repair. Power off the unit and continue the repair. ↓	Concurrent repair. Continue the repair with unit power on. Go to step 6 on page 98.	Delay the repair. This ends the procedure.
--	---	--

4. Power off the unit

Power should be removed from the unit containing the power supply. If this unit is powered on, power it off now.

5. Disconnect the power cords

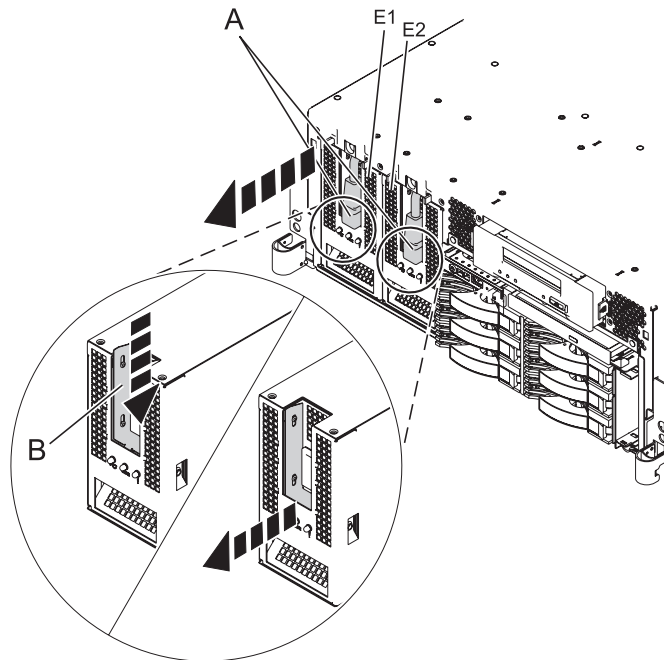
Disconnect all power cords from the unit you are servicing.



6. Remove the power supply

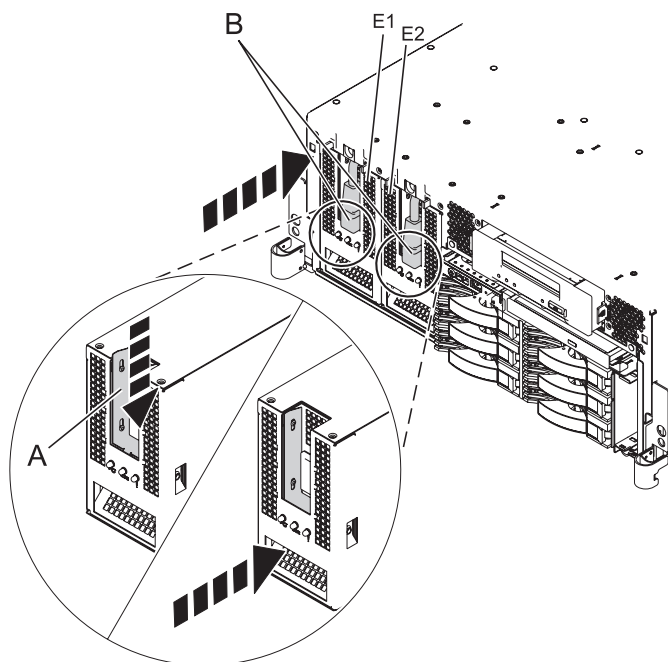
Danger: Do not attempt to open the covers of the power supply. Power supplies are not serviceable and are to be replaced as a unit.

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.



7. Install the power supply

1. While pushing the lever **(A)** down, carefully slide the new power supply into its location in the system.
2. Connect the power cable **(B)** to the power supply.



8.

Are you doing a concurrent repair?

Yes

No

↓

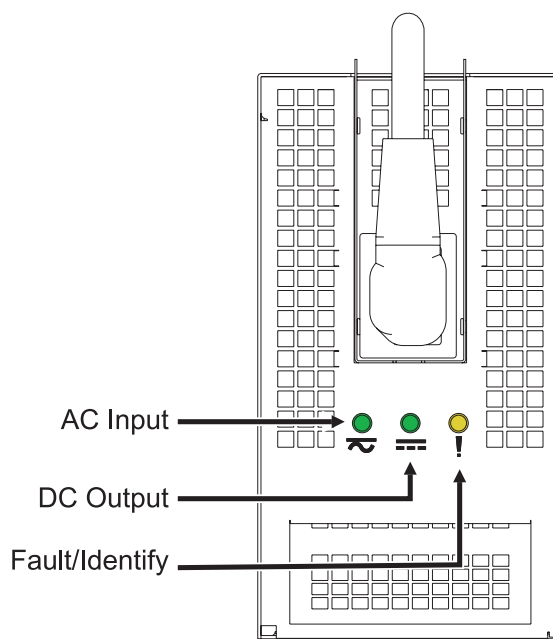
Go to step 10 on page 100.

9. Check the LEDs on the power supply

You must determine if the new power supply is operational. The new power supply is operational if its LEDs are set as follows:

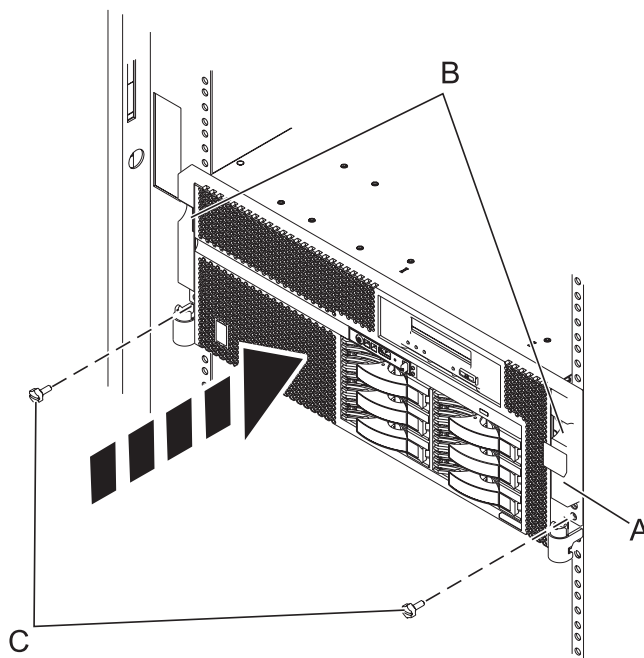
- AC Input - on, not blinking
- DC Output - on, not blinking
- Fault/Identify - blinking or off

If the LEDs are set differently, you must determine why. Make sure the power supply is plugged into a working AC power source, try installing a different power supply, or call your next level of support.



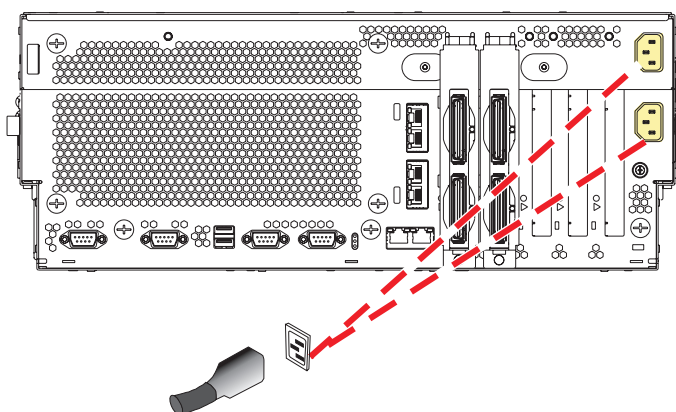
10. Install the front cover

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 following figure. The latches should hold the cover in place.
3. Tighten the thumbscrews.
4. Close the front rack door.



11. Connect the power cords

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



12.

Go to Verifying a repair.

RAID enablement card

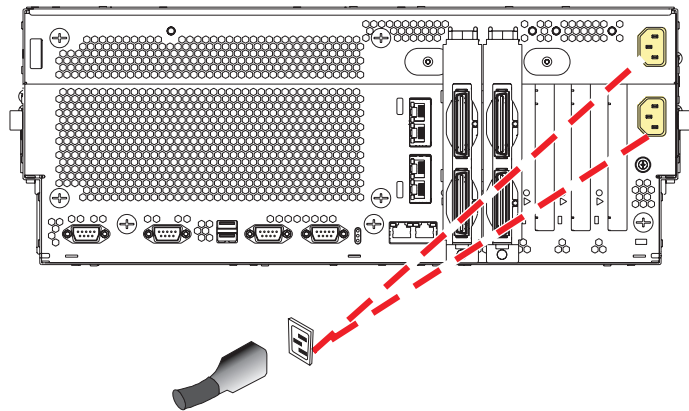
Use this procedure to service the RAID enablement card.

1. Power off the unit

Power should be removed from the unit containing the RAID type D card. If this unit is powered on, power it off now.

2. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

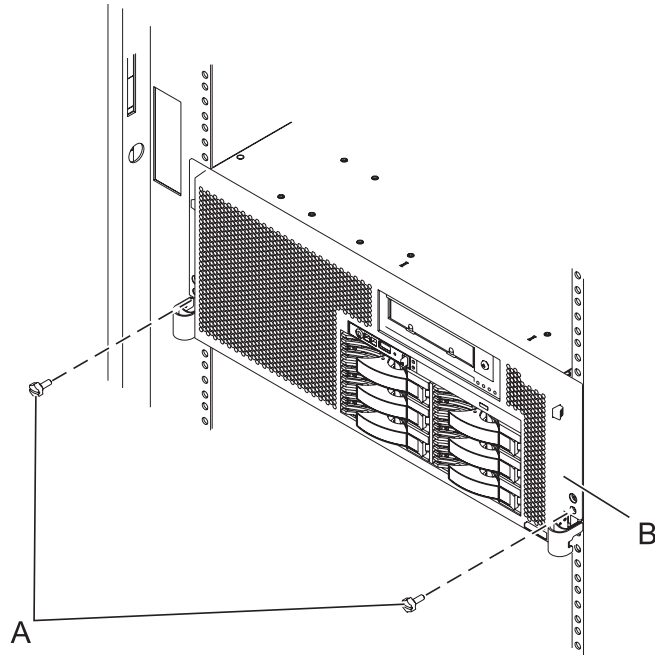


3. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

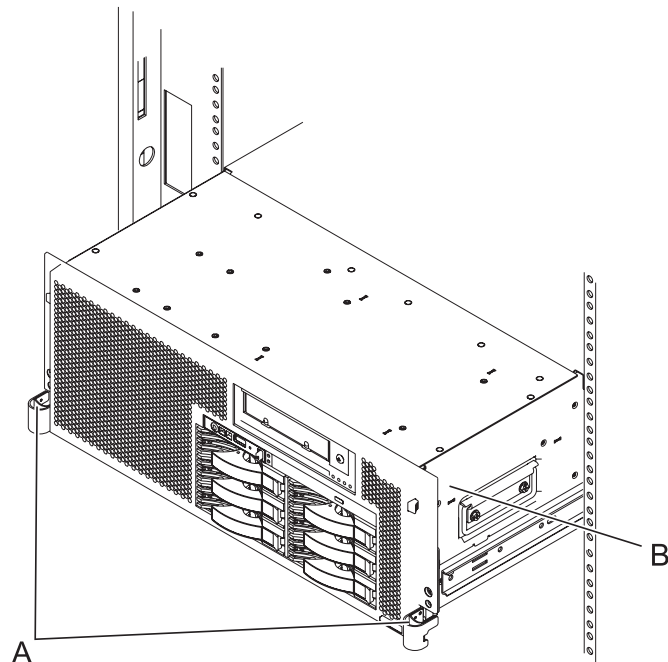


4. Place into service position (continued)

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.

Notes:

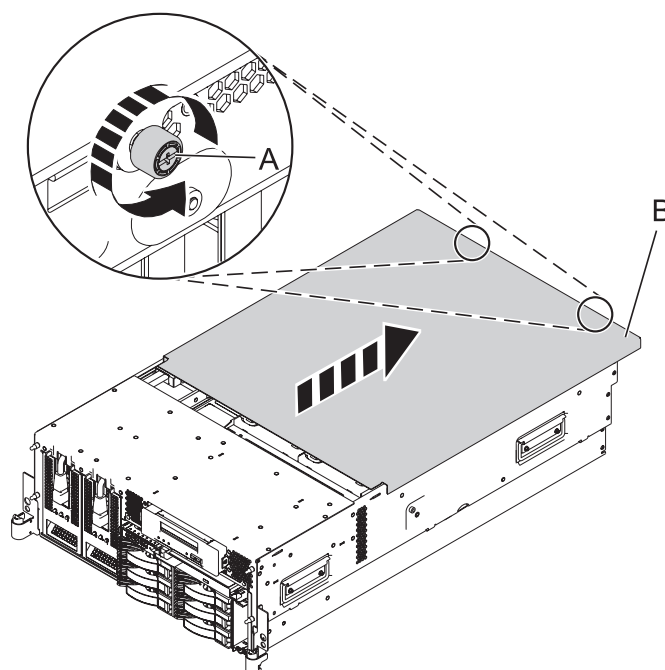
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



5. Remove the service access cover

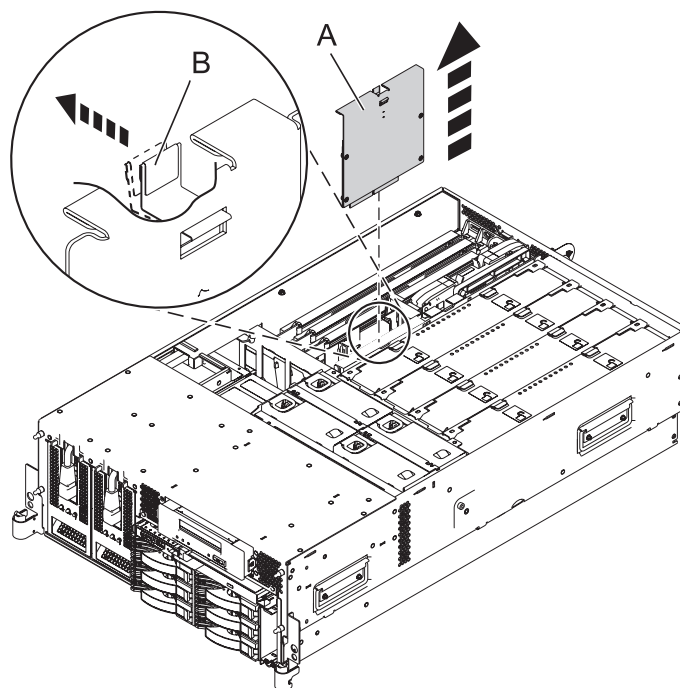
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



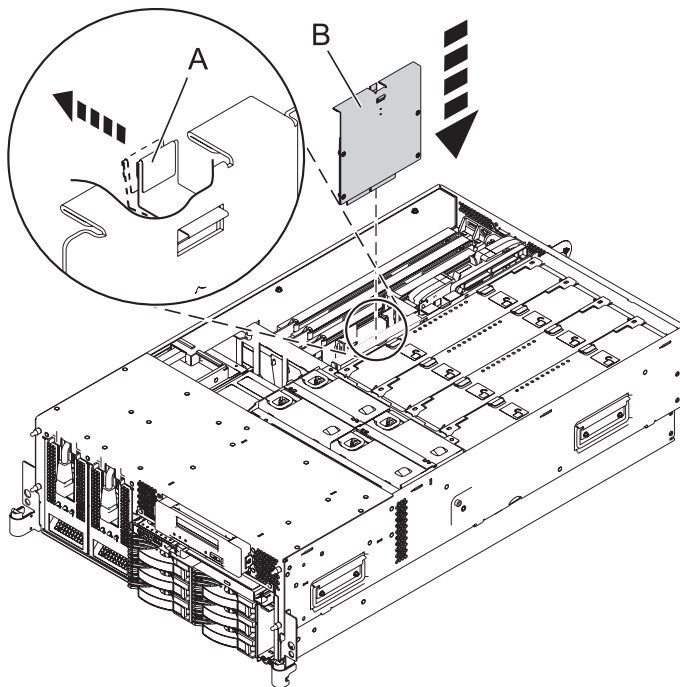
6. Remove the base RAID card

1. Push the tab (B) in the direction shown to release the card.
2. Gently pull the card (A) straight out of the enclosure.



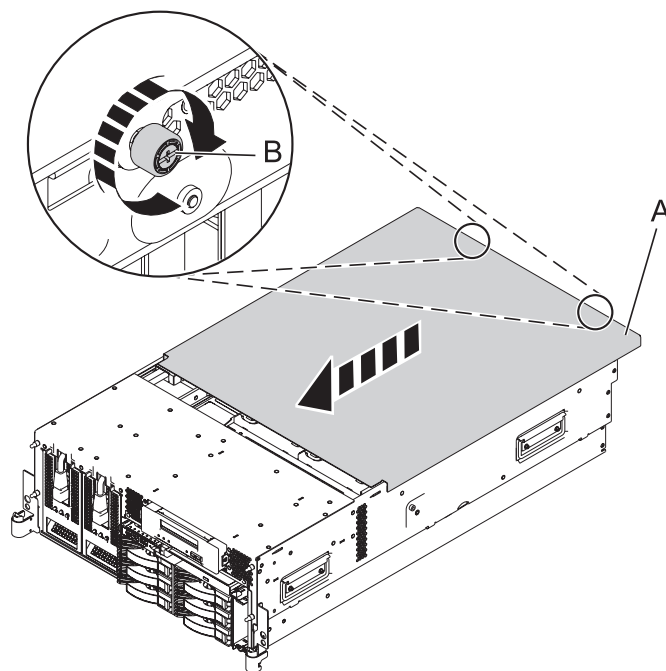
7. Install the base RAID card

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.



8. Install the service access cover

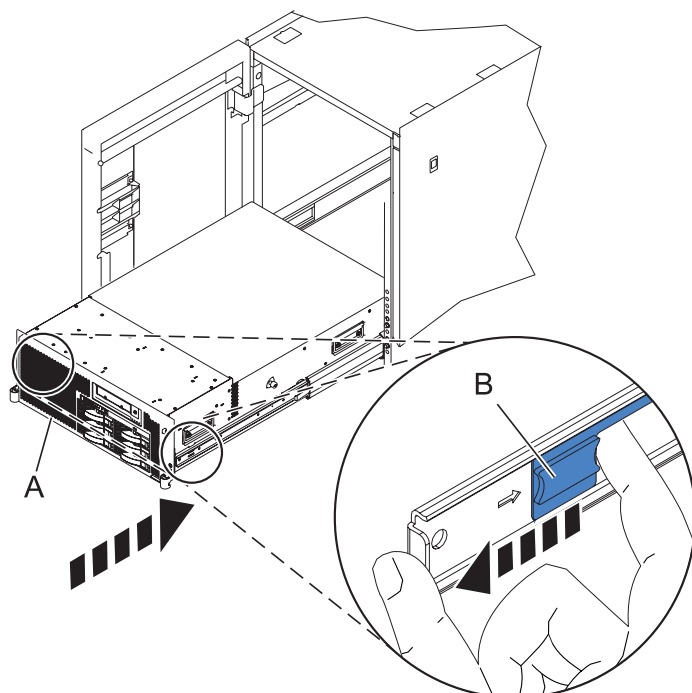
1. Place the service access cover **(A)** on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



9. Place into operating position

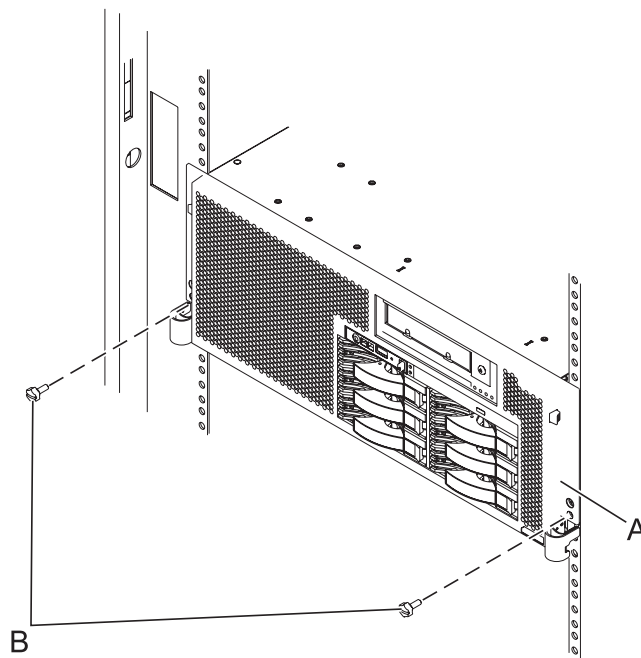
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



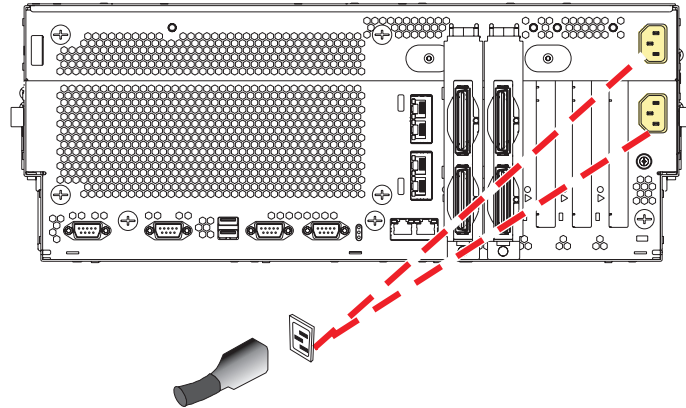
10. Place into operating position (continued)

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



11. Connect the power cords

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



12.

Go to Verifying a repair.

Auxiliary cache card

Use this procedure to service the auxiliary cache card.

1. Power off the unit

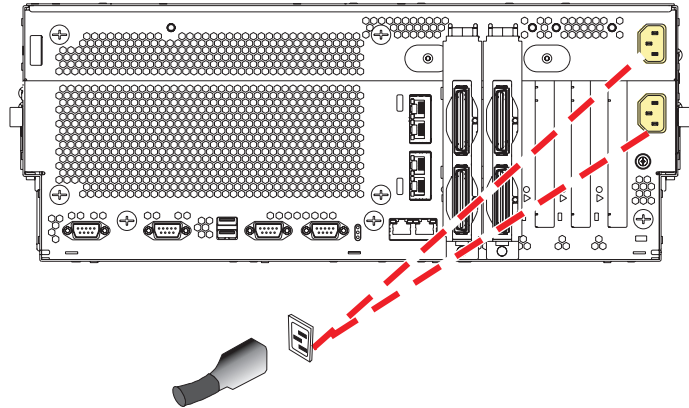
Power should be removed from the unit containing the RAID type V card. If this unit is powered on, power it off now.

2. Open the back rack door

Open the back rack door on the unit you are servicing.

3. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

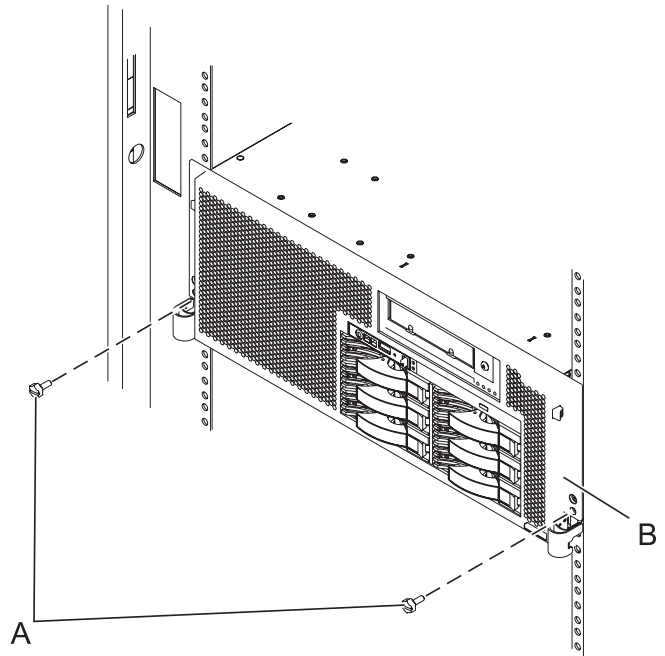


4. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

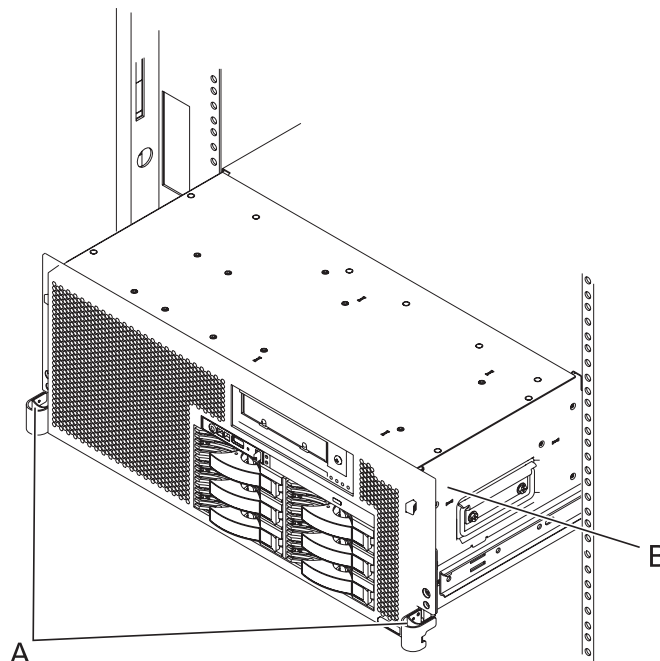


5. Place into service position (continued)

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.

