ESCALA

ESCALA PL1660R, PL1660R-L and PL3260R Removal and Replacement Procedures

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ESCALA

ESCALA PL1660R, PL1660R-L and PL3260R Removal and Replacement Procedures

Hardware

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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.

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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)

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

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

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

The equipment is suitable for installation in the following:

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

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

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

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

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

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 your service provider or next level of support.

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DANGER

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

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

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

  To Disconnect:

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

  To Connect:

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

  (D005)

Attention:

Failure to follow the step-by-step sequence for FRU removal or 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.

  External cables

  Control panel

  Disk drive

  Disk unit enclosure

Fans
I/O Backplane
Media device enclosure
Memory DIMM
RIO/HSL adapter and 12X host channel adapter
PCI adapter
C6 PCI adapter
Power supply
Removable media
Service processor assembly and time-of-day battery
Service processor cable
SMP cable
System backplane
System processor assembly
Voltage regulator assembly
VPD Card
VPD passthru card

External cables

Use this information to replace an external cable except the service processor cable or Symmetric Multi-Processor (SMP) cable.

Note: When the 9117-MMA server is attached to a 7314-G30 expansion unit, the following conditions apply.

- If the system firmware levels are equal to or less than EM320_040_031 or EM310_069_048, the system must be powered off before adding or removing 12X channel cables.
- If the system firmware levels are greater than EM320_040_031 or EM310_069_048, the 12x channel cables can be added or removed concurrently by following normal maintenance procedures.

1. **Open the back rack door**

Open the back rack door.

2. **Remove the External Cables**

Use the locations information to locate the cable.

Trace the cable and record the system location at the other end before removing the cable.

3. **Install the External Cables**

Use the locations information 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.

4. **Close the back rack door**

Close the back rack door.

5. **Verify the repair**

Go to Verifying a repair.

Control panel

Use this procedure to replace the control panel.

1. **Begin the repair**

   Control panel replacement can be performed with the system powered on and concurrently with system operations. To do this you need to access the Advanced System Management Interface (ASMI). Choose one of the following options:

   - For concurrent repair, continue with the next step.
   - For nonconcurrent repair (system powered off), go to step Power off and remove cords.

2. **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.

3. **Prepare the Control Panel for concurrent replacement**

1. In the navigation area of the ASMI, expand **Conurrent Maintenance** then select **Control panel**.
2. At the Preparing the control panel window, select **Remove**and click **Continue**.
3. Select the control panel's location and click **Save Settings**.
4. The message **Opeation completed successfully** is displayed.

Did the operation complete successfully?

Yes	No
Continue with the next step for a concurrent repair.	Go to step 6 on page 6 for a non-concurrent repair.

4. **Use this procedure to service the Control Panel.**

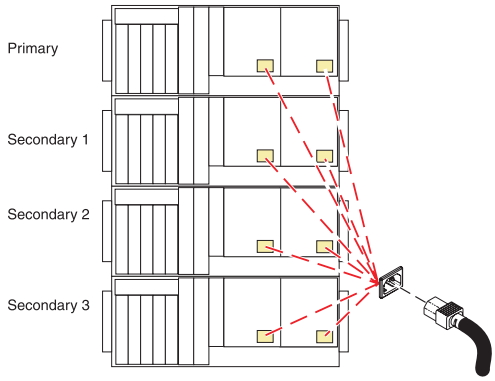
Service the control panel (D1) concurrently. Do not remove power from the system during this procedure.

Go to step 6 on page 6.

5. **Do not power off the system and remove the power cords:**

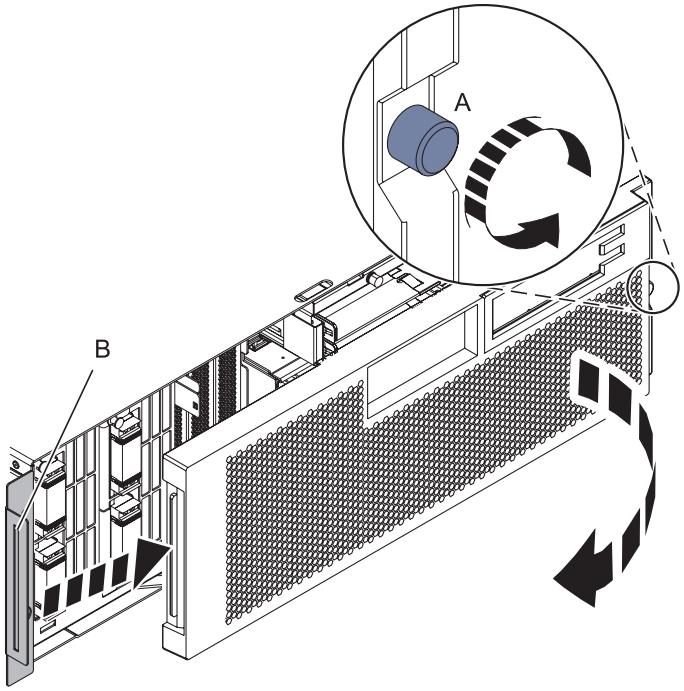
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