Notes:

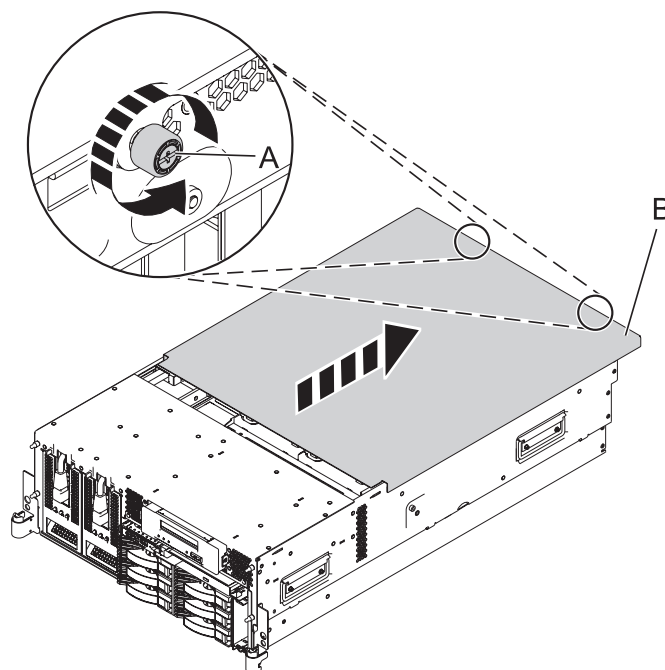
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



6. Remove the service access cover

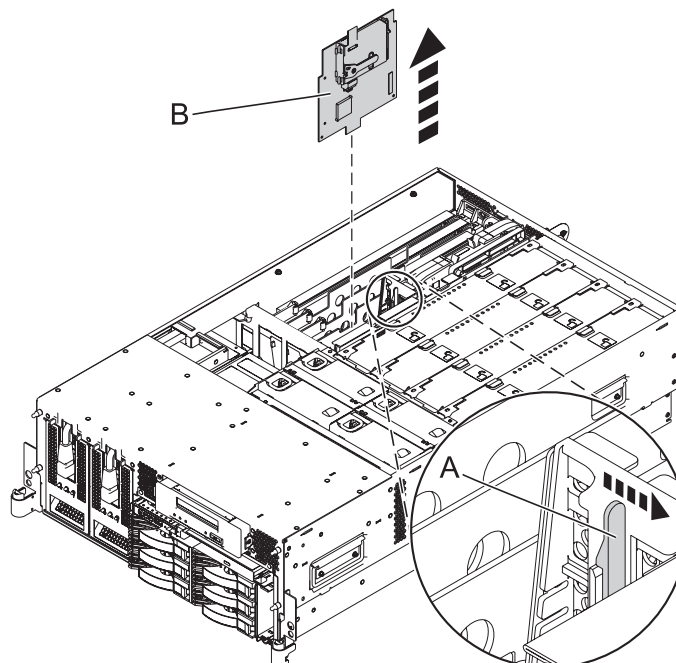
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



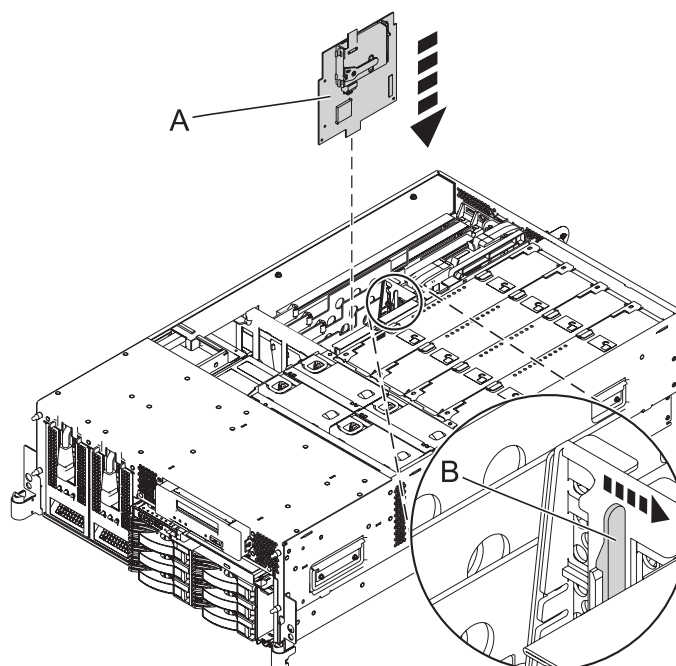
7. Remove the daughter RAID card

1. Push the latch **(A)** in the direction shown to release the card.
2. Gently pull the card **(B)** straight out of the enclosure.



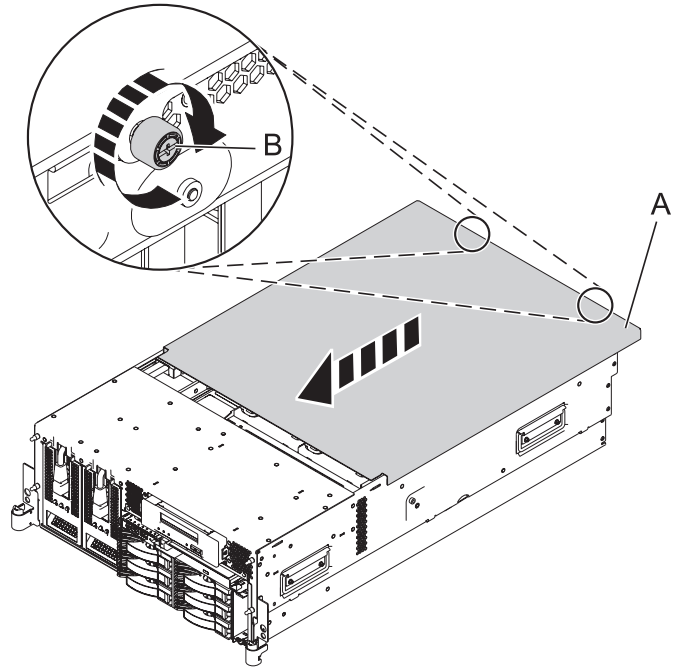
8. Install the daughter RAID card

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.



9. Install the service access cover

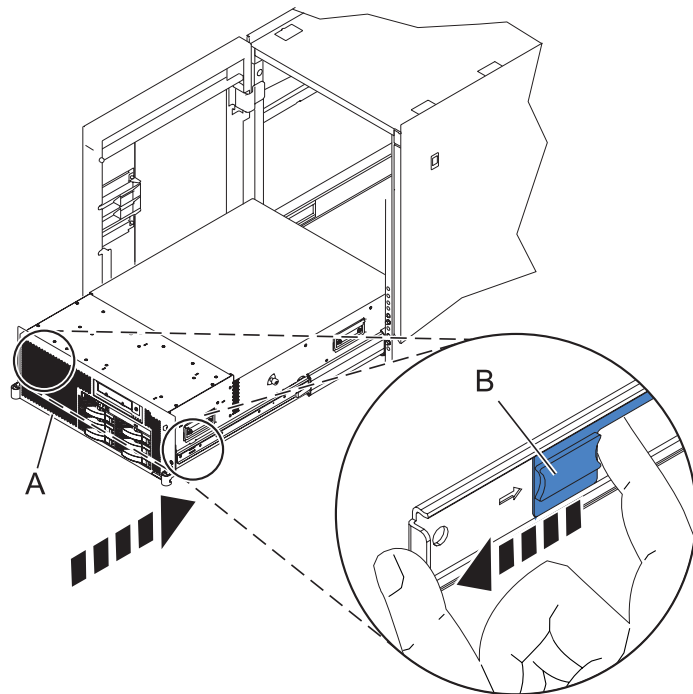
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



10. Place into operating position

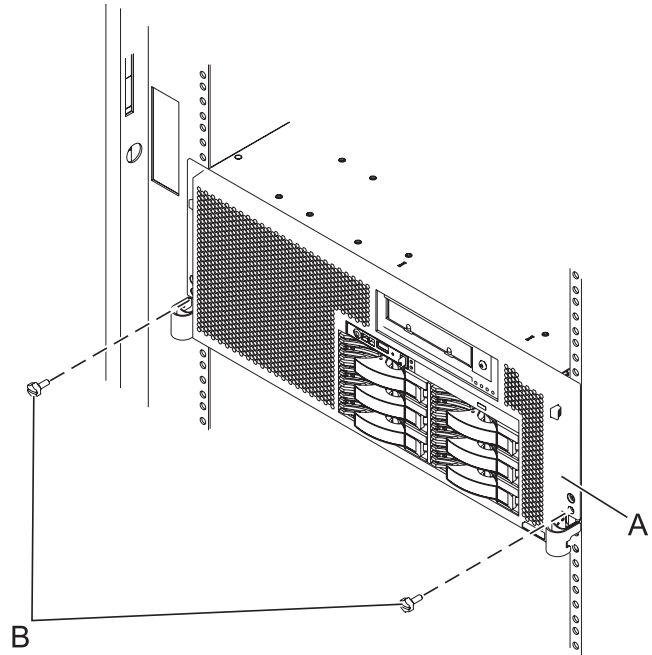
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



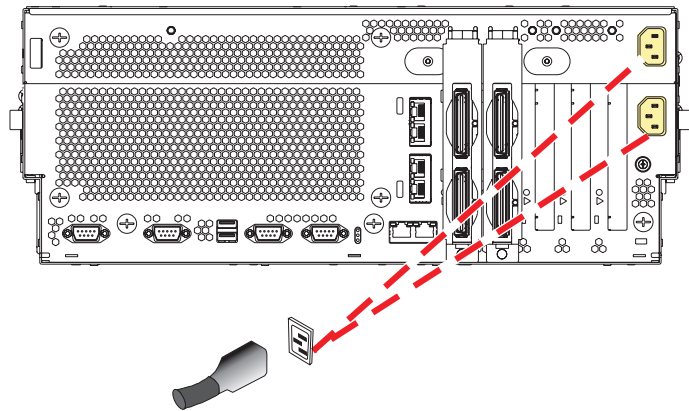
11. Place into operating position (continued)

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



12. Connect the power cords

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



13. Close the back door

Close the back rack door on the unit you are servicing.

14.

Go to Verifying a repair.

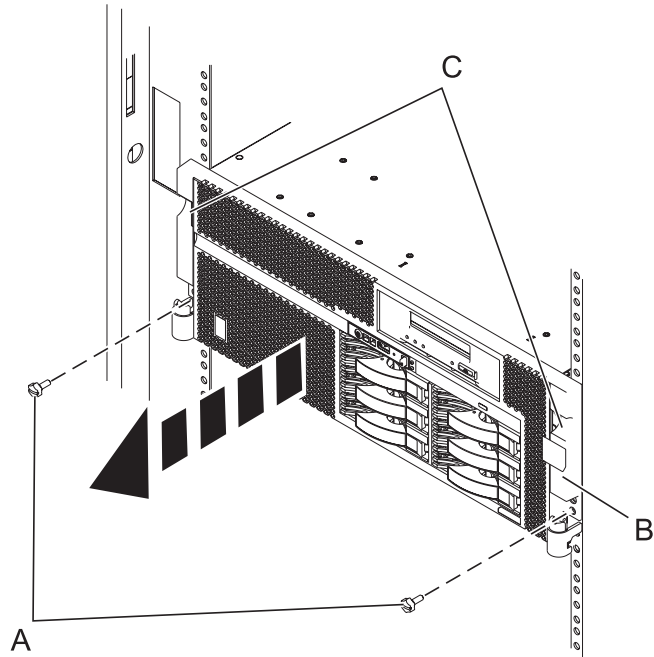
Slimline media

Use this procedure to service the slimline media.

1. Remove the front cover

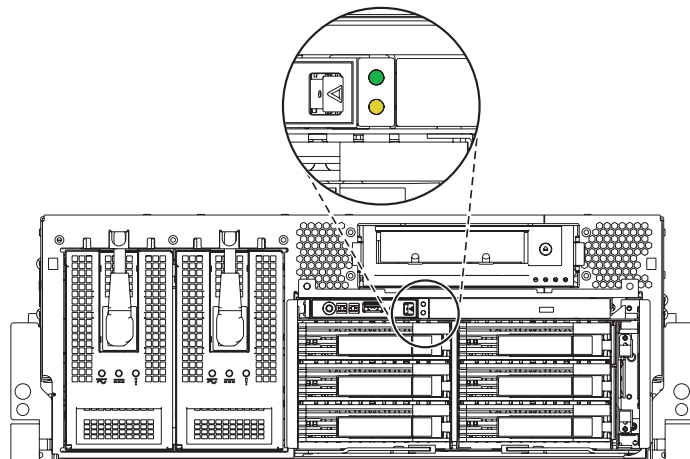
Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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



2. Determine if repair can continue concurrently

You must determine if the repair can continue concurrently. If the top LED is green as shown in the graphic on the right, you may proceed with a concurrent repair. Otherwise, the repair can continue only after powering off the unit. If the unit is already powered off, you may proceed with a nonconcurrent repair.



3.

Select an action:

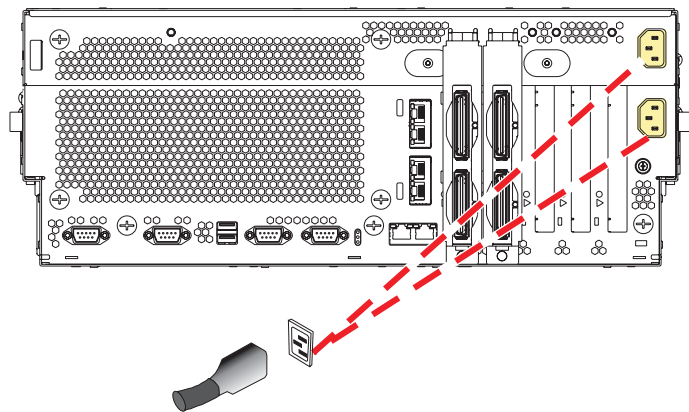
Nonconcurrent repair.	Concurrent repair.	Delay the repair.
Power off the unit and continue the repair.	Continue the repair with unit power on.	
↓	Go to step 7 on page 114.	This ends the procedure.

4. Power off the unit

Power should be removed from the unit containing the Slimline media. If this unit is powered on, power it off now.

5. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

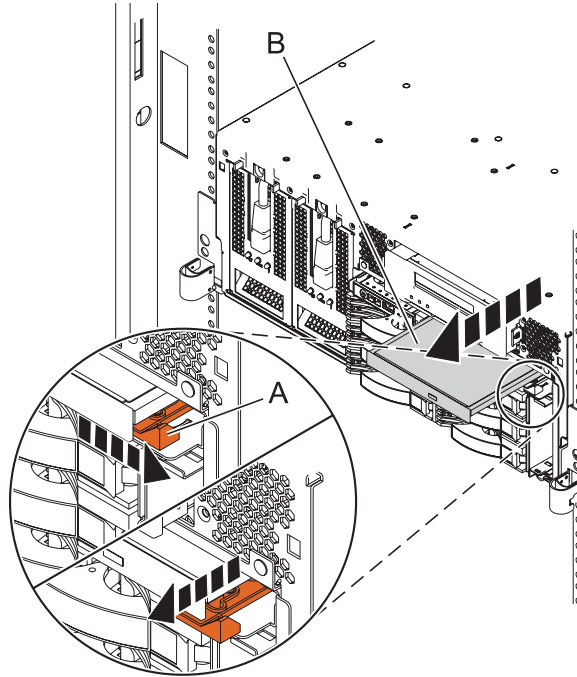
**6. Use this procedure to remove and replace a slimline media drive concurrently using AIX®:**
Remove the disk drive as a resource:

- Log in as root user or use CE Login.
- At the command line, type **diag** and press Enter.
- Press Enter to continue.
- On the Function Selection display, select **Task Selection**.
- Select **Hot Plug Task**.
- Select **SCSI** and **SCSI RAID Hot Plug Manager**.
- Select **Identify a Device Attached to SCSI Hot Swap Enclosure Device**.
- Select the slimline media drive you want to remove and press **Enter**. The slimline media drive slot enters the identify state. The concurrent maintenance light for the slot begins flashing. The following figure shows the locations of the concurrent maintenance lights. Verify that the flashing light corresponds to the location for the slimline media drive you want to remove, and press Enter. The slimline media drive slot exits the identify state. Press F3 to return to SCSI and SCSI Raid Hot Plug Manager.
- Select **Replace/Remove a Device Attached to an SCSI Hot Swap Enclosure Device**. A list of the drives that you can remove is shown. If the slimline media drive you want to remove does not

appear on the list, ask your system administrator to put the drive in the failed state before continuing with this procedure. For information, see AIX System Management Guide: Operating System and Devices. Select the slimline media drive you want to remove and press Enter. The drive slot enters the remove state and power is removed from the slot. The concurrent maintenance light for the slot begins flashing rapidly.

7. Remove the slimline media device

1. Push the terra cotta plastic retaining tab (A) away from the slimline media device.
2. While depressing the terra cotta plastic retaining tab, grasp the device (B) and pull it out of the system.

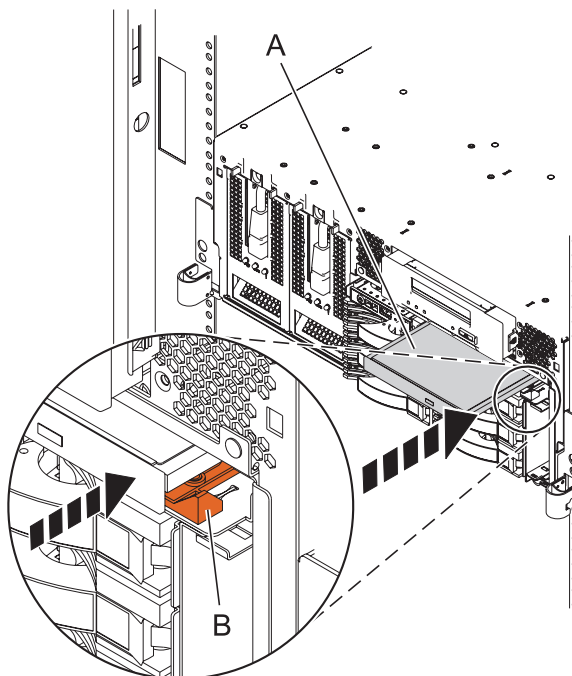


8. Add the new slimline media drive as a resource

- a. Press **Enter**. The drive slot exits the remove state and enters the normal state.
- b. Exit to the SCSI and SCSI RAID Hot-Plug Manager menu. Press the **F3** or **ESC** and the **3** key to return.
- c. Exit to the Task selection display.
- d. Select **Log Repair Action**.
- e. Select the disk drive that you replaced and then press Enter.
- f. Select **Commit** after you have made your selection and then press Enter.
- g. Exit to the command line.

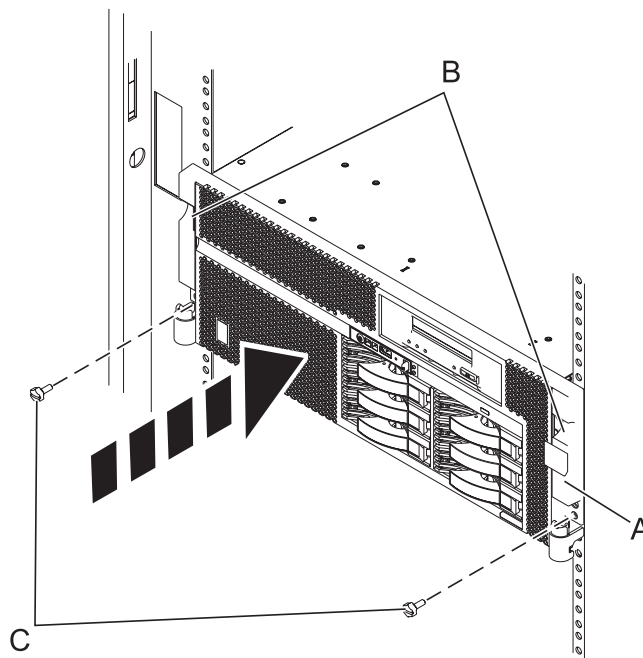
9. Install the slimline media device

1. Align the replacement device **(A)** with the slimline media bay.
2. Push it into the system until the retaining tab **(B)** locks the device into place.



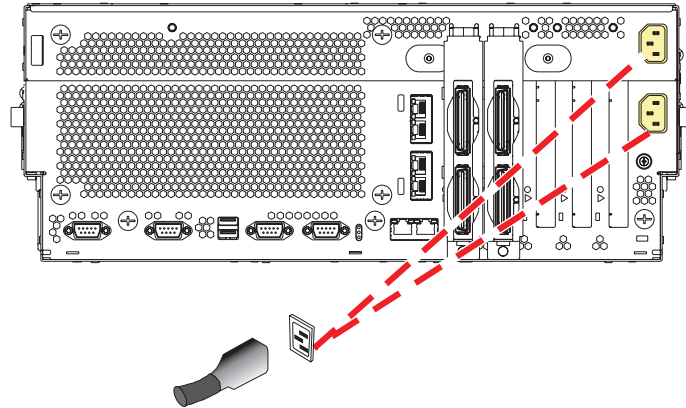
10. Install the front cover

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 following figure. The latches should hold the cover in place.
3. Tighten the thumbscrews.
4. Close the front rack door.



11. Connect the power cords

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



12.

Go to Verifying a repair.

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 may also be referred to as the service processor menus.

To access the ASMI, refer to 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

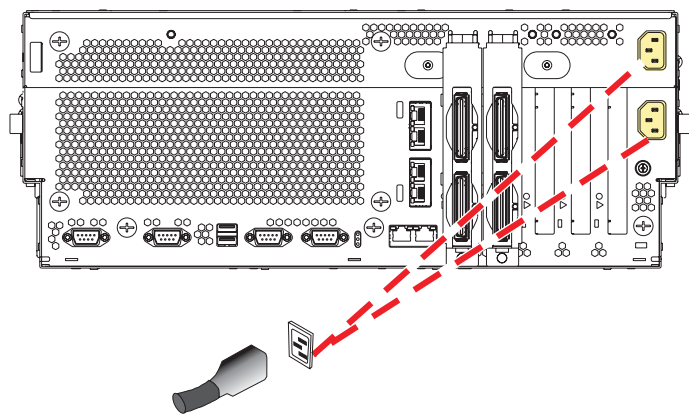
1. Check and record the admin user ID's password.
 2. Check and record the server firmware level prior to replacing this FRU. You may need to update the system to the latest server firmware code level after you replace this FRU.
 3. Check and record the service processor settings you previously set using Advanced System Management (ASM). This can be done using a Hardware Management Console (HMC) or PC to access ASM. You will need to reset these service processor settings after you replace this FRU or the default settings will be used. Settings to record include the following:
 - 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
 4. Record any service processor settings you may have set using operating system commands.
-

3. Power off the unit

Power should be removed from the unit containing the system backplane. If this unit is powered on, power it off now.

4. Disconnect the power cords

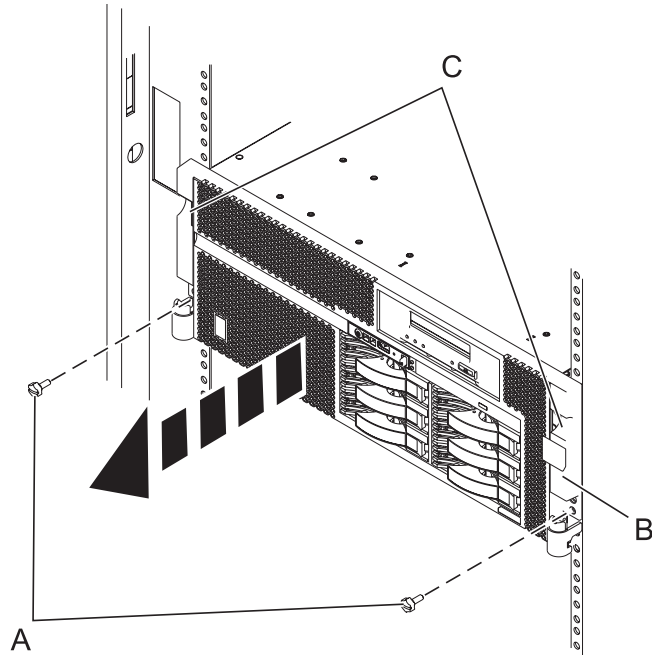
Disconnect all power cords from the unit you are servicing.



5. Remove the front cover

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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



6. Disconnect the external cables

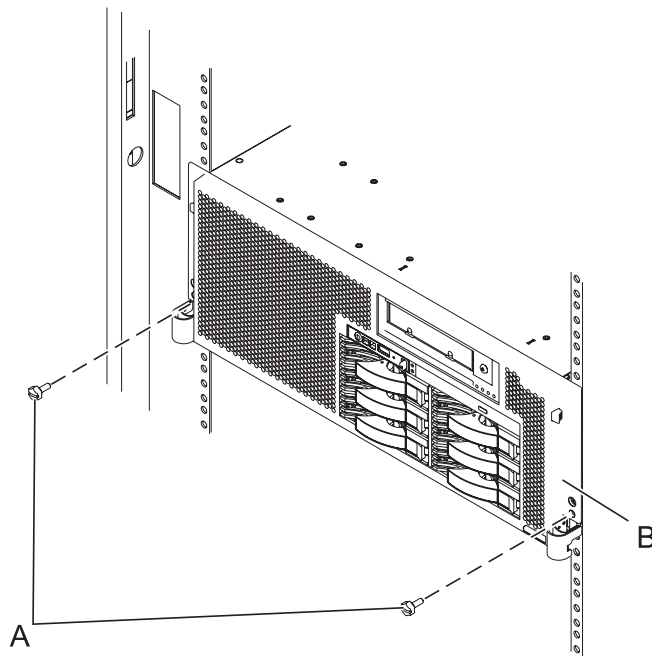
Label and disconnect the external cables connected to the FRU you are servicing.

7. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

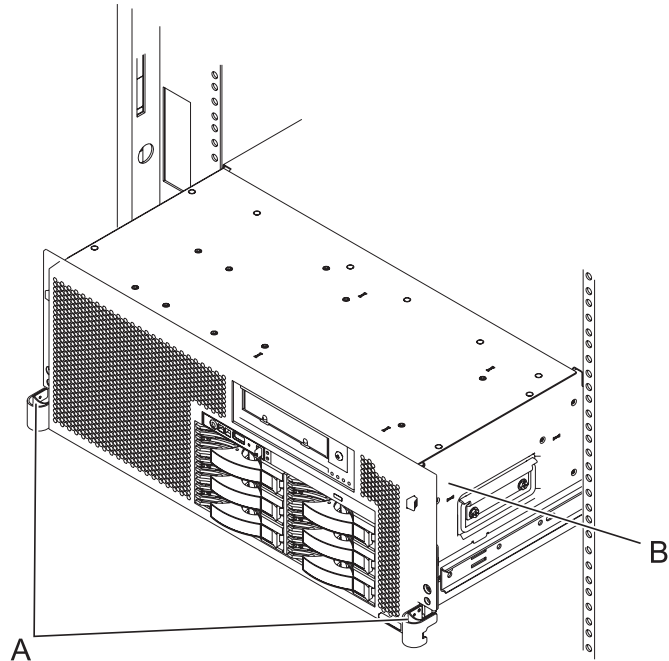


8. Place into service position (continued)

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.

Notes:

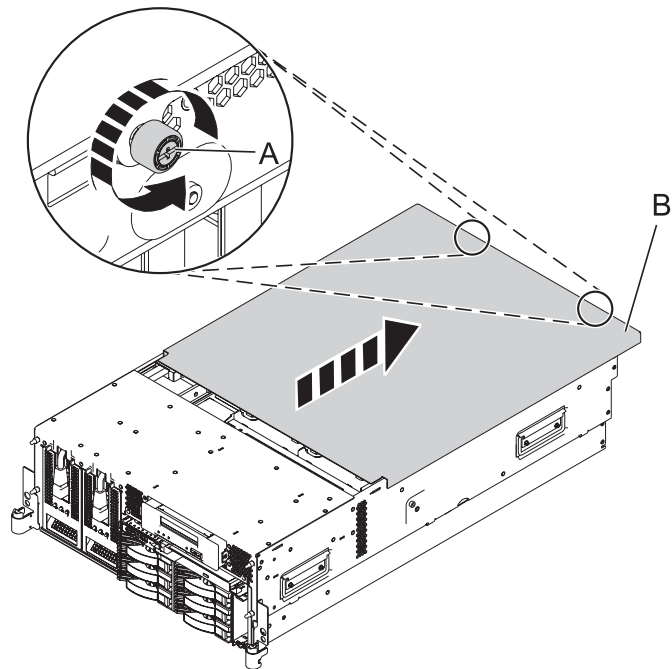
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



9. Remove the service access cover

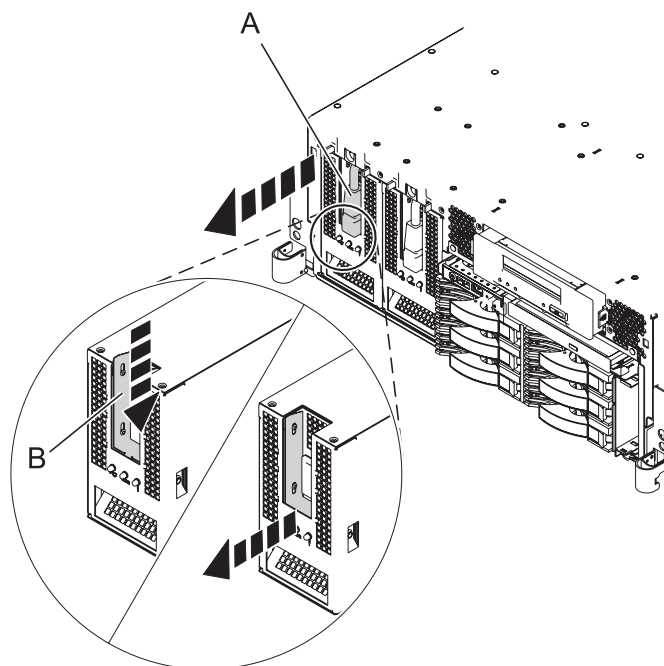
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



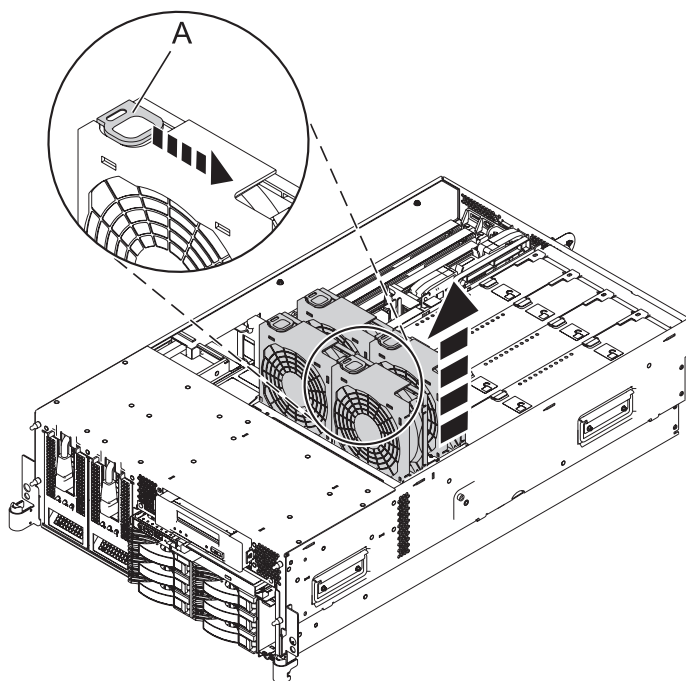
10. Remove both power supplies

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.



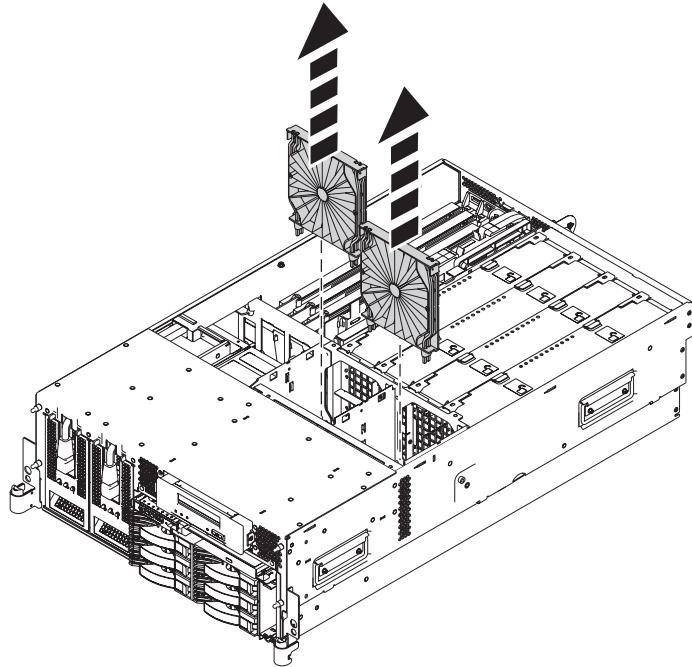
11. Remove the fans

1. While squeezing the latch **(A)**, reach through the hole of the fan and pull the fan out of the fan cage.
2. Repeat these steps until all system fans are removed from the fan cage.



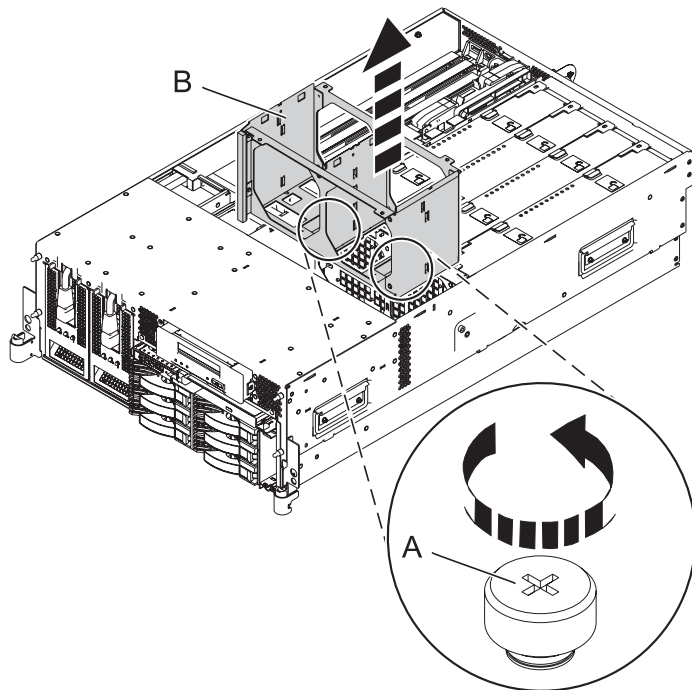
12. Remove the air baffles

Grasp the air baffles and pull them out of the fan cage.



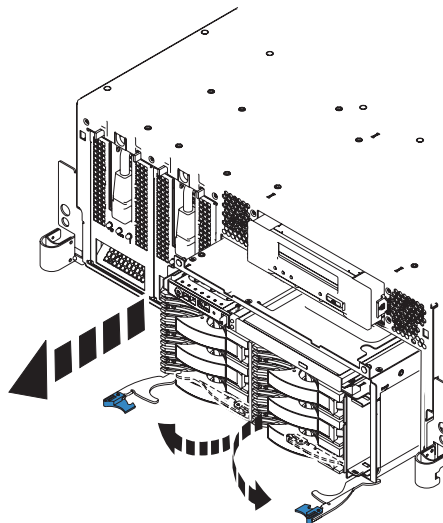
13. Remove the fan cage

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.



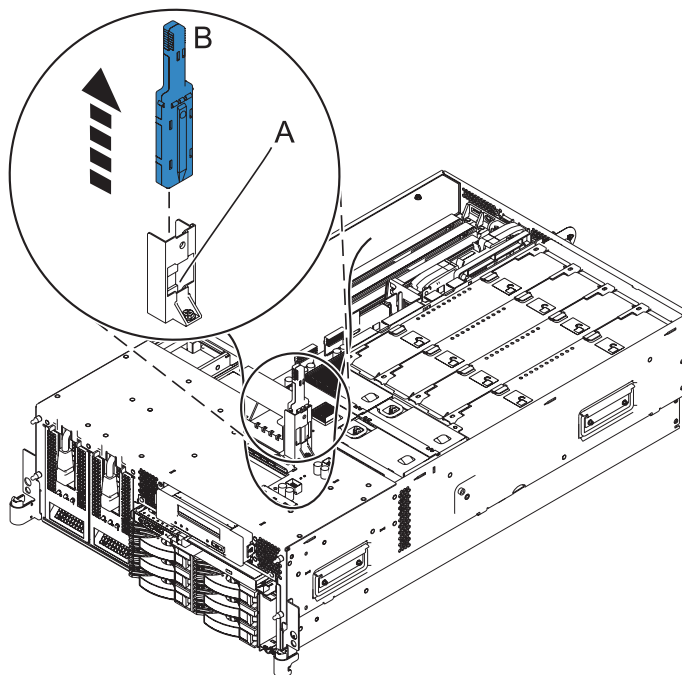
14. Remove the disk unit cage

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.



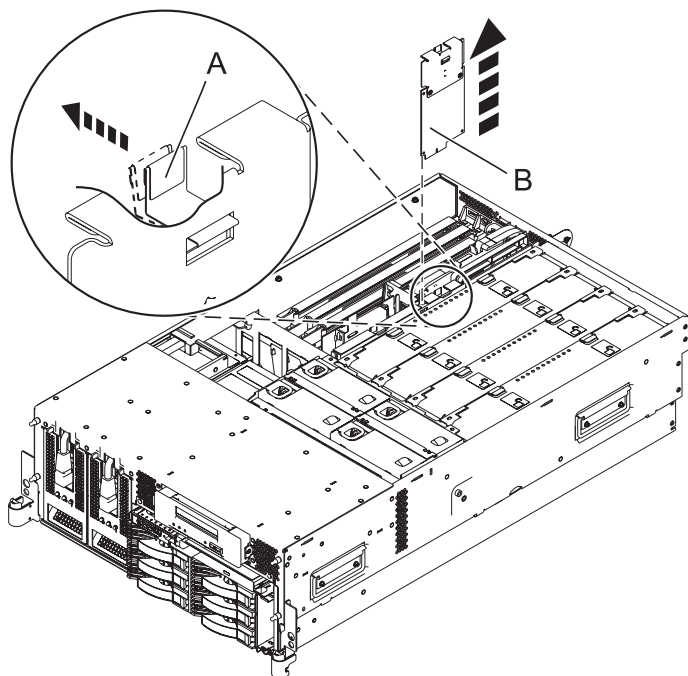
15. Remove the VPD card

Remove the VPD card **(B)** from the VPD card guide **(A)** on the planar by pulling the blue handle.



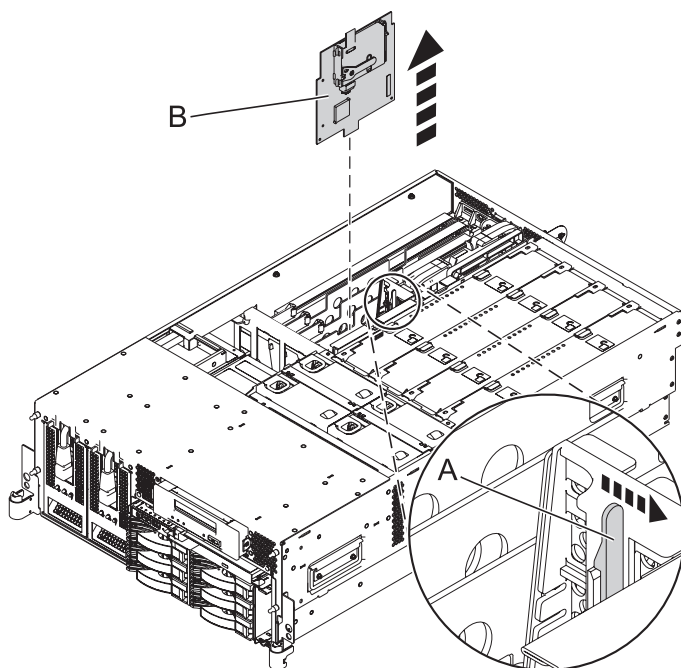
16. Remove the TPMD card if present

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.



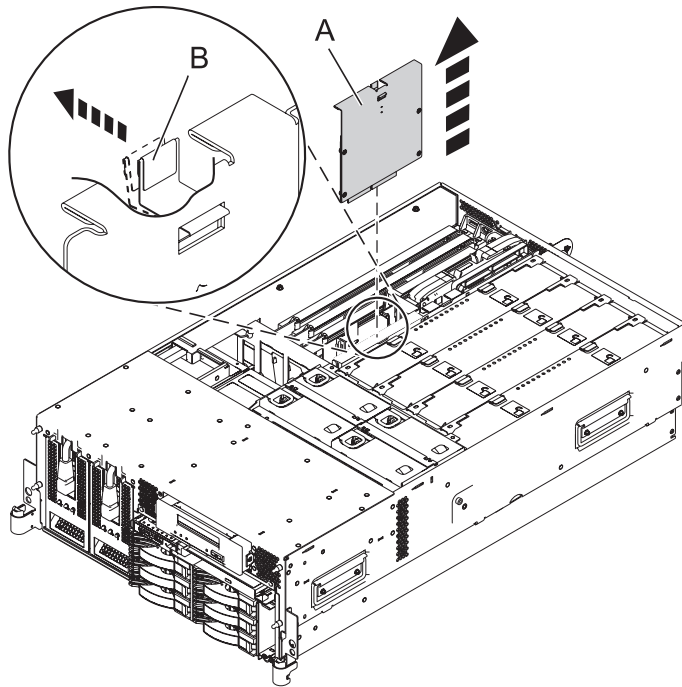
17. Remove the daughter RAID card, if present

1. Push the latch **(A)** in the direction shown to release the card.
2. Gently pull the card **(B)** straight out of the enclosure.



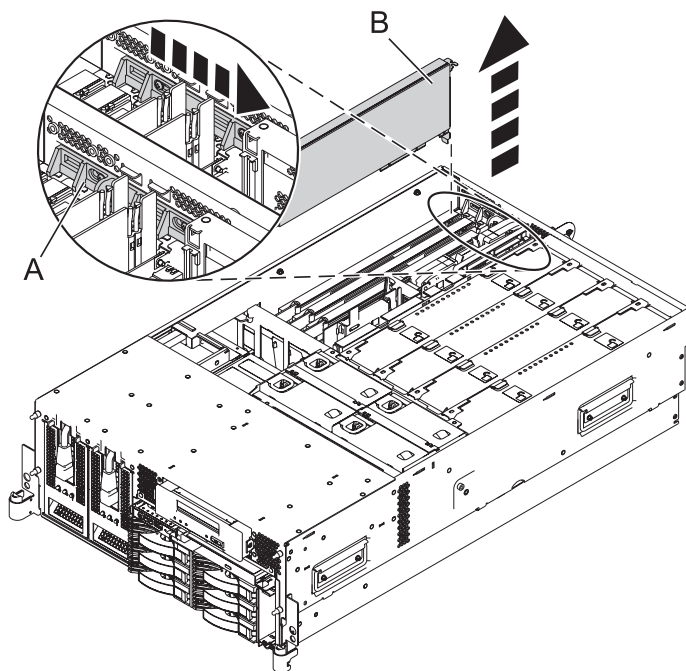
18. Remove the base RAID card, if present

1. Push the tab **(B)** in the direction shown to release the card.
2. Gently pull the card **(A)** straight out of the enclosure.



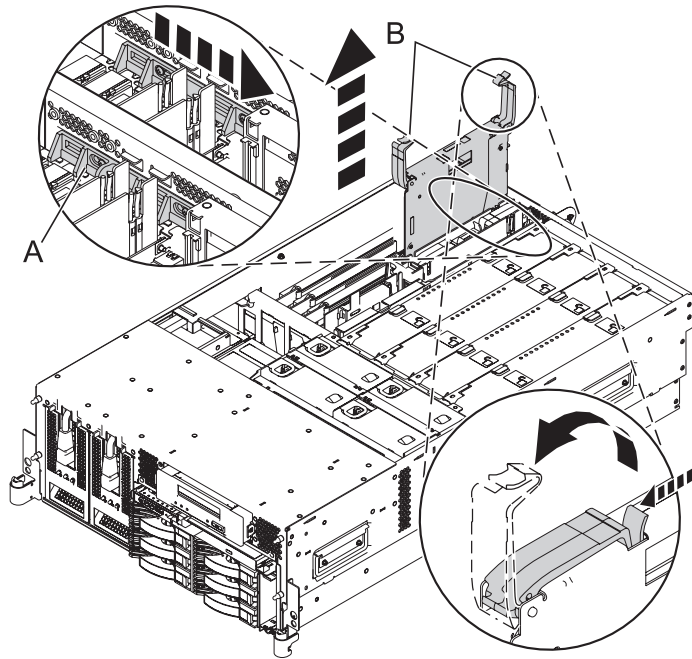
19. Remove all PCI adapters

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 PCI Card Adapters are removed.



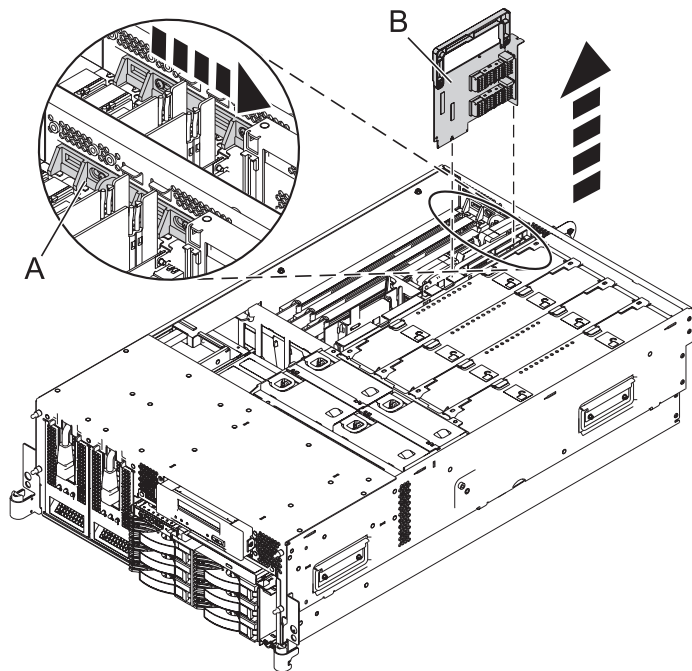
20. Remove the GX adapter card if present

1. Slide the adapter latch **(A)** in the direction shown to release the adapter card.
2. Squeeze the latches **(B)** to release them from the adapter card and rotate them in the direction shown.
3. Gently pull the adapter card straight out of the system.
4. Repeat these steps to remove a second GX adapter card, if present.



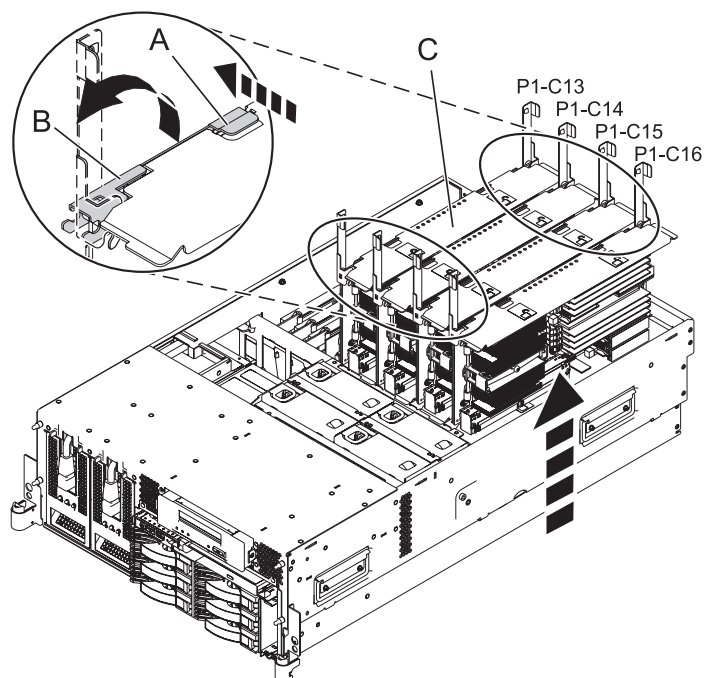
21. Remove the Ethernet card

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.



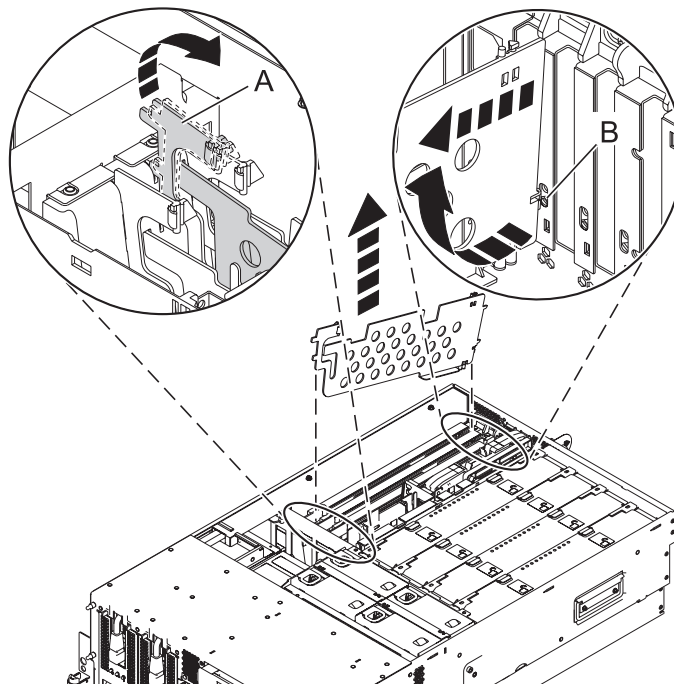
22. Remove the system processor assemblies and fillers

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.



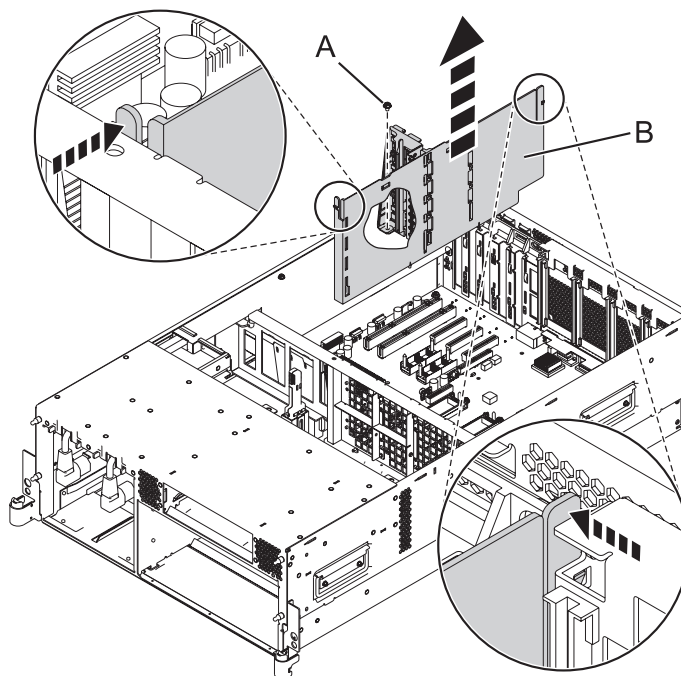
23. Remove the PCI adapter dividers

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.



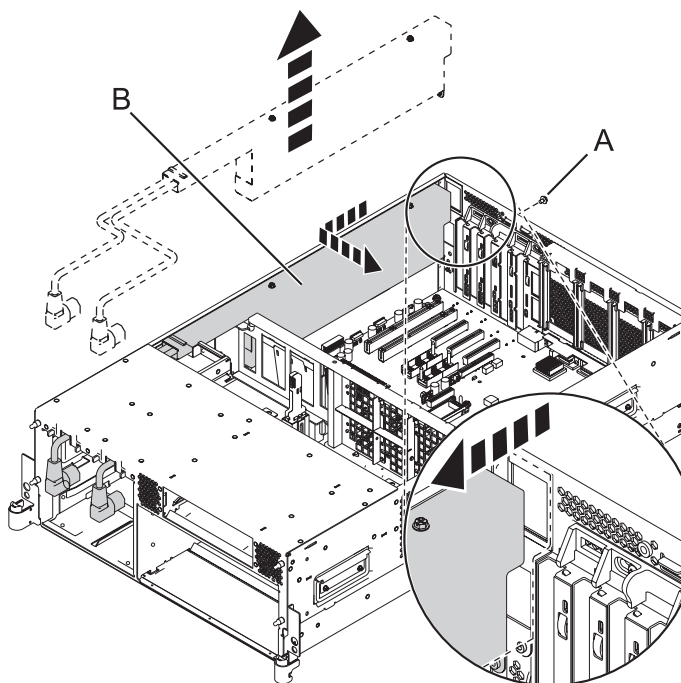
24. Remove the middle system divider

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.



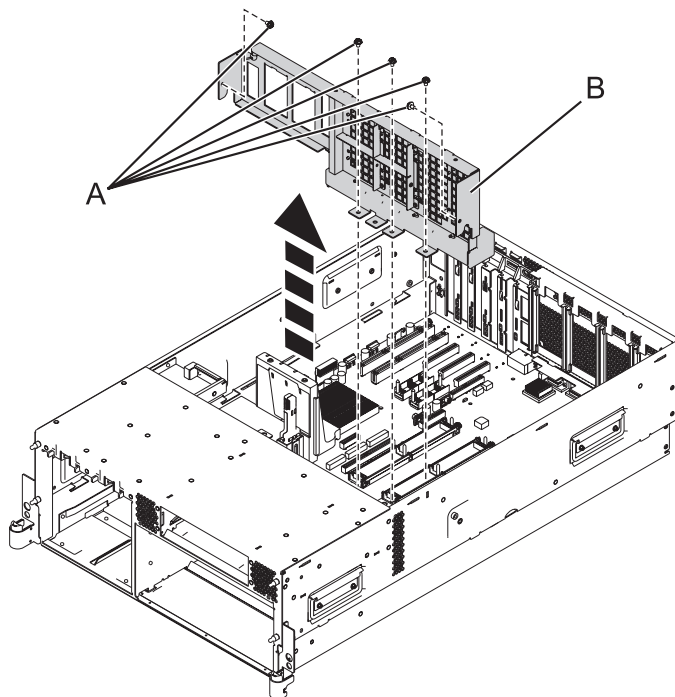
25. Remove the line cord assembly

1. Remove the screw **(A)** located on the back of the system chassis.
2. Slide the line cord assembly **(B)** towards the front of the system to unlock it.
3. Grasp the line cord assembly and pull it out of the system.



26. Remove the front processor support

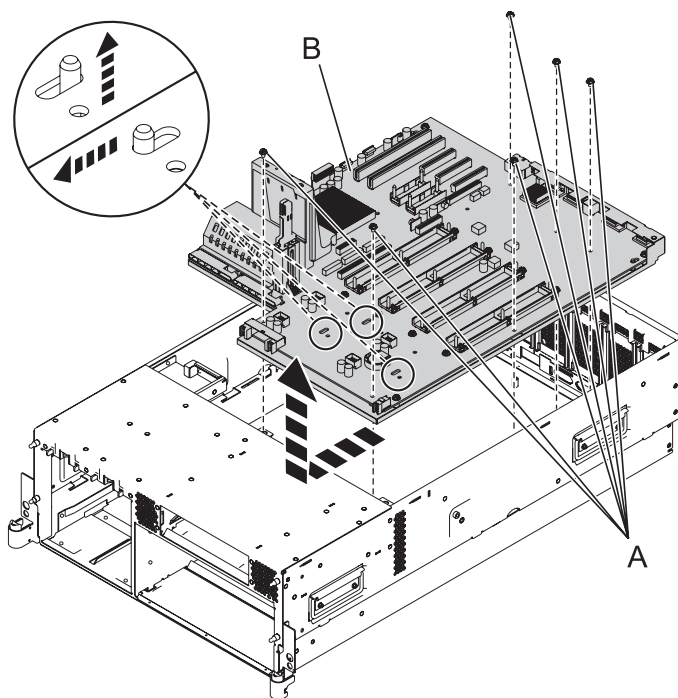
1. Remove the five screws (A) to unfasten the front processor support.
2. Grasp the front processor support (B) and lift it out of the system.



27. Remove the system backplane

1. Label and disconnect all Ethernet cables that are present.
2. Remove the 6 screws (A) as shown in the illustration.
3. Push the system backplane (B) towards the front of the system.
4. Lift the system backplane up and out of the system chassis.
- 5.

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

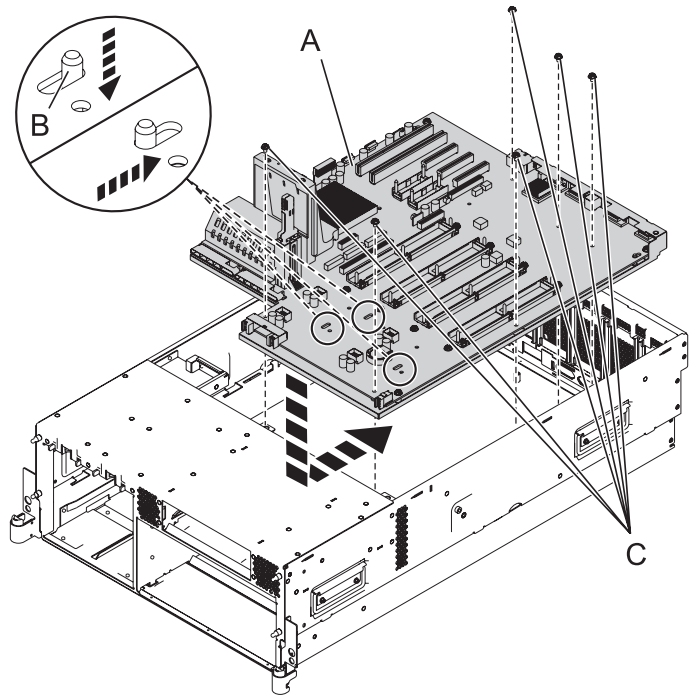
Note: Use care when replacing the system backplane.

1. Carefully grasp the replacement system backplane (A) along two edges.

2.

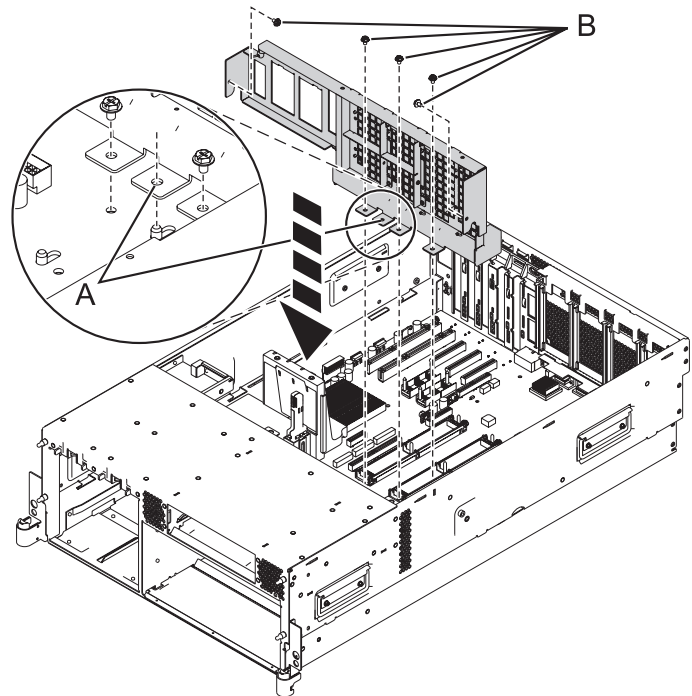
Note: Ensure the pin holes on the system backplane are lined up correctly with the pins (B) on the system chassis.

3. Lower the system backplane at an angle, with the back of the backplane connecting with the system chassis first.
4. Slide the system backplane towards the back of the system chassis.
5. Tighten the 6 screws (C) securing the system backplane to the system chassis.
6. Reconnect all Ethernet cables that were previously removed.



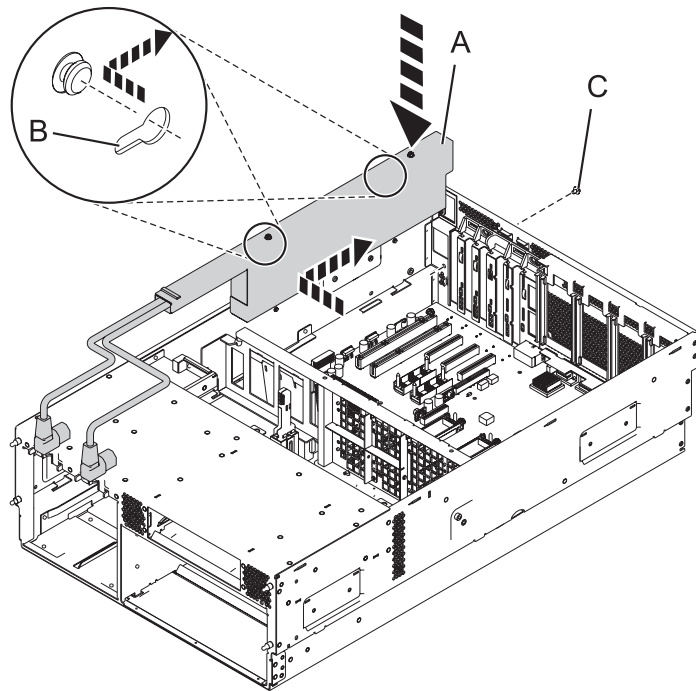
2. Install the front processor support

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.



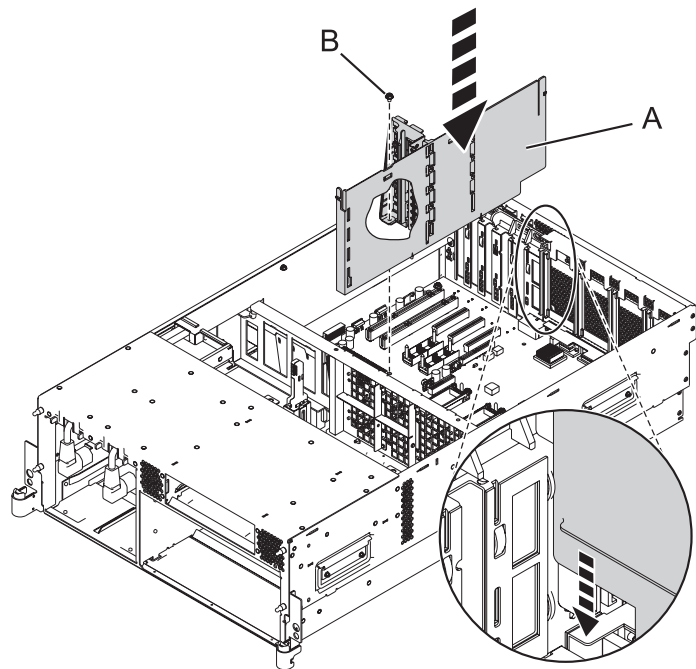
3. Install the line cord assembly

1. Place the line cord assembly (A) into position, ensuring the slots (B) on the line cord assembly align with the pins on the system chassis.
2. Slide the line cord assembly towards the back of the system to lock it into place.
3. Insert and tighten the screw (C) to secure the line cord assembly.



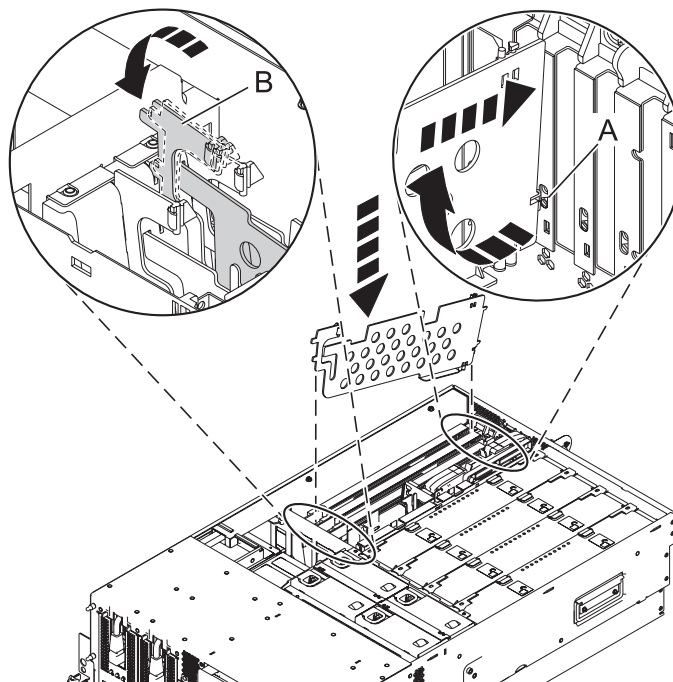
4. Install the middle divider

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.



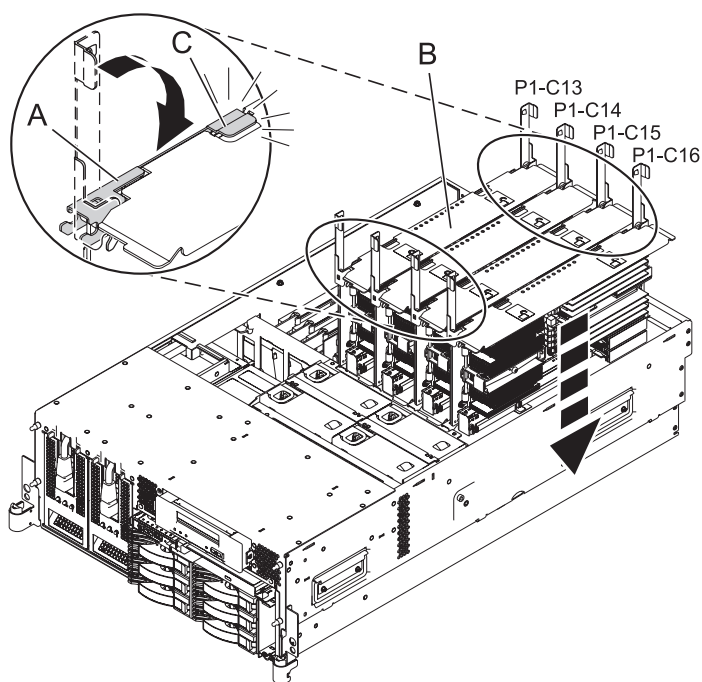
5. Install the PCI adapter dividers

1. Carefully grasp the PCI adapter divider by its top edge and align the back 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.



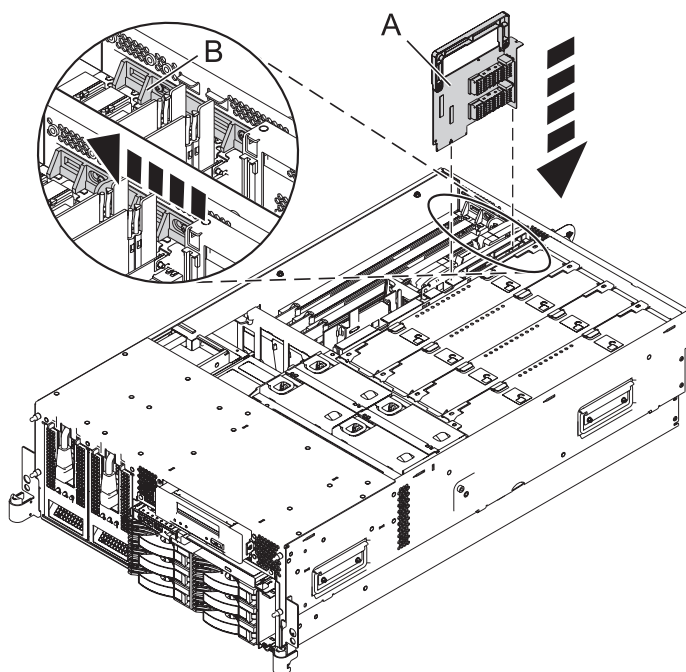
6. Install the system processor assemblies and fillers

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.



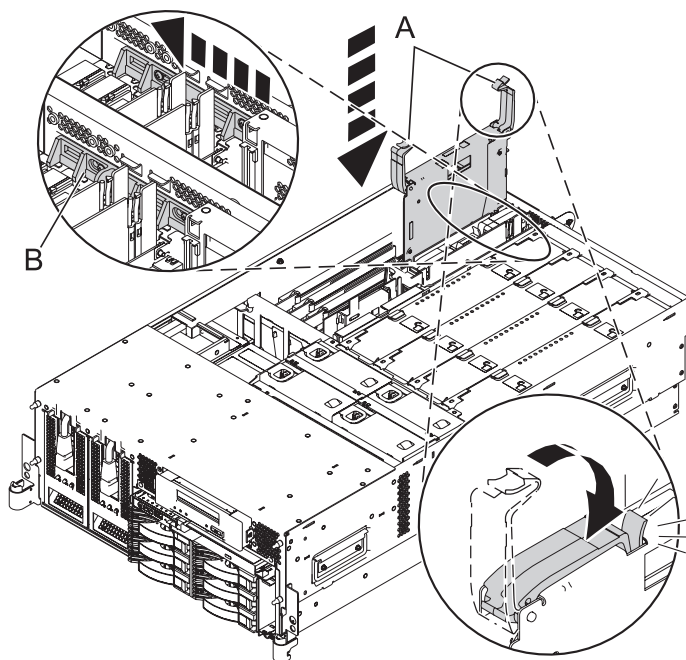
7. Install the Ethernet card

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.



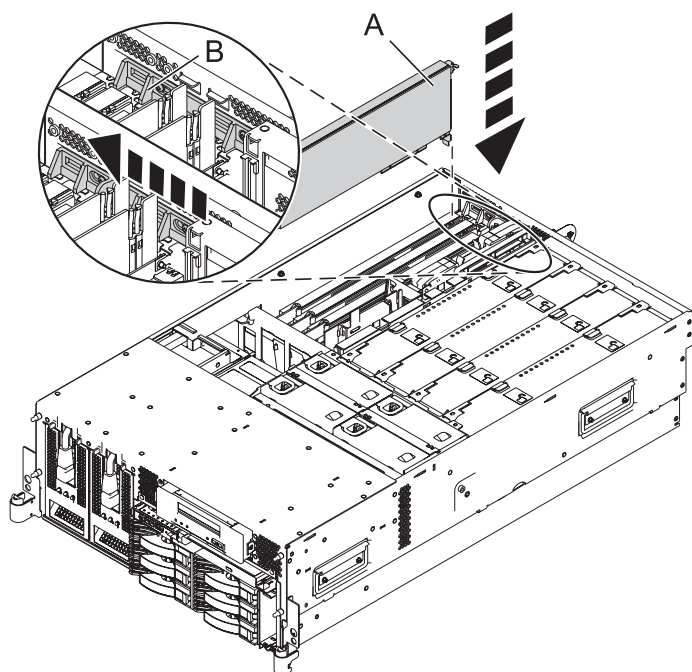
8. Install the GX adapter card if previously removed

1. Align the adapter card with the expansion slot and its connector on the system backplane.
2. With the latches (A) in the open position, gently push the adapter card 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 card.
5. Repeat these steps to install a second GX adapter card, if previously removed.



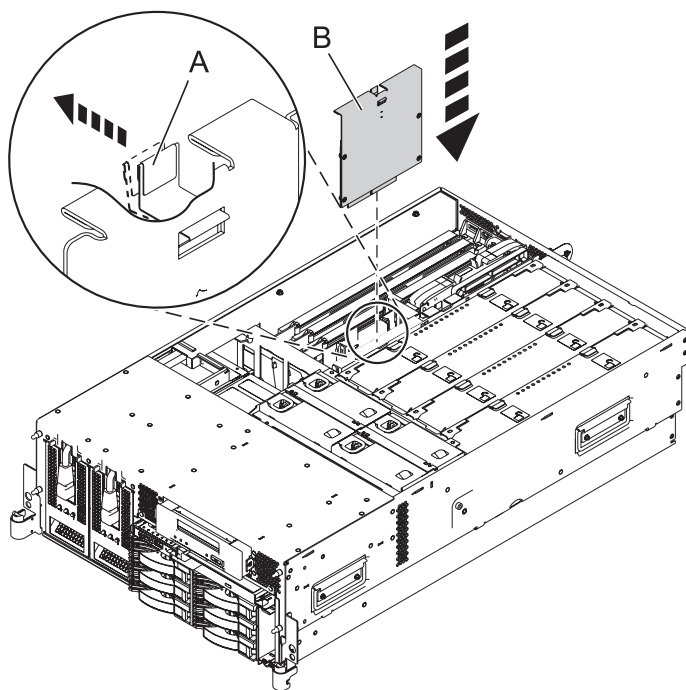
9. Install all PCI adapters

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 card.
4. Repeat these steps until ALL PCI Card Adapters are installed.



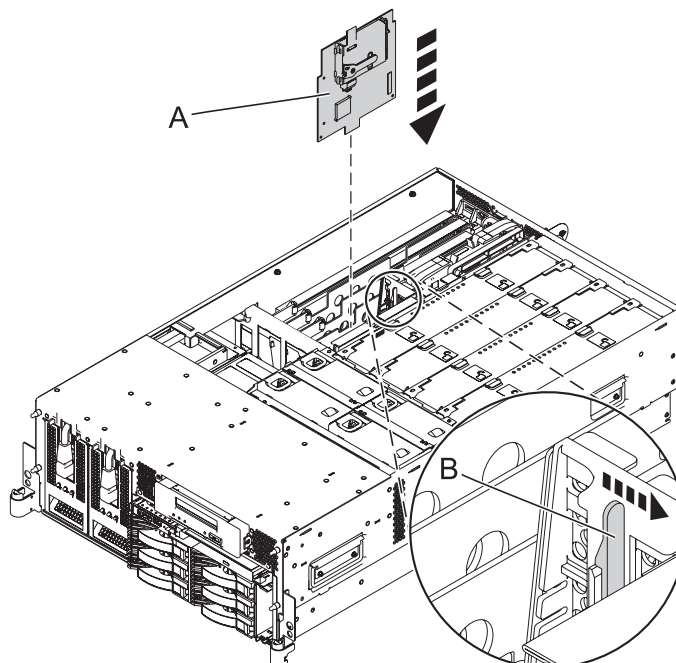
10. Install the base RAID card, if previously removed

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.



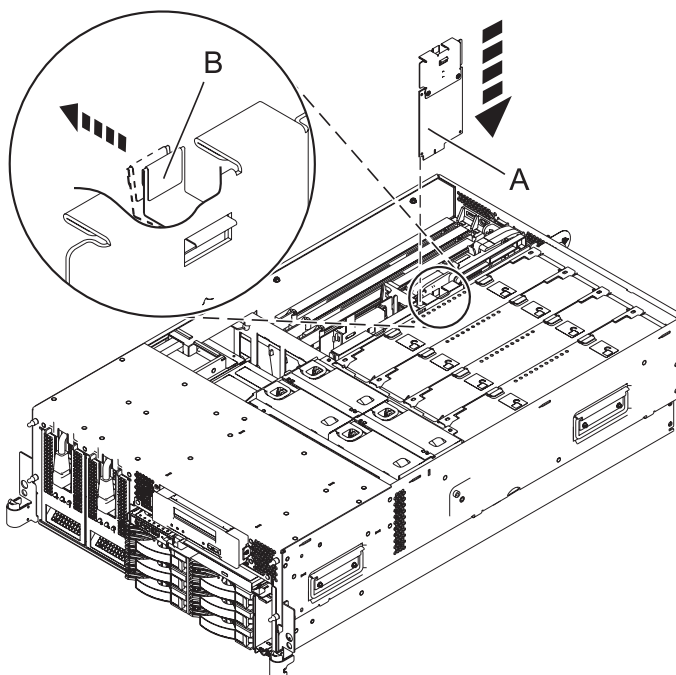
11. Install the daughter RAID card, if previously removed

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.



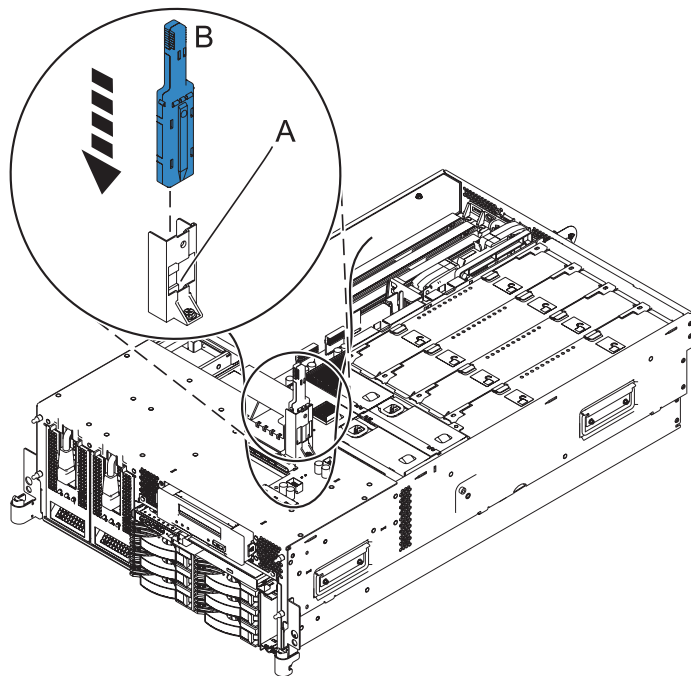
12. Install the TPMD card if previously removed

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.



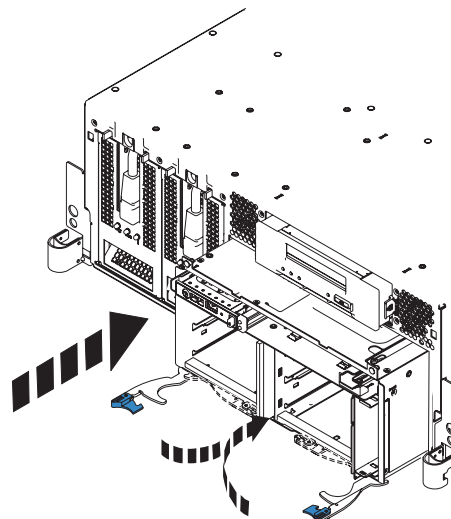
13. Install the VPD card

1. Insert the VPD card (B) into the VPD card guide (A).
2. Push until the VPD card is fully seated.



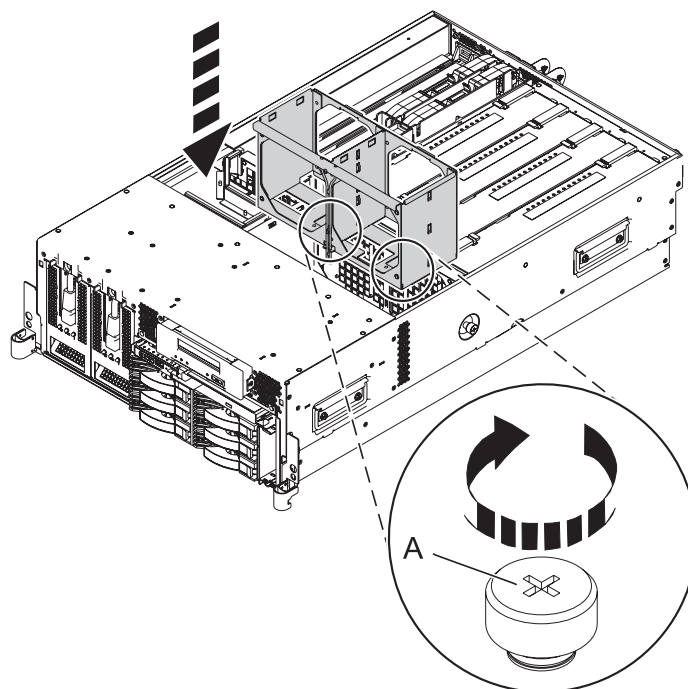
14. Install the disk unit cage

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.



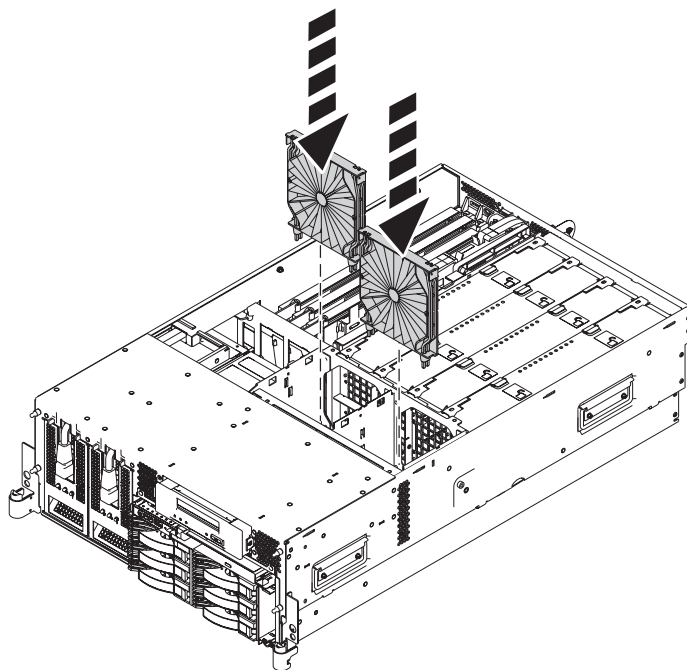
15. Install the fan cage

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.



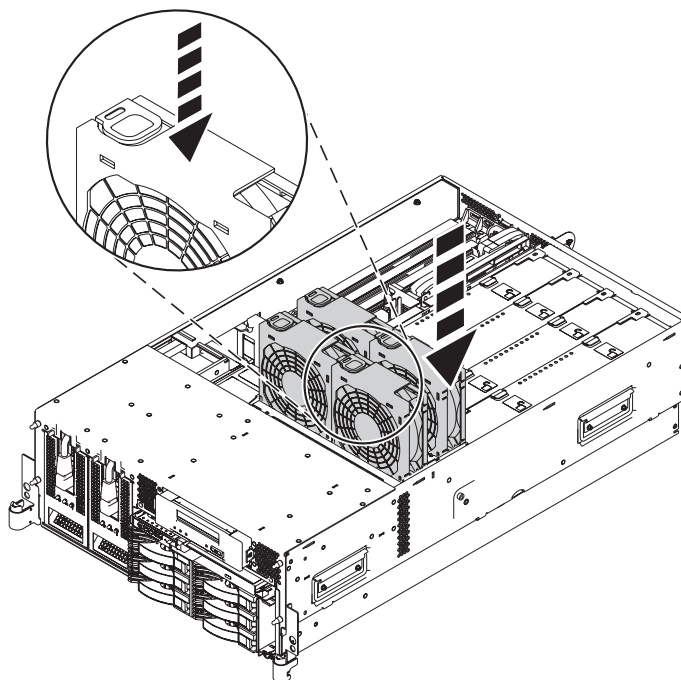
16. Install the air baffles

1. Lower the air baffles into their location in the fan cage.
2. Push down on the air baffles until they lock into place.



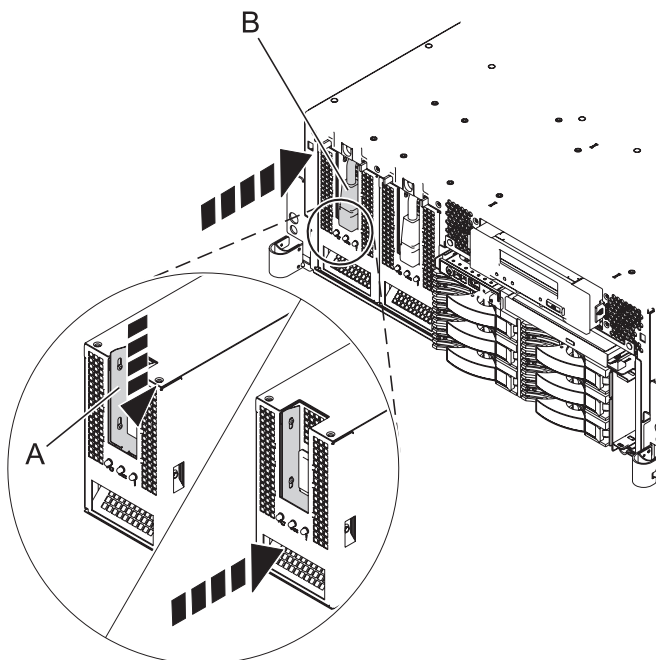
17. Install the fans

1. Lower the fan into its location in the fan cage.
2. Push down on the fan until it locks into place.
3. Repeat these steps until all system fans are installed.



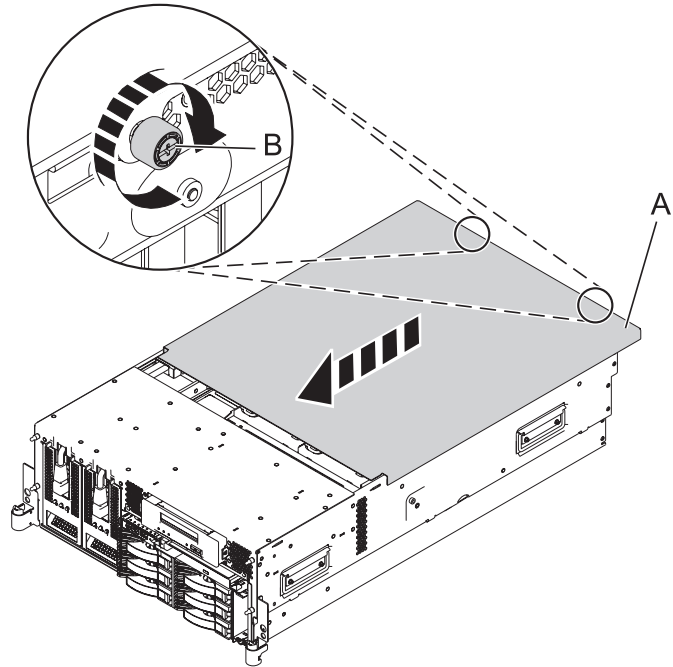
18. Install both power supplies

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

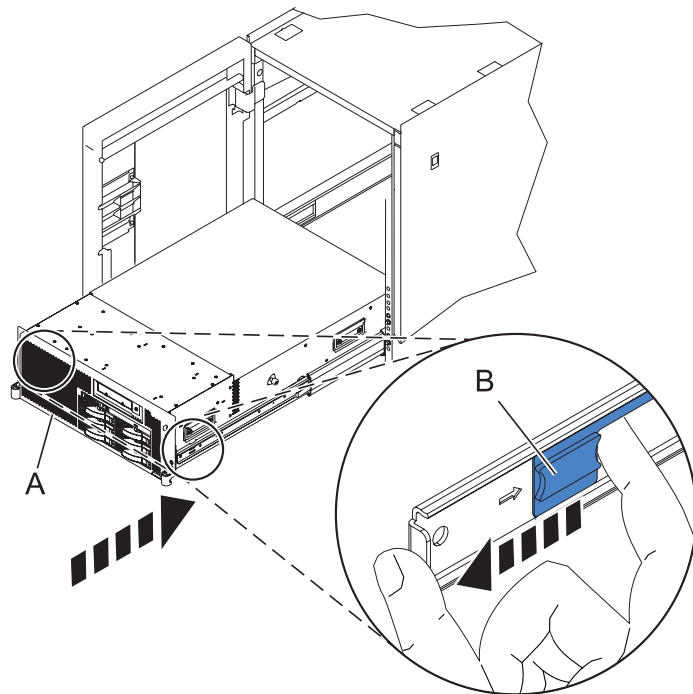
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



20. Place into operating position

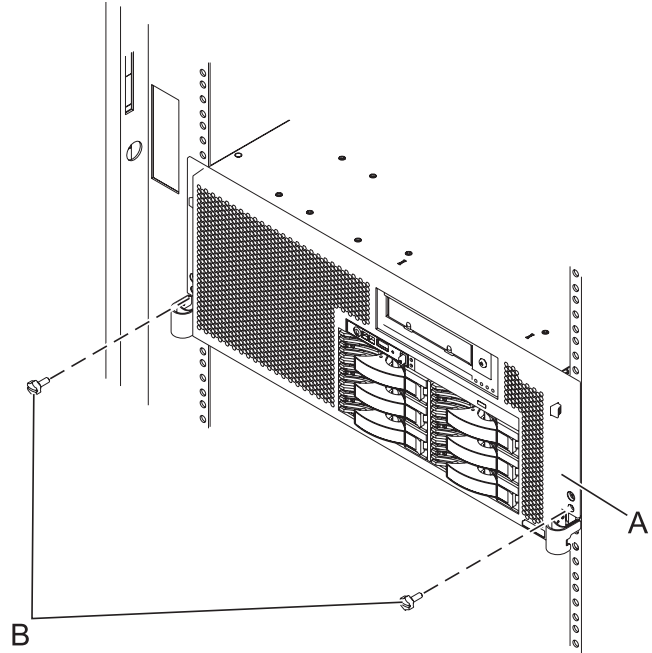
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



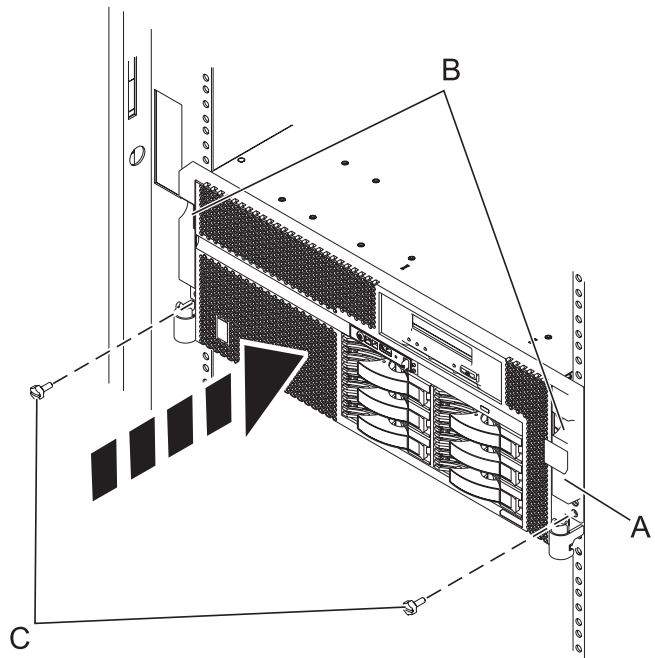
21. Place into operating position (continued)

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 following figure. The latches should hold the cover in place.
3. Tighten the thumbscrews.
4. Close the front rack door.

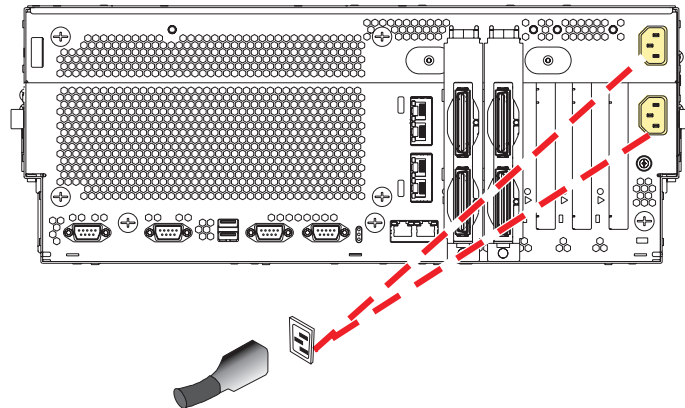


23. Reconnect the external cables

Reconnect the external cables 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.

Power on the system.

26. Restore network connectivity

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

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 28 on page 141.
---	----------------------------

27. Restore service processor settings

Enable network access to the service processor by doing the following:

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. Do the following:

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
-----	----

Can you access the service network?

Go to step 30. Go to step 33 on page
142

28. Restore service processor settings

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

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>
 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 on 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 on page 142

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 may also be referred to as the service processor menus.

To access the ASMI, refer to 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 needs to be manually inputted and stored in the new system backplane using the Advanced System Management Interface (ASMI).

To input the system serial number:

1. On the ASMI Welcome pane, specify your user ID and password, and click **Log in**.
 2. In the navigation area, expand **System Configuration** and **Program Vital Product Data**.
 3. Select **System Enclosures**. In the right pane, the current system enclosures are displayed.
 4. On the system being serviced, record the enclosure serial number printed on the bar-coded label on the system unit.
 5. Enter the enclosure serial number recorded from the system unit in the **Enclosure serial number** field.
 6. Click **Save settings** to update and save the enclosure serial number and the feature code.
-

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 an HMC as the DHCP server, do the following:

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 on page 141

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 pressing the pin-hole switch on the control panel.

35.

Go to step 26 on page 140.

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 MachineType-Model#-Serial# format.

To change the system name, do the following:

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 HMC, 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.

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, seconds).
 3. Change either the date value or the time value or both, and click **Update Time Of Day**.
-

39. 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.
-

40. Restore service processor settings

1. Reset any service processor settings that you may have set using operating system commands. You recorded these settings at the beginning of this procedure.
 2. If you choose to reset the HMC access password, do the following:
 3.
 - a. From the HMC GUI (preferred method):
 - b.
 - Expand the **Systems Management** folder in the navigation tree pane.
 - Expand the **Servers** folder.
 - Select the server to be powered off. A list of server-related tasks will display in the **Tasks** pane.
 - Expand the **Configuration** folder in the **Tasks** pane.
 - Under the **Configuration** folder, click the **Update Managed System Password** task.
 - c. Or, from the HMC command line, type:
 - d. `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.
-

41. Recover partition data on the FSP

Profile data stored in the managed server has been cleared or corrupted.

To recover profile data using the HMC, do the following:

1. Expand the **Systems Management** folder in the navigation tree pane.
 2. Double click on the **Servers** folder.
 3. Use the checkbox to select a server.
 4. Click on the **Tasks** drop-down menu that appears on the table toolbar.
 5. From the menu, select **Recover Partition Data**.
-

42. Update vital product data

If your system is running IBM i and is not managed by the HMC, you must update the load source after replacing the system backplane.

To update the load source without using the HMC, do the following:

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 screen appears, 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; then, press Enter. Confirm the language feature by pressing Enter.
 3. The Install Licensed Internal Code display appears; 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) screen, 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.
 6. The Update System Vital Product Data display appears. Press Enter to confirm that you want the vital product data to be written.
 7. Press F12 twice.
 8. Press 1 and Enter to exit DST. Use the system control panel to perform a delayed power-off. Change the IPL mode to B; then, power on the system to perform an IPL from disk.
-

43. 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.

44.

Go to Verifying a repair.

System processor assembly

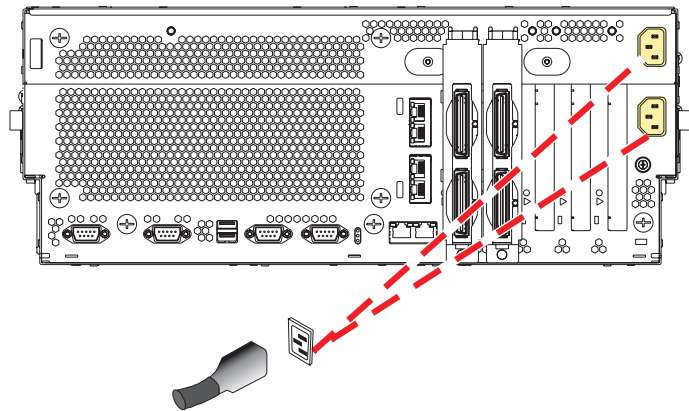
Use this procedure to service the system processor assembly.

1. Power off the unit

Power should be removed from the unit containing the system processor assembly. If this unit is powered on, power it off now.

2. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

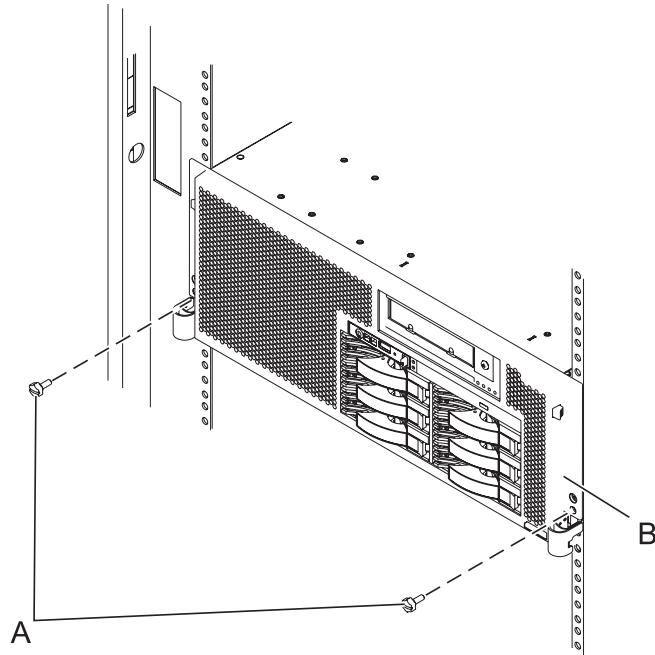


3. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

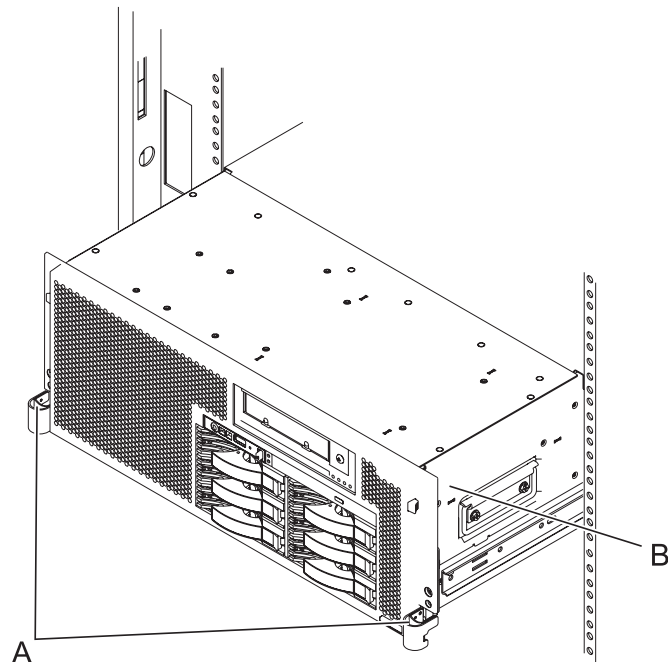


4. Place into service position (continued)

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.

Notes:

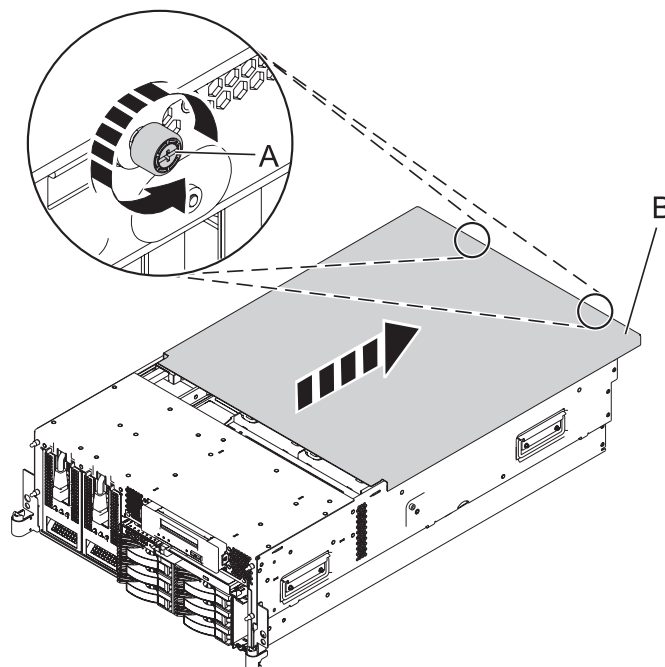
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



5. Remove the service access cover

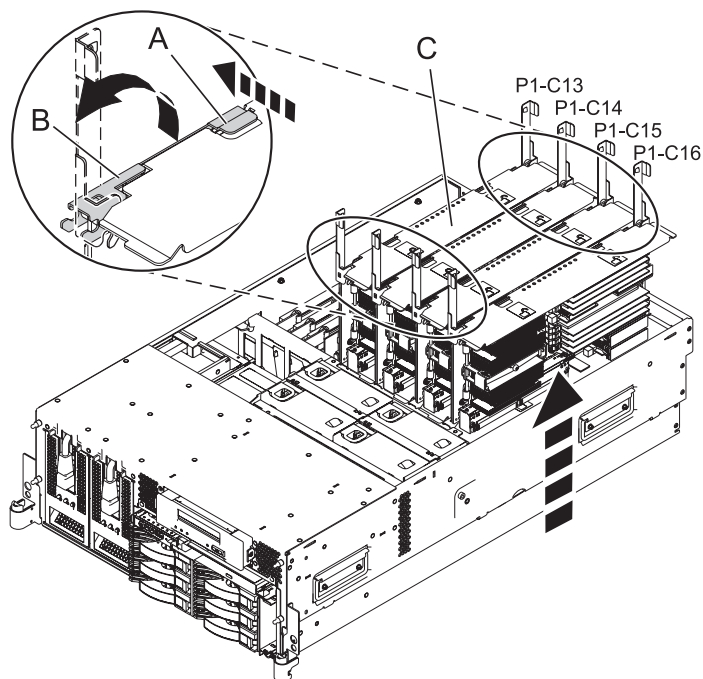
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



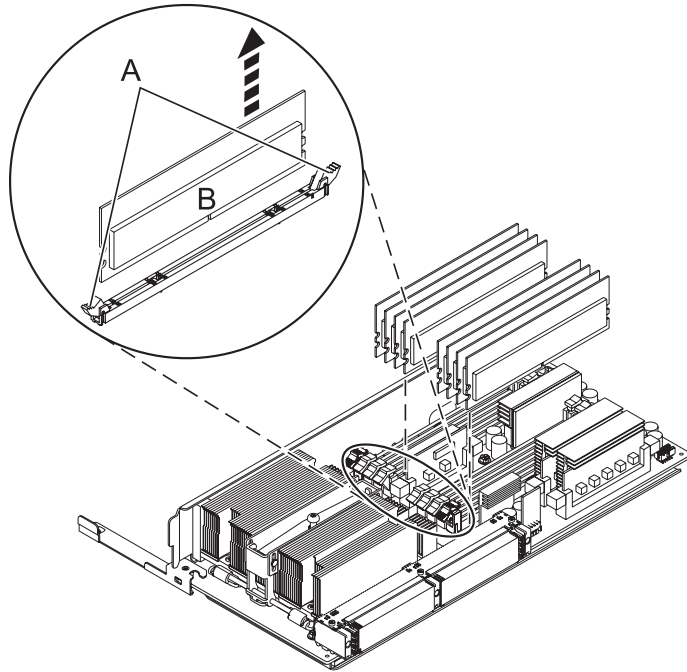
6. Remove the system processor assembly

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.



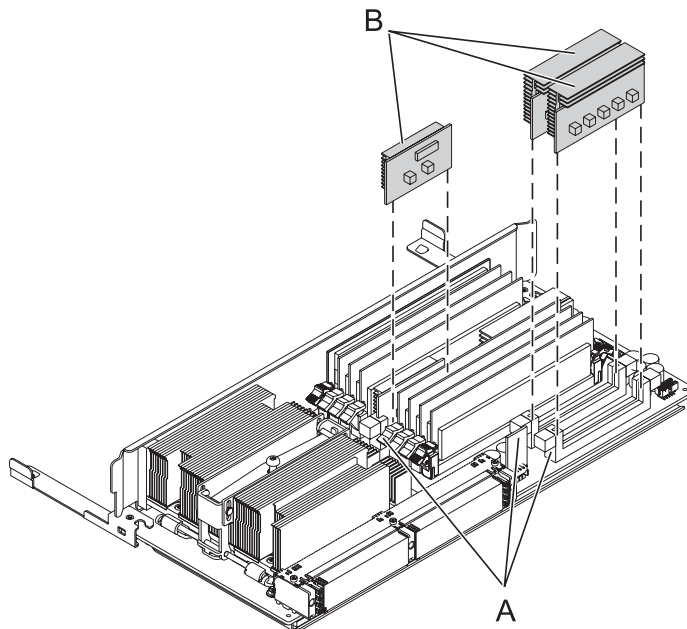
7. Remove all memory DIMMs

1. Remove the memory DIMM by pushing the tabs **(A)** out and then down. The tabs' lever action forces the memory DIMM out of the connector.
2. Pull the memory DIMM **(B)** out of the connector.
3. Repeat these steps until all memory DIMMs have been removed from the processor assembly being replaced.



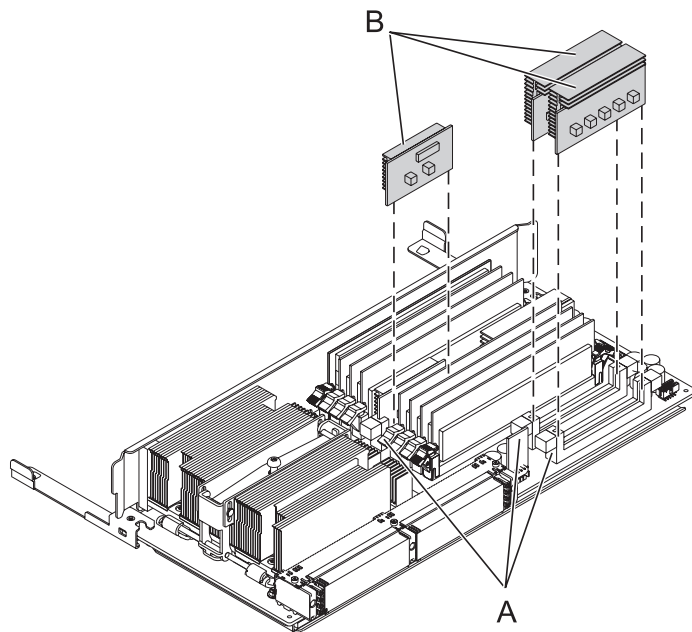
8. Remove all of the voltage regulator modules

1. Locate the voltage regulators. You will need to remove all modules.
2. Push the connector tabs **(A)** out and then down to unlock the module.
3. Pull the module **(B)** out of the connector.
4. Repeat these steps to remove the other voltage regulator modules.



9. Install all of the voltage regulator modules

1. Ensure that the connector tabs (A) are pushed out in the unlocked position before installing the voltage regulator module.
2. Carefully grasp the voltage regulator module (B) along two edges and align it with the connector.
3. Insert the voltage regulator module into the connector.
4. Push the connector tabs into the locked position.
5. Repeat these steps to install the other voltage regulator modules.

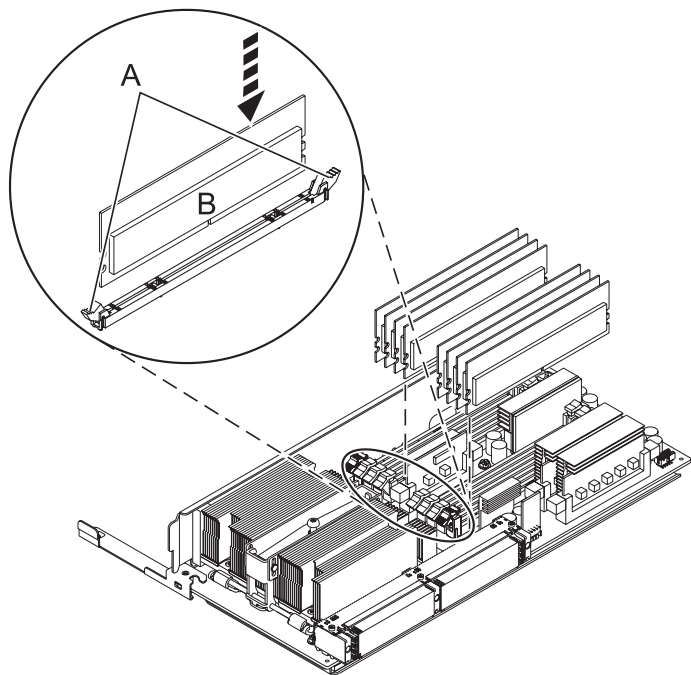


10. Install all memory DIMMs in the new processor assembly

1. Ensure that the connector locking tabs (A) are pushed out in the unlocked position before installing a memory DIMM.

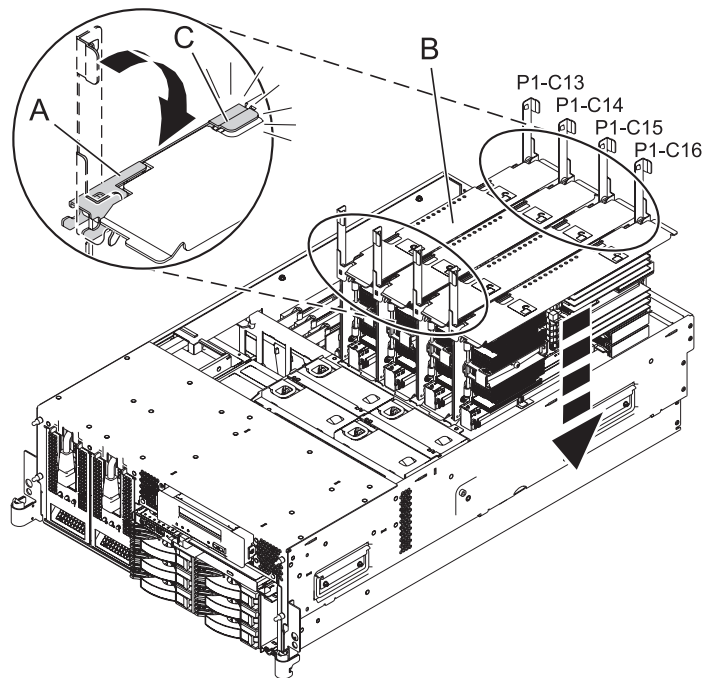
Attention: Memory DIMMs are keyed to prevent a DIMM from being installed improperly. Note the locations of the key tabs within the DIMM connector before attempting to install the DIMM.

- 2.
3. Carefully grasp the memory DIMM (B) along two edges and align the connector.
4. Insert the memory DIMM firmly into the connector.
5. Secure the memory DIMM by pushing in the locking tabs (A).
6. Repeat these steps until all memory DIMMs have been installed.



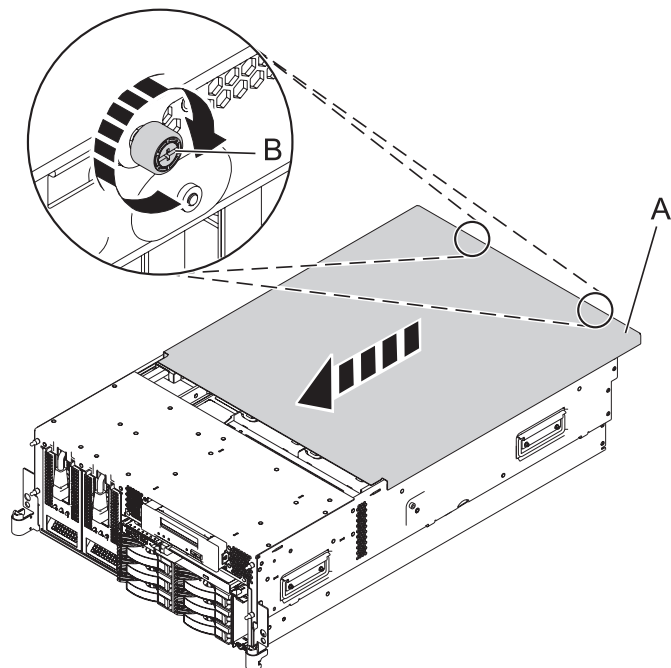
11. Install the system processor assembly

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).



12. Install the service access cover

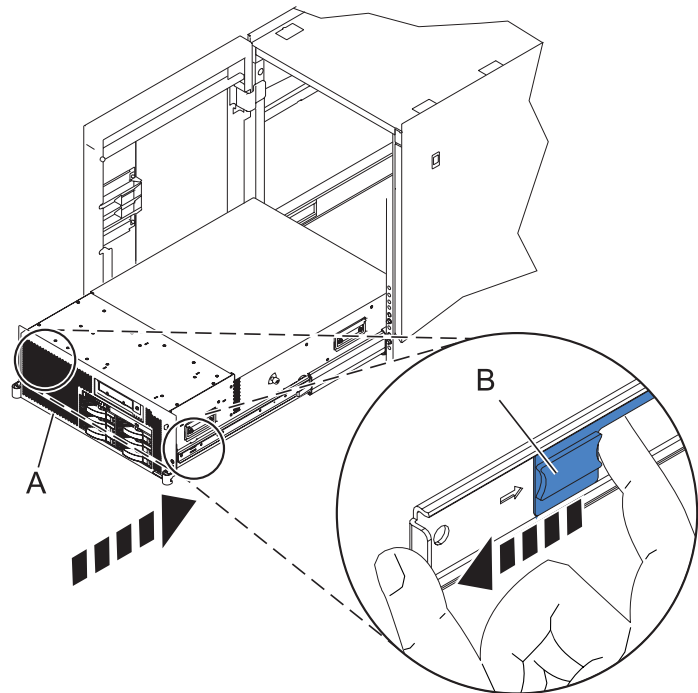
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



13. Place into operating position

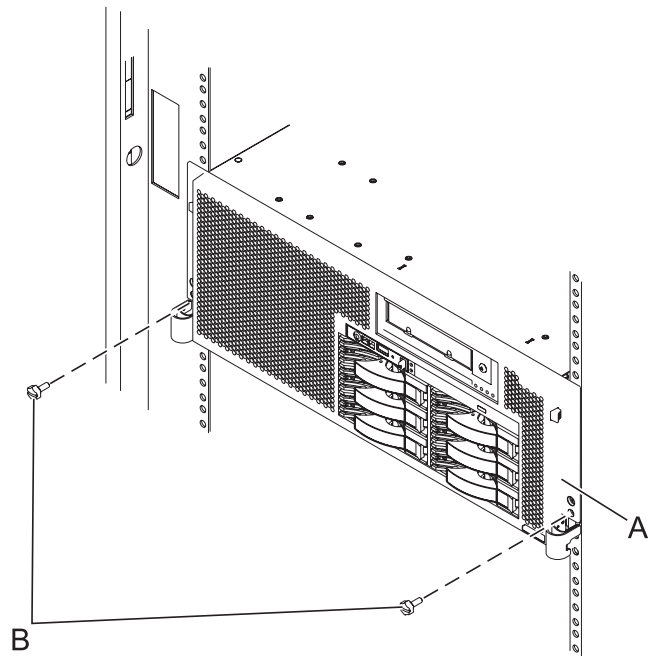
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



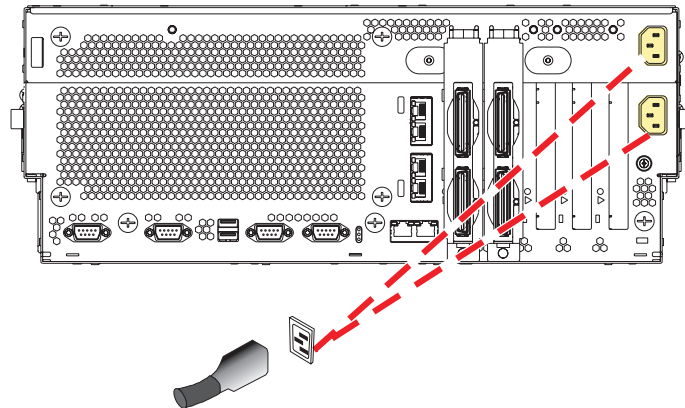
14. Place into operating position (continued)

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



15. Connect the power cords

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



16.

Go to Verifying a repair.

TPMD card

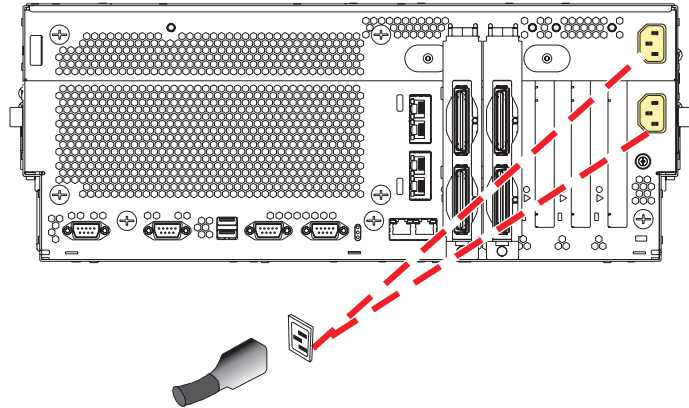
Use this procedure to service the Thermal Management (TPMD) card.

1. Power off the unit

Power should be removed from the unit containing the TPMD card. If this unit is powered on, power it off now.

2. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

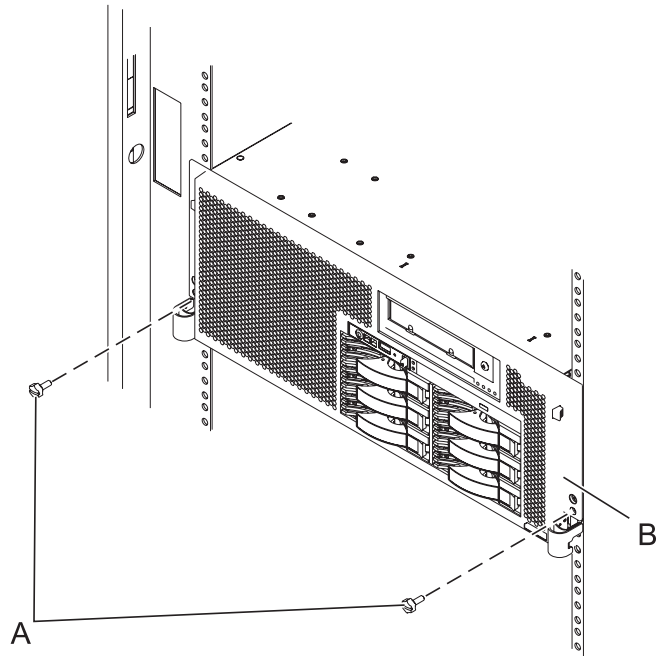


3. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

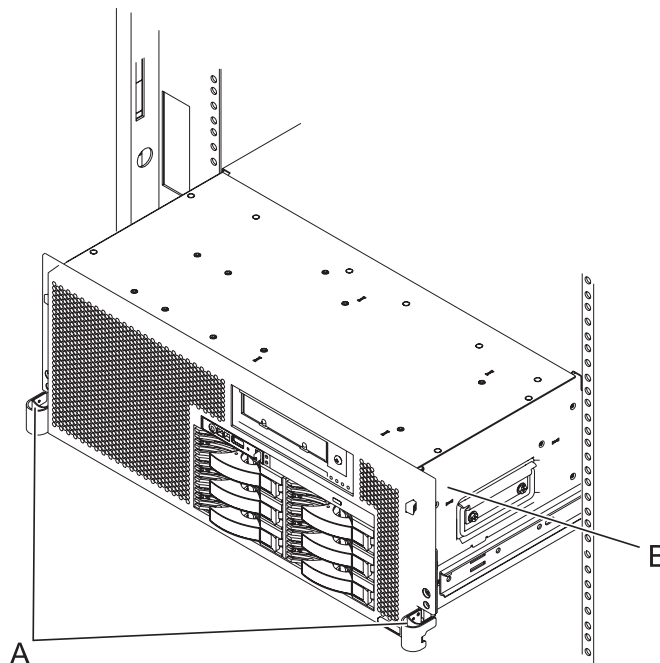


4. Place into service position (continued)

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.

Notes:

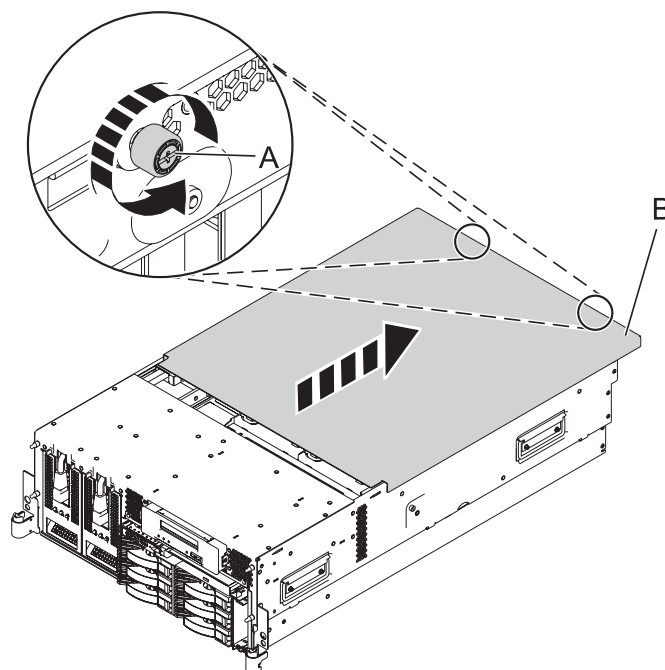
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



5. Remove the service access cover

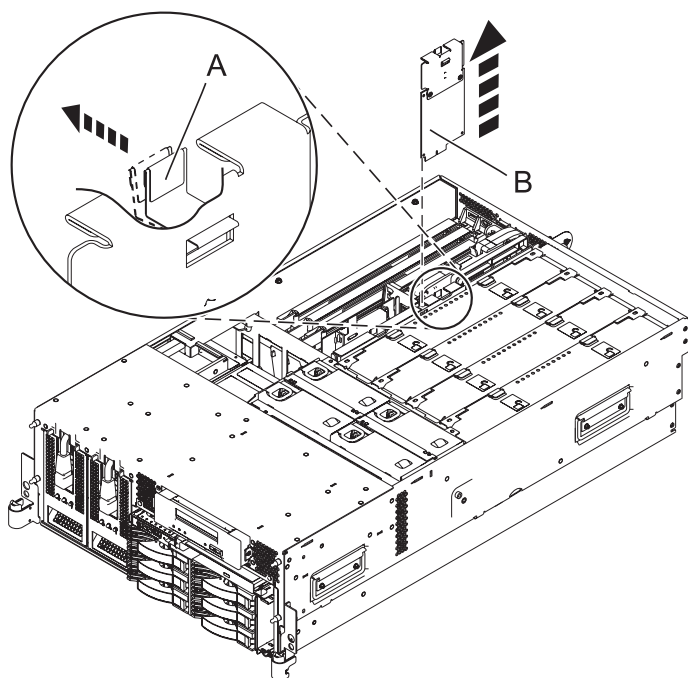
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



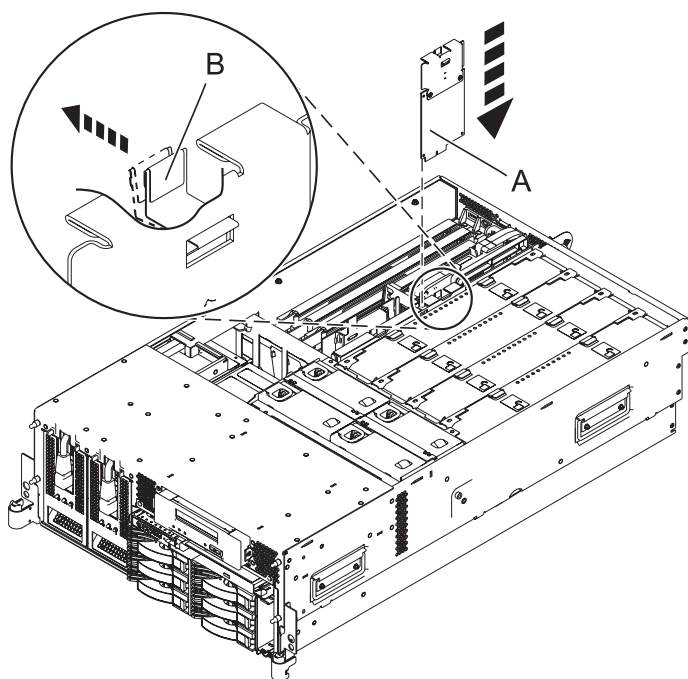
6. Remove the TPMD card

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.



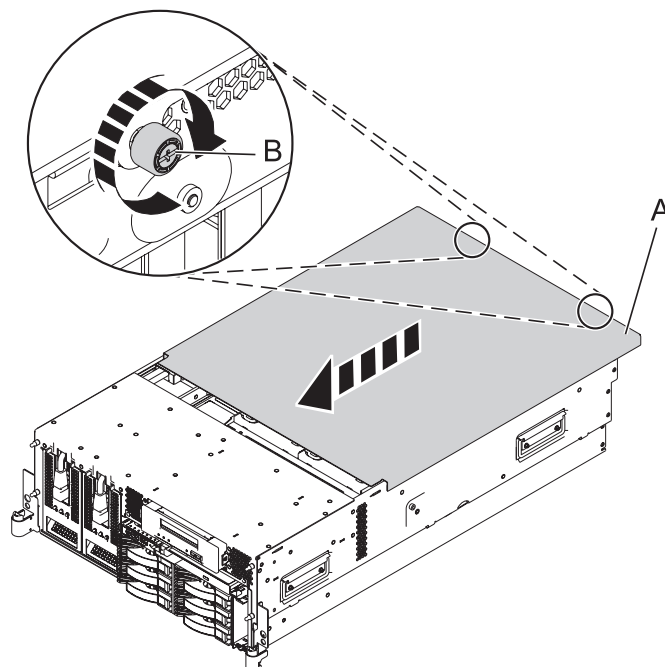
7. Install the TPMD card

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.



8. Install the service access cover

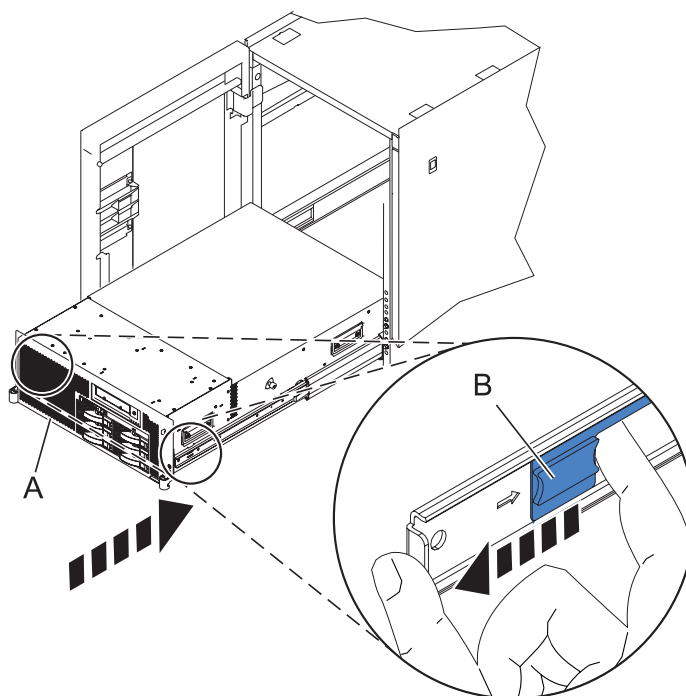
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



9. Place into operating position

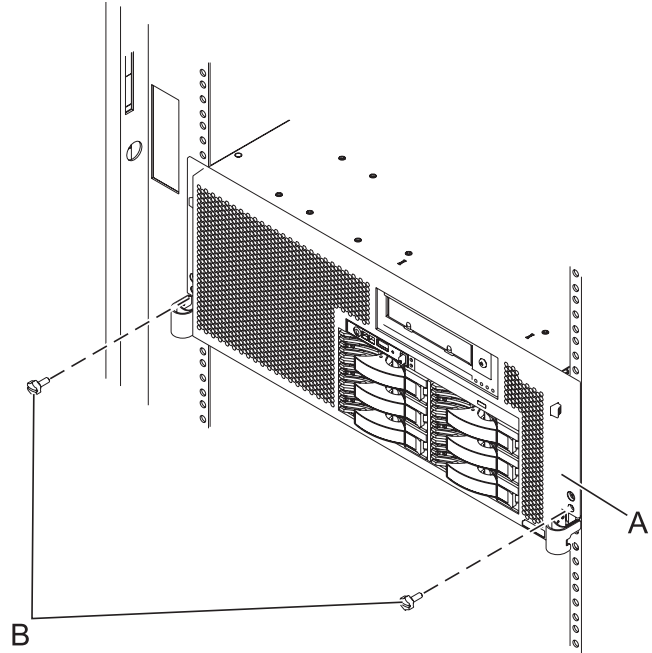
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



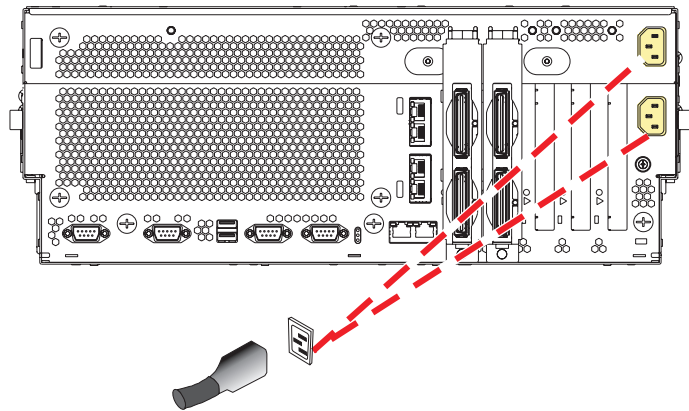
10. Place into operating position (continued)

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



11. Connect the power cords

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



12.

Go to Verifying a repair.

Voltage regulator module

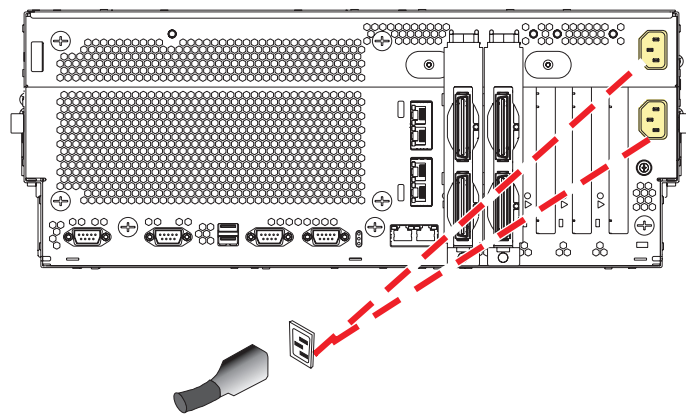
Use this procedure to service the voltage regulator module.

1. Power off the unit

Power should be removed from the unit containing the voltage regulator module. If this unit is powered on, power it off now.

2. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

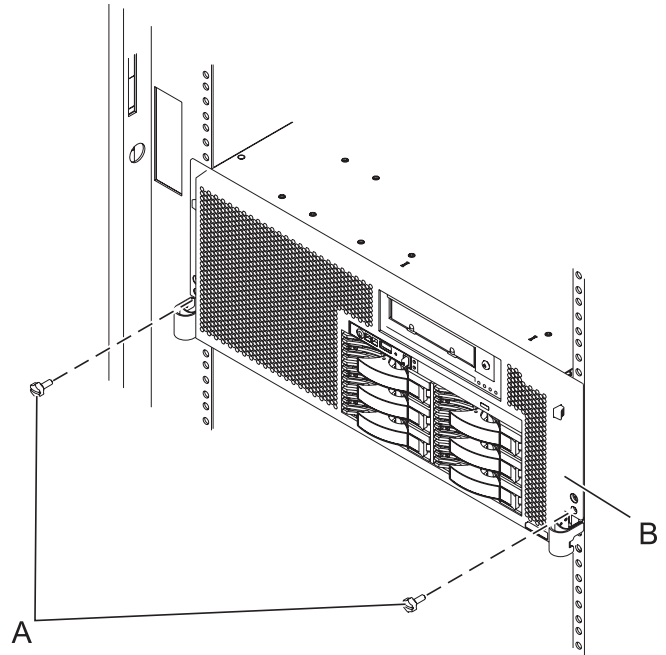


3. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

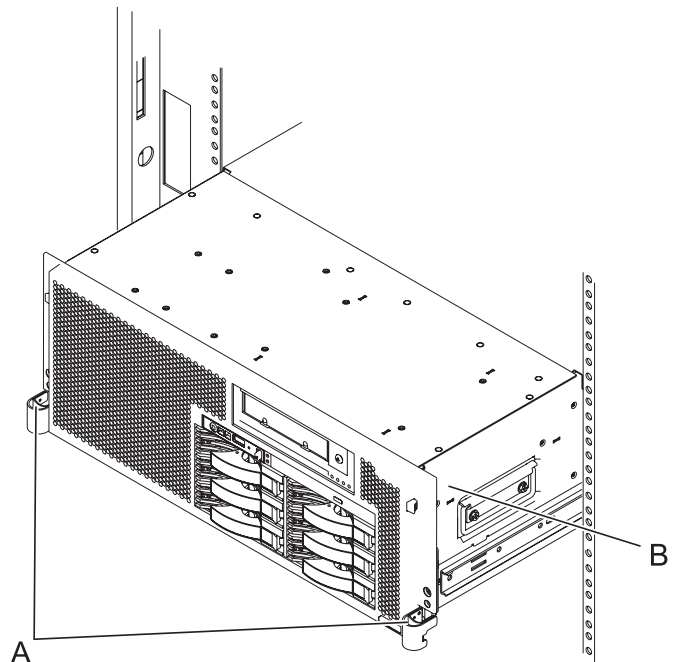


4. Place into service position (continued)

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.

Notes:

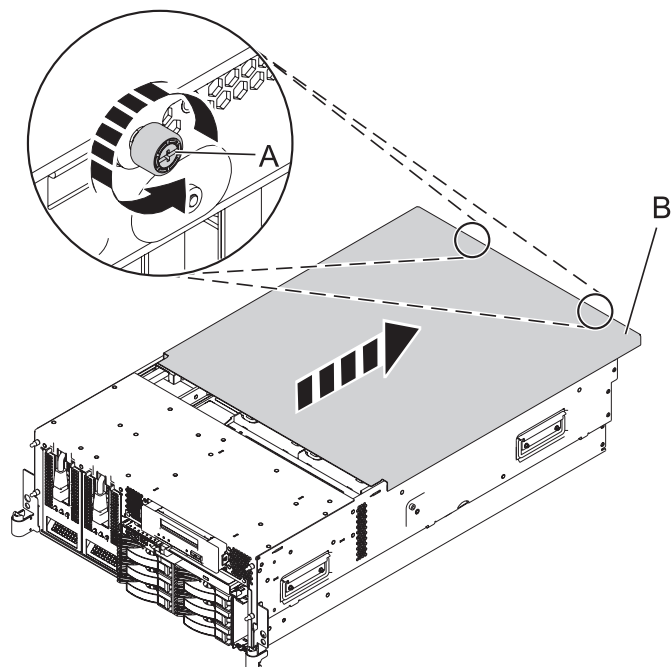
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



5. Remove the service access cover

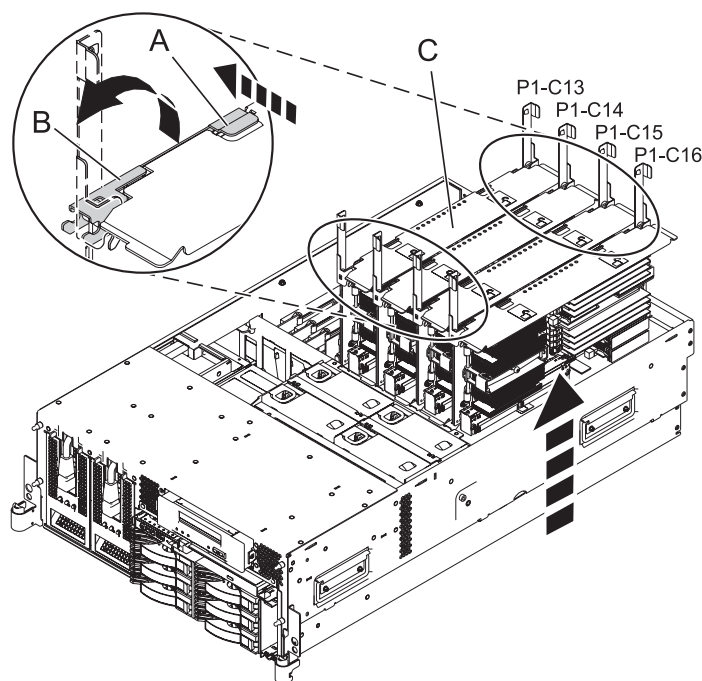
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



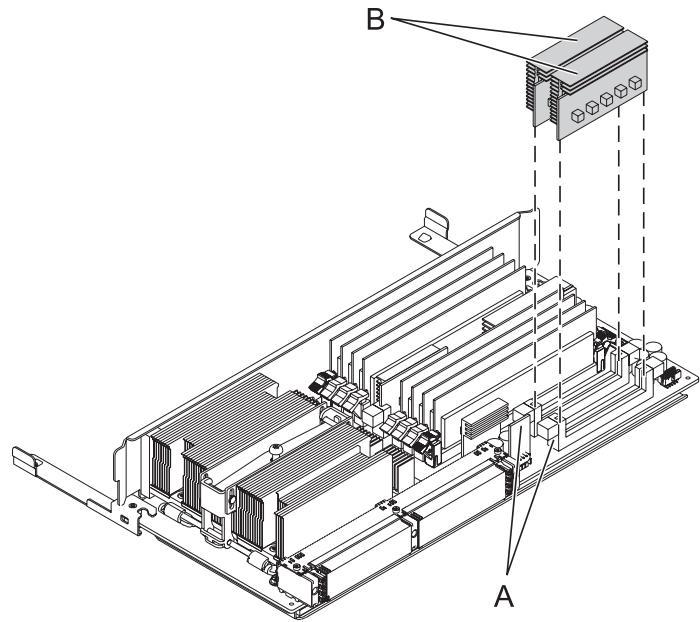
6. Remove the system processor assembly

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.



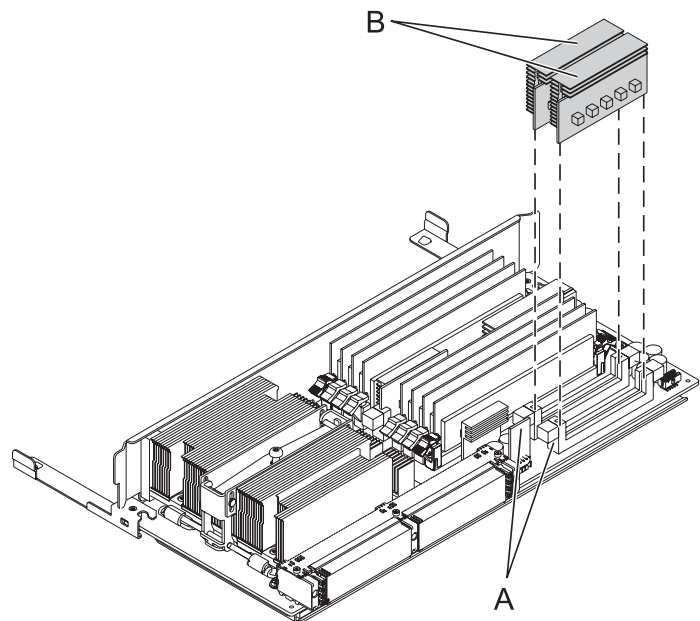
7. Remove the voltage regulator module pair

1. Locate the voltage regulator module pair. You will need to remove both modules.
2. Push the connector tabs (A) out and then down to unlock the module.
3. Pull the module (B) out of the connector.
4. Repeat these steps to remove the other voltage regulator module.



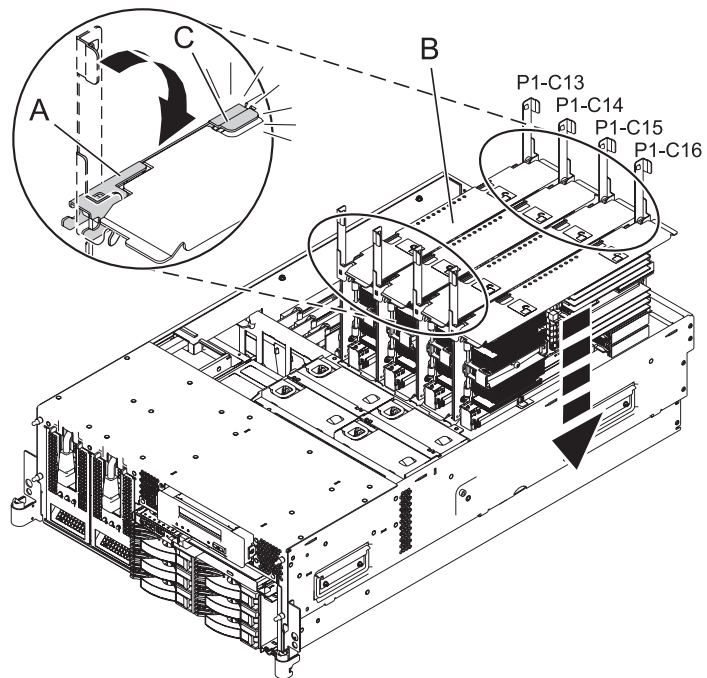
8. Install the voltage regulator module pair

1. Ensure that the connector tabs (A) are pushed out in the unlocked position before installing a new voltage regulator module.
2. Carefully grasp the voltage regulator module (B) along two edges and align it with the connector.
3. Insert the voltage regulator module into the connector.
4. Push the connector tabs into the locked position.
5. Repeat these steps to install the other voltage regulator module.



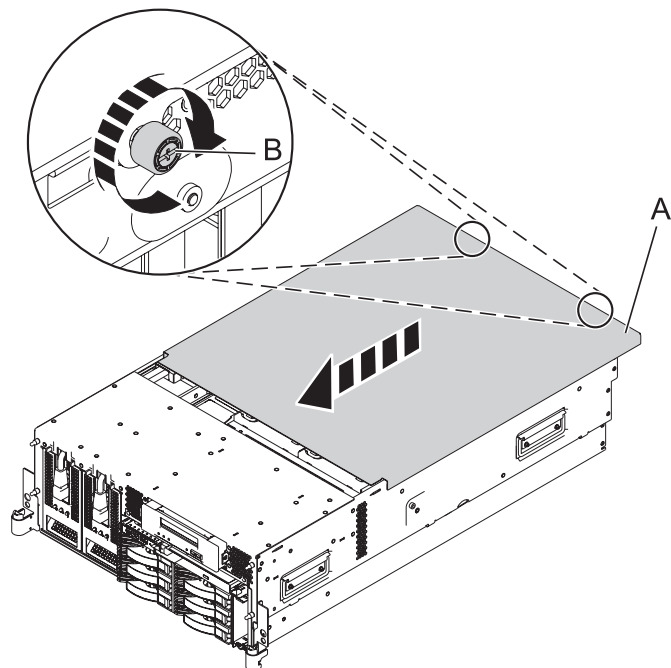
9. Install the system processor assembly

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).



10. Install the service access cover

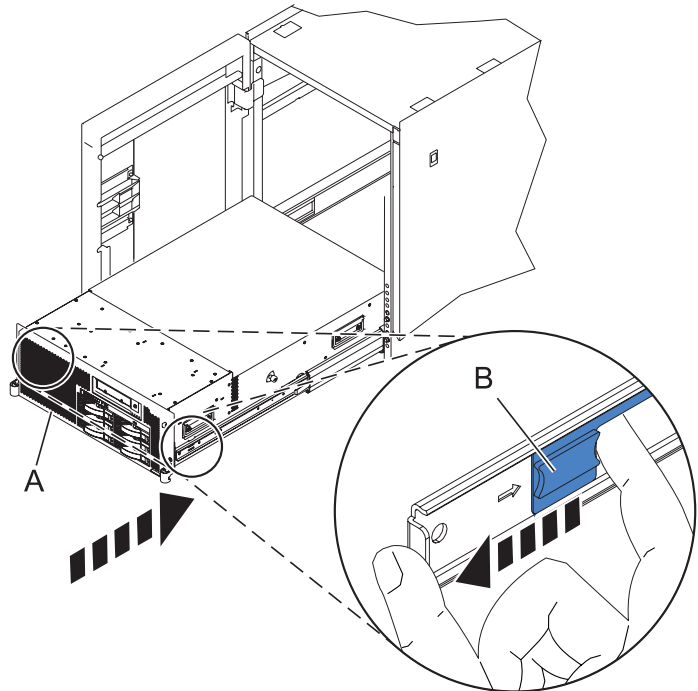
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



11. Place into operating position

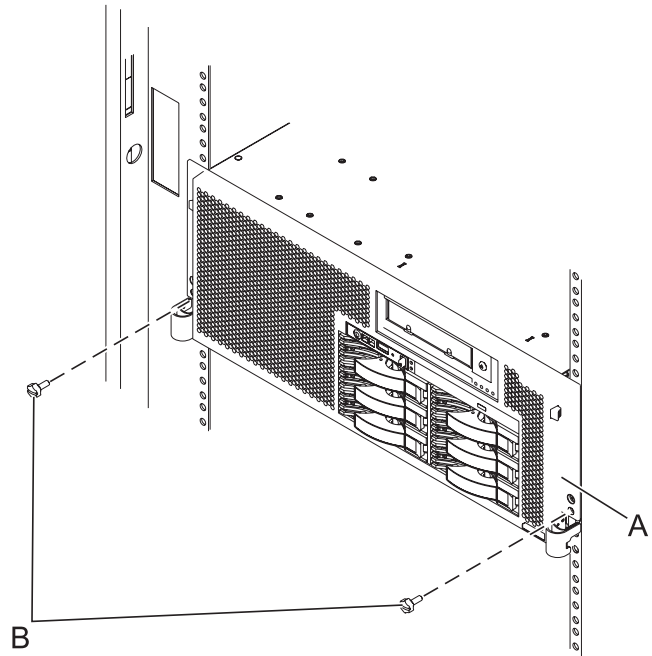
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



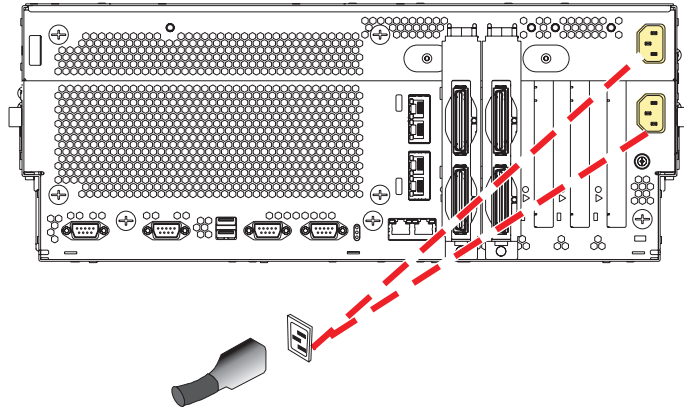
12. Place into operating position (continued)

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



13. Connect the power cords

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



14.

Go to Verifying a repair.

Voltage regulator module (single)

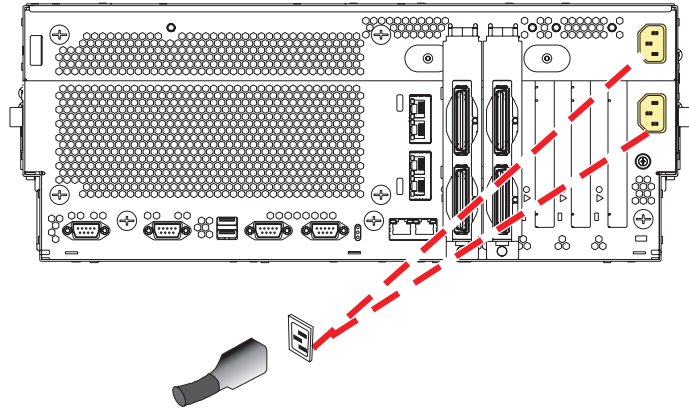
Use this procedure to service a single voltage regulator module.

1. Power off the unit

Power should be removed from the unit containing the voltage regulator module. If this unit is powered on, power it off now.

2. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

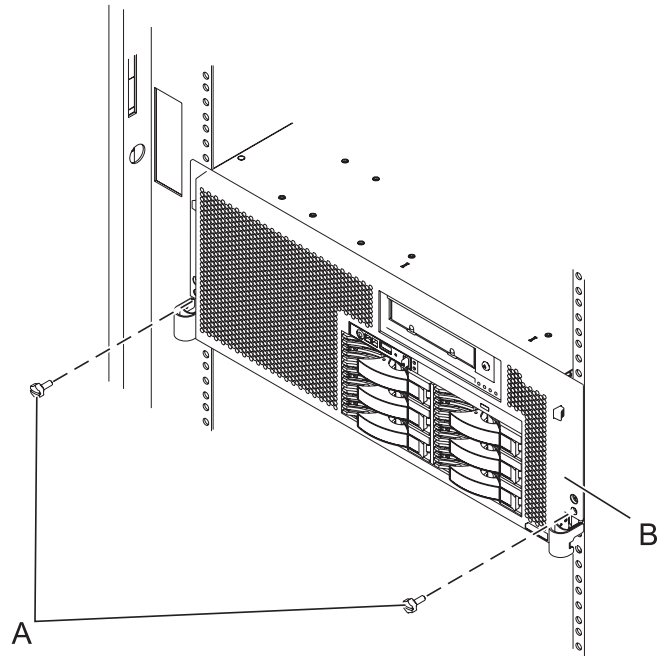


3. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

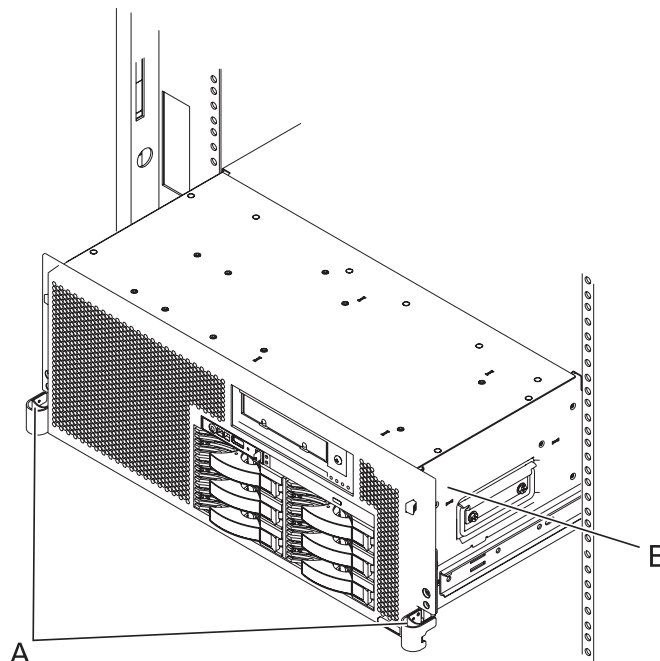


4. Place into service position (continued)

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.

Notes:

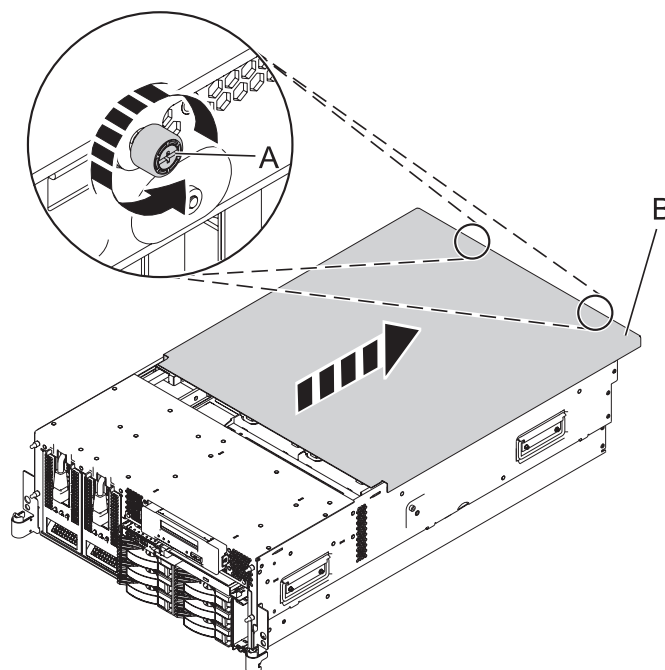
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



5. Remove the service access cover

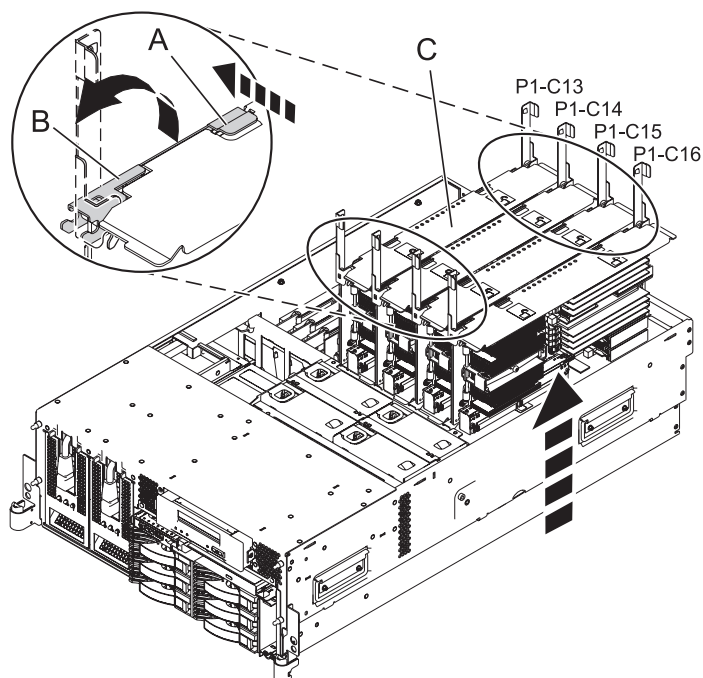
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



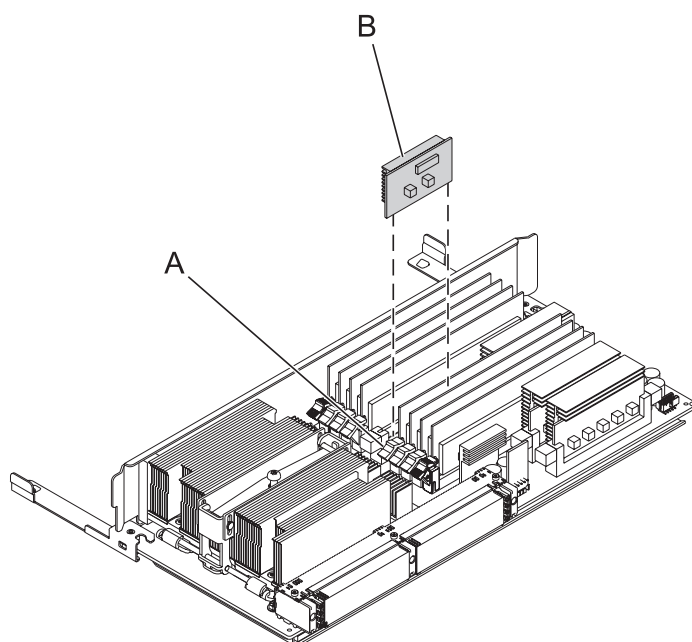
6. Remove the system processor assembly

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.



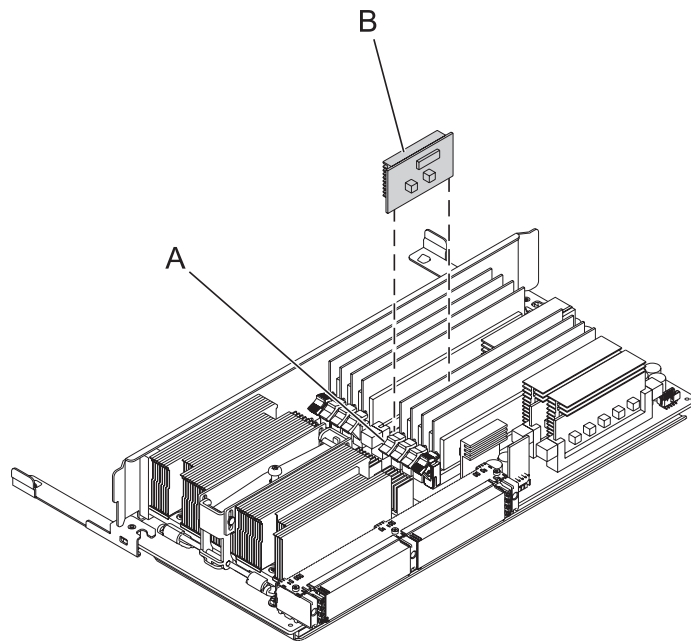
7. Remove the voltage regulator module

1. Locate the voltage regulator module.
2. Push the connector tabs (A) out and then down to unlock the module.
3. Pull the module (B) out of the connector.



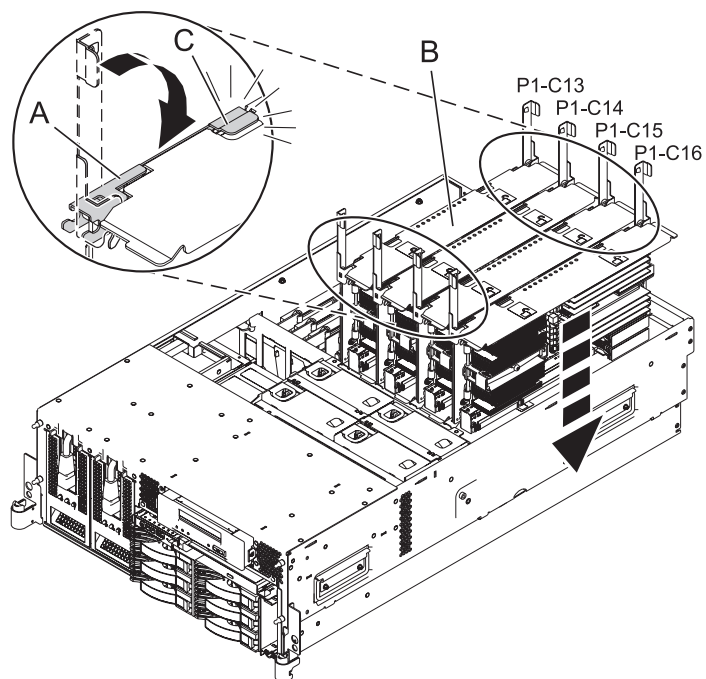
8. Install the voltage regulator module

1. Ensure that the connector tabs **(A)** are pushed out in the unlocked position before installing a new voltage regulator module.
2. Carefully grasp the voltage regulator module **(B)** along two edges and align it with the connector.
3. Insert the voltage regulator module into the connector.
4. Push the connector tabs into the locked position.



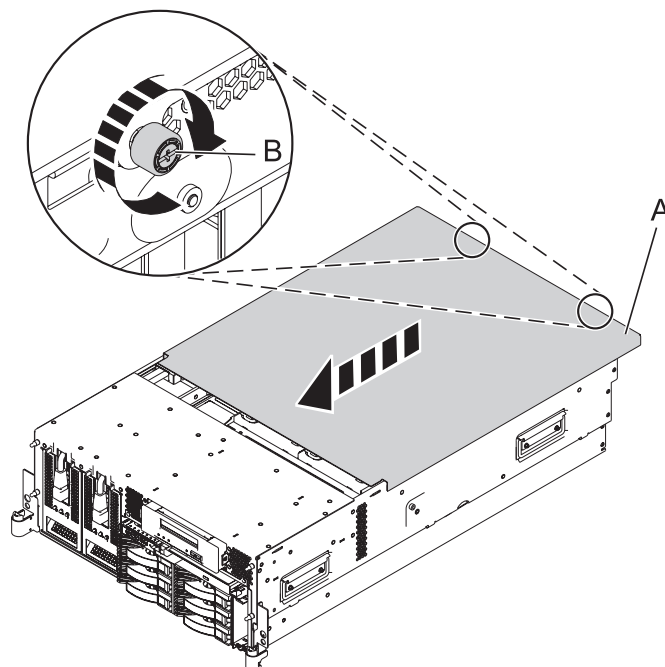
9. Install the system processor assembly

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)**.



10. Install the service access cover

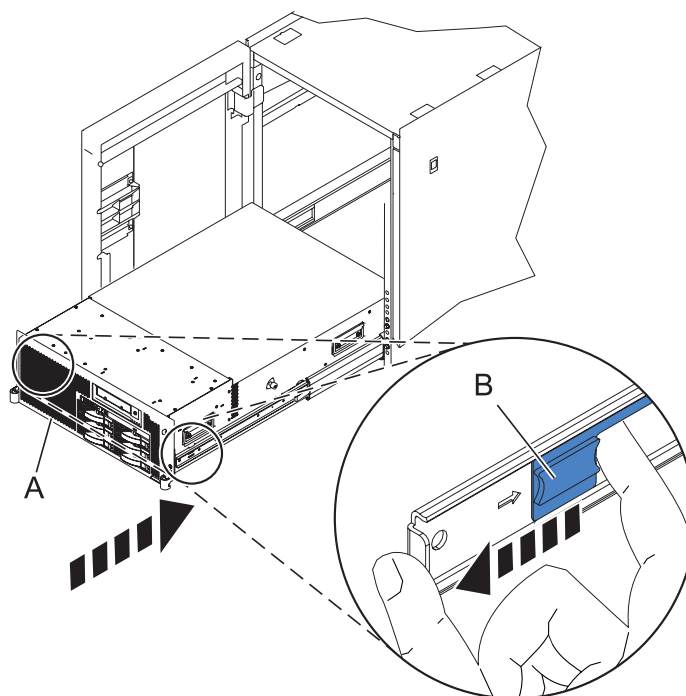
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



11. Place into operating position

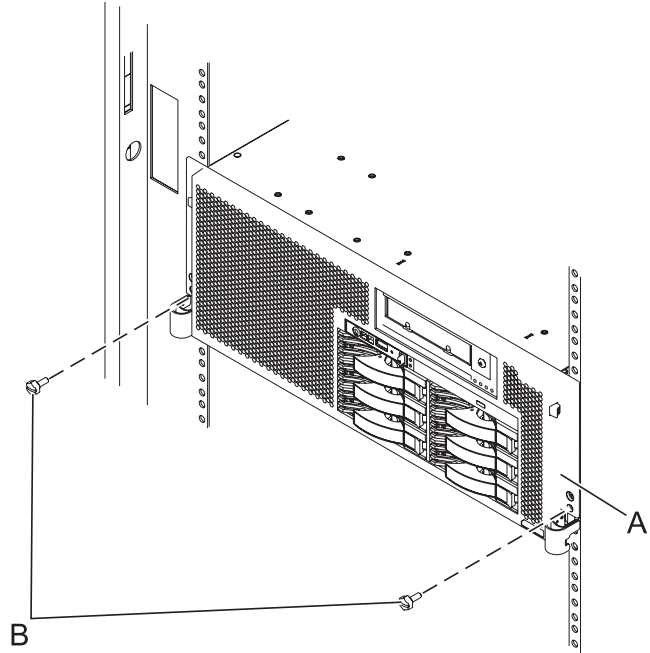
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



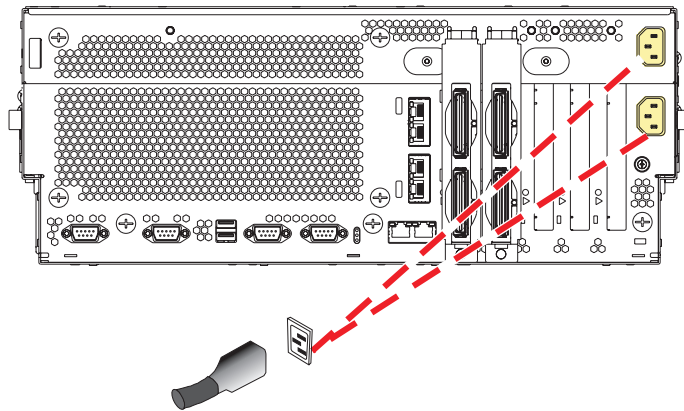
12. Place into operating position (continued)

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



13. Connect the power cords

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



14.

Go to Verifying a repair.

VPD card

Use this procedure to service the Vital Product Data (VPD) card.

Attention: The VPD card contains data which is vital to system operation:

- Machine type, model, and serial number
- System brand
- System unique ID (SUID)
- Activation codes for Capacity on Demand (COD) and Virtualization Engine Technologies (VET) (if applicable)

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, and for System i® systems contact icod@us.ibm.com.

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 may also be referred to as the service processor menus.

To access the ASMI, refer to *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.

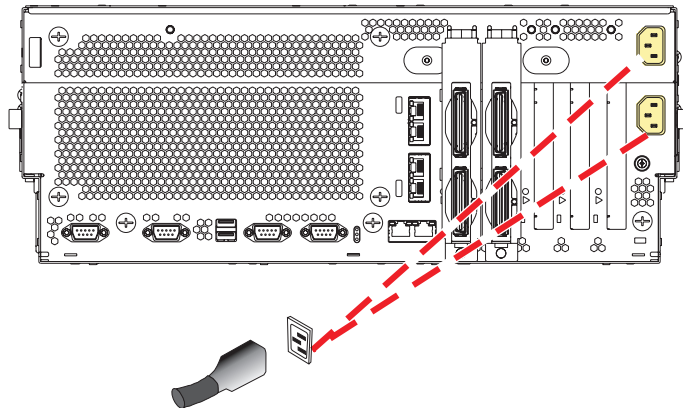
2. In the navigation area, expand **System Configuration** and **Program Vital Product Data**.
 3. Select **System Brand**.
 4. In the right pane, manually record the value for the System Brand.
 5. Select **System Keywords** under **Program Vital Product Data**.
 6. In the right pane, manually record the values for the machine type-model, system serial number, system unique ID, and (if applicable) activation codes for Capacity on Demand (COD) and Virtualization Engine Technologies (VET).
-

3. Power off the unit

Power should be removed from the unit containing the VPD card. If this unit is powered on, power it off now.

4. Disconnect the power cords

Disconnect all power cords from the unit you are servicing.

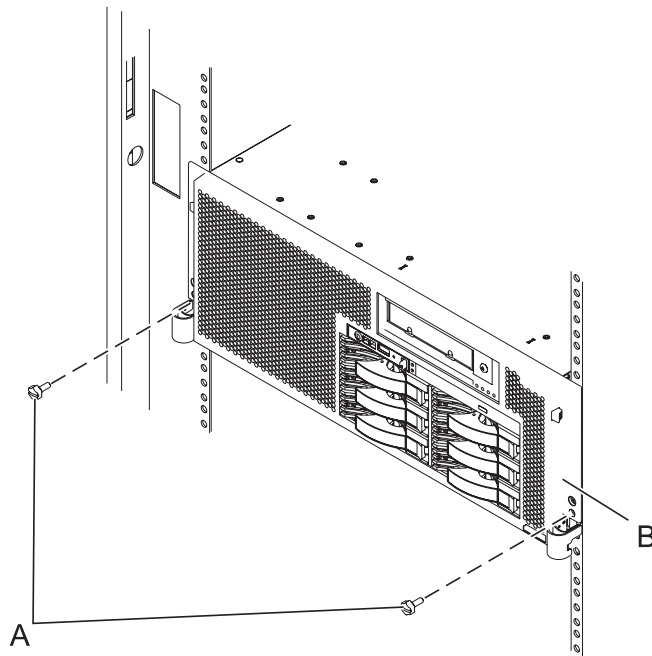


5. Place into service position

Note to expansion unit users: The instructions in this procedure are written based on the rack model. Expansion unit users can still use this procedure; however, expansion unit users should ignore specific references to rack-only features such as rack doors, rack thumbscrews, and rack-specific FRU orientation.

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.

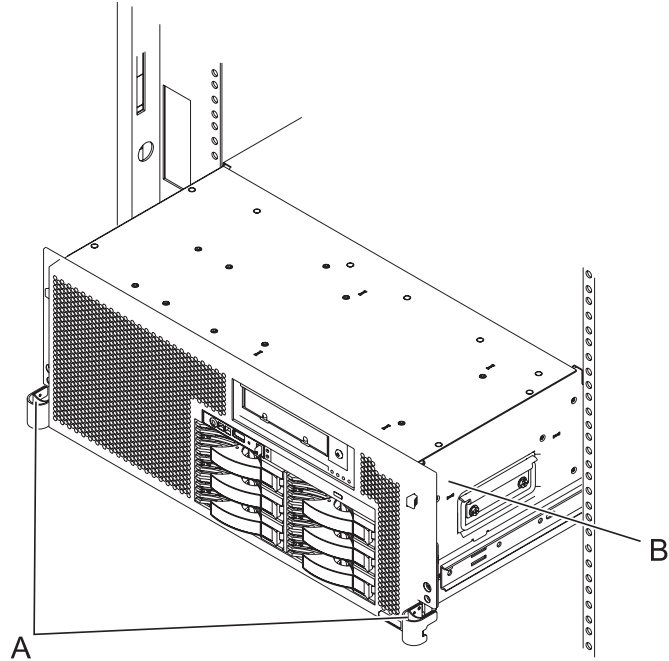


6. Place into service position (continued)

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.

Notes:

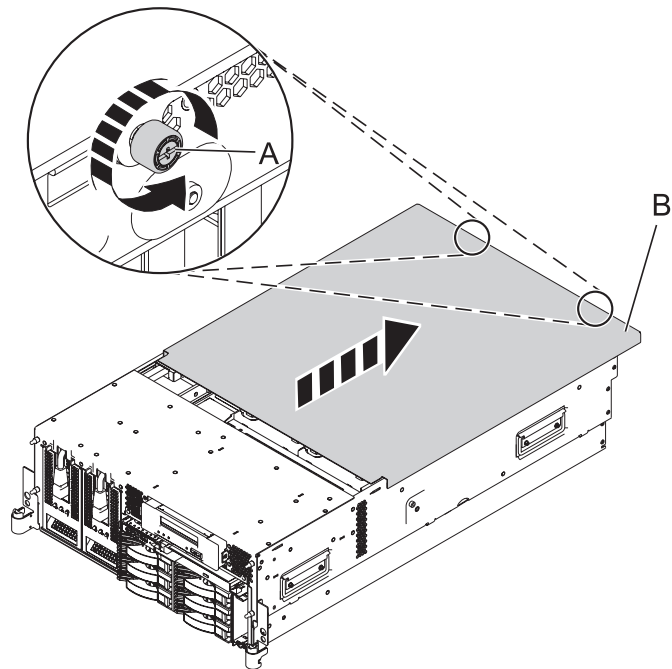
1. Ensure that the cables at the back of the system unit do not catch or bind as you pull the unit forward in the rack.
2. When the system unit rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.



7. Remove the service access cover

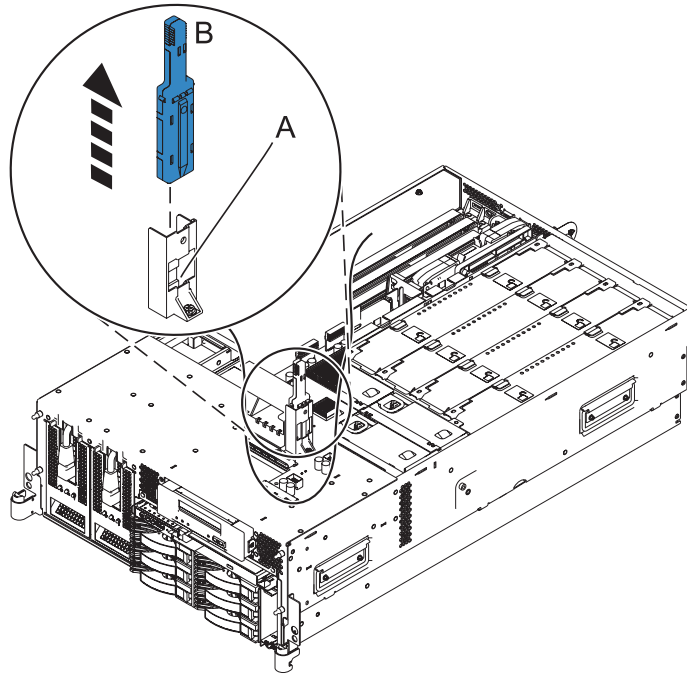
1. Loosen the two thumbscrews (A) located at the back of the cover.
2. Slide the cover (B) toward the back of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

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.



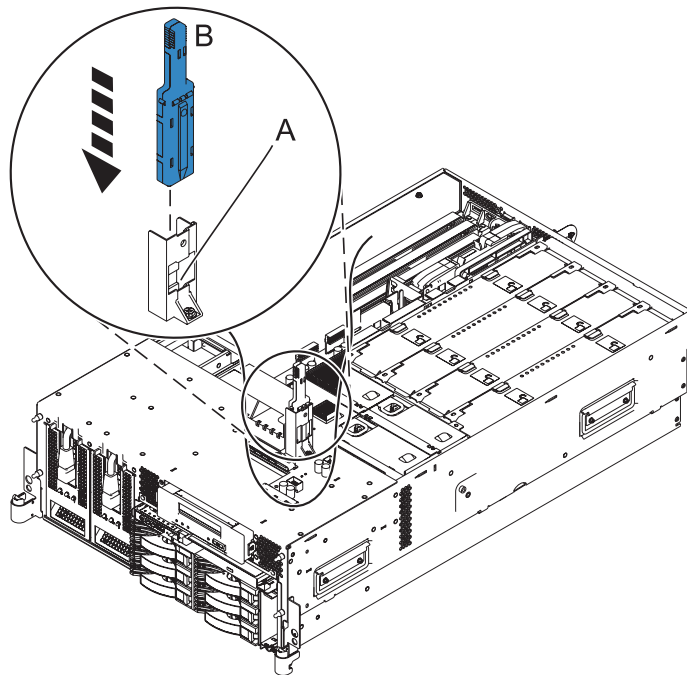
8. Remove the VPD card

Remove the VPD card (B) from the VPD card guide (A) on the planar by pulling the blue handle.



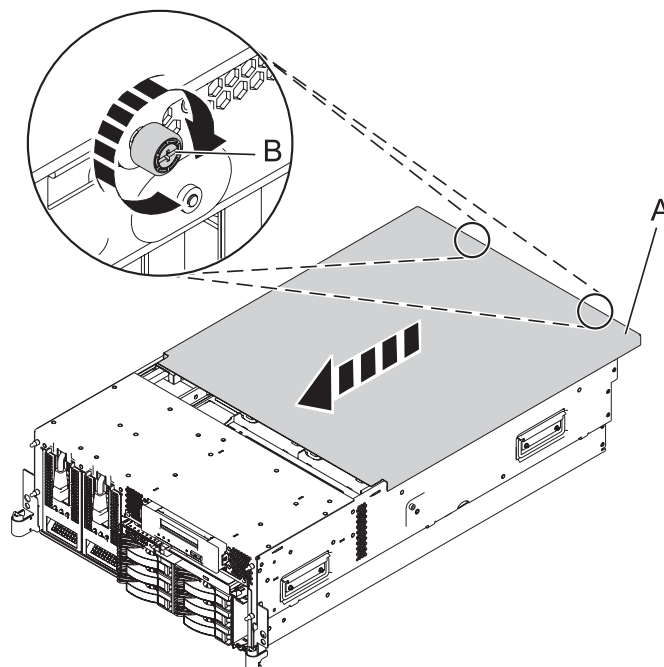
9. Install the VPD card

1. Insert the VPD card (B) into the VPD card guide (A).
2. Push until the VPD card is fully seated.



10. Install the service access cover

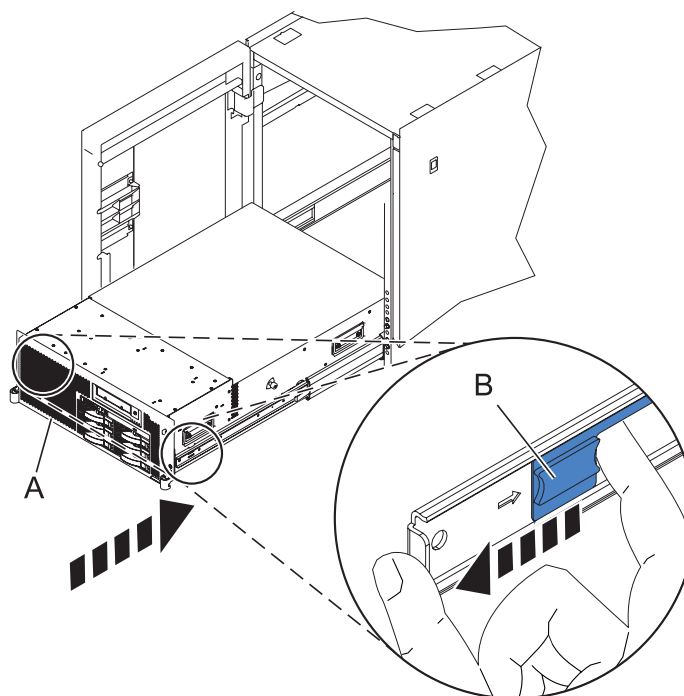
1. Place the service access cover (A) on the top of the system, about 25 mm (1 in.) from the front of the system.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align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



11. Place into operating position

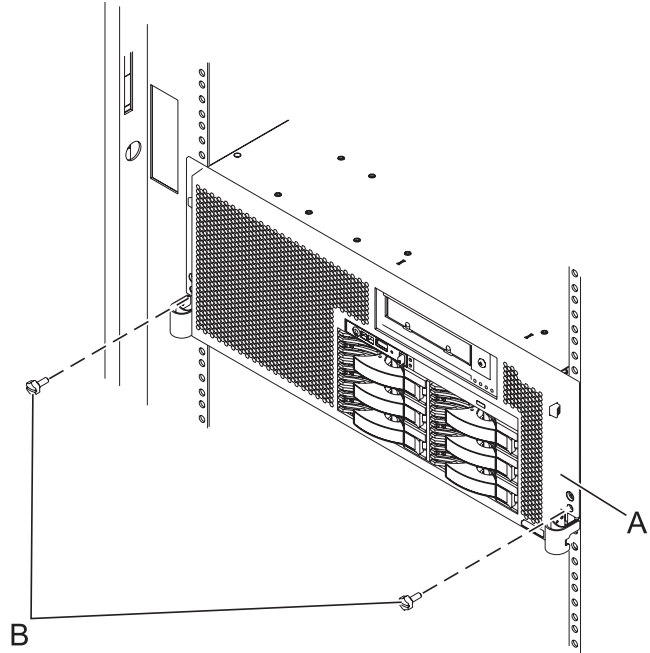
1. To unlock the rail safety latches (B), slide the latches towards the front of the system.
2. Push the system unit (A) back into the rack until both system-unit release latches have locked into position.

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



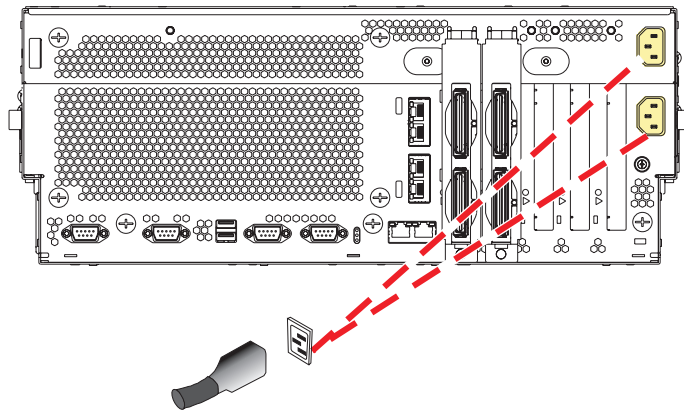
12. Place into operating position (continued)

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



13. Connect the power cords

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



14. Power on the system.

Power on the system.

15. 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 may also be referred to as the service processor menus.

To access the ASMI, refer to *Accessing the Advanced System Management Interface*.

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

16. 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**.
3. Expand **Program Vital Product Data**.
4. Select **System Brand**.
5. If the backed up system brand is correct, click **Accept backed up setting and save**. Otherwise, enter the correct system brand and click **Continue**.
- 6.

Note: If you do not know the correct system brand, contact your next level of support.

7. Click **Save setting** to update the system brand to the VPD.
 8. Select **System Keywords** under **Program Vital Product Data**.
 9. If the backed up system keywords is correct, click **Accept backed up setting and save**. Otherwise, enter the values for the machine type-model, system serial number, system unique ID, and (if applicable) activation codes for Capacity on Demand (COD) and Virtualization Engine Technologies (VET). 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.
 10. Click **Save settings** to update the system keywords and save them to the VPD.
-

17.

Go to *Verifying a repair*.

Chapter 2. 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.
 - To verify the repair of a system that is currently powered on and that has an operating system loaded, go to step 5.
1. Power on the server and all attached I/O enclosures.

Did all the enclosures power on?

Yes: Go to step 3.↓ Go to step 3.

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” on page 180
- “Verifying the repair in Linux” on page 183
- “Verifying a repair using an IBM i system or logical partition” on page 183

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.

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.

No Go to step 7 on page 181.

Note: The AIX diagnostic service aid was used if a resource was removed using the **Hot Plug** task.

- 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 181; 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 182.

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.
- 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.**

Chapter 3. 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 Hardware Management Console (HMC) 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 an HMC?

- **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 191.
 - 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 195.
-

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 200. 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 190 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 on page 187?

- **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 187?

- **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 187 in the list of FRUs for this service action event?

- **Yes:** Continue with the next step.
- **No:** Go to step 32 on page 190.

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 on page 189.
-

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 on page 189.

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 188 empty?

- **Yes:** Go to step 32 on page 190.
 - **No:** Continue with the next step.
-

25. Does the list of all partitions you recorded in step 11 on page 188 contain more than one entry?

- **Yes:** Continue with the next step.
 - **No:** Go to step 32 on page 190.
-

26. Is the error class recorded in step 25 AIX?

- **Yes:** Continue with the next step.
 - **No:** Go to step 32 on page 190.
-

27. Perform the following steps for each entry in the list of all partitions you recorded in step 11 on page 188, 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 188 been processed?

- **Yes:** Continue with the next step.
 - **No:** Go to step 24 on page 189 to process the next partition in the list you recorded in step 11 on page 188.
-

32. Have all the serviceable events recorded in step 4 on page 187 been processed?

- **Yes:** Continue with the next step.
 - **No:** Go to step 5 on page 187 and process the next service action event in the list of serviceable events recorded in step 4 on page 187.
-

33. While processing all service action events, were you directed to step 14 on page 188?

- **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 200. 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 188, except the partition you were using to debug the original problem.

35. From the HMC 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 188 been processed?

- **Yes:** Continue with the next step.
 - **No:** Go to step 34 on page 190 to process the next partition in the list you recorded in step 14 on page 188.
-

39. If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 200. 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 200. 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 194 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 191?

- **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 191?

- **Yes:** Go to step 11.
 - **No:** Continue with the next step.
-

10. Is the FRU you replaced and recorded in step 1 on page 191 in the list of FRUs for this service action event?

- **Yes:** Continue with the next step.
 - **No:** Go to step 30 on page 194.
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 192. Go to step 16.

15. Add the partition list obtained in step 11 on page 192 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 192. If you are referred to the list of partitions obtained in step 11 on page 192 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 192 empty?

- **Yes:** Go to step 30 on page 194.
 - **No:** Continue with the next step.
-

23. Does the list of all partitions you recorded in step 11 on page 192 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 193?

- **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 192, 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 192 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 192.
-

30. Have all the serviceable events recorded in step 4 on page 192 been processed?

- **Yes:** Continue with the next step.
 - **No:** Go to step 5 on page 192 and process the next service action event in the list of serviceable events recorded in step 4 on page 192.
-

31. While processing all service action events, were you directed to step 14 on page 193?

- **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 200. 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 193, 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 193 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 193.
-

37. If the system attention LED is still on, turn off the LED as described in “Activating and deactivating LEDs” on page 200. 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 Hardware Management Console (HMC) 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 197.
 - **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 200.

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 198; 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 199.

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 199.
-

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.

Activating and deactivating LEDs

You can use these procedures to activate or deactivate LEDs using the Hardware Management Console (HMC) or the Advanced System Management Interface (ASMI).

Choose from the following tasks:

- “Deactivating a system attention LED or partition LED using the HMC”
- “Activating or deactivating an identify LED using the HMC”
- “Deactivating a system attention LED or logical partition LED using the Advanced System Management Interface” on page 201
- “Activating or deactivating an identify LED using the Advanced System Management Interface” on page 201

Deactivating a system attention LED or partition LED using the HMC

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.

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 using the 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.

Activating or deactivating an identify LED using the HMC

You can activate or deactivate an identify LED for components attached to the system.

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, 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.

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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Verantwortlich für die Konformitätserklärung nach des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

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