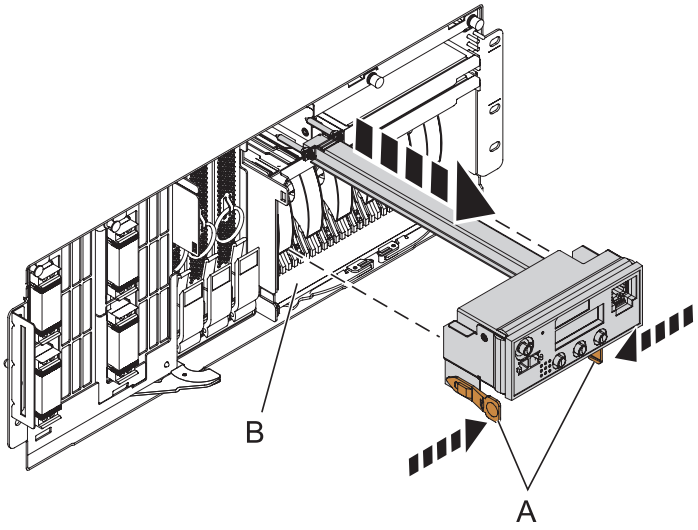
6. Remove the Front Cover

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)**.



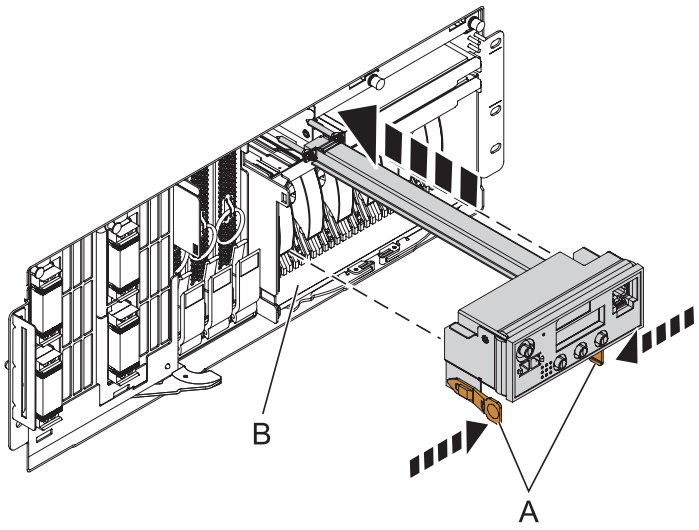
7. Remove the Control Panel

Remove the control panel by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges of the panel, and pulling it out of its bay **(B)**.



8. **Install the new Control Panel**

Carefully slide the control panel into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



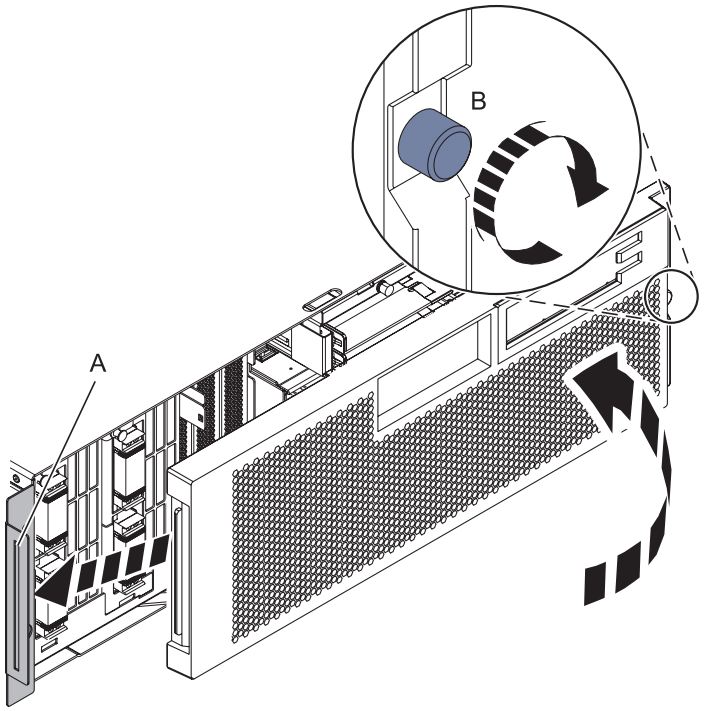
If you are performing a concurrent repair, continue with the next step. Otherwise, go to step10 on page 8.

9. **Install the Control Panel**

1. In the navigation area of the ASMI, expand "**Concurrent Maintenance**" and then select "**Control panel**".
2. At the Preparing the control panel window, select "Install" and click "Continue".
3. Choose the control panel's location and click "Save Settings".
4. If the operation was successful, the Operation completed successfully window will display.

10. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.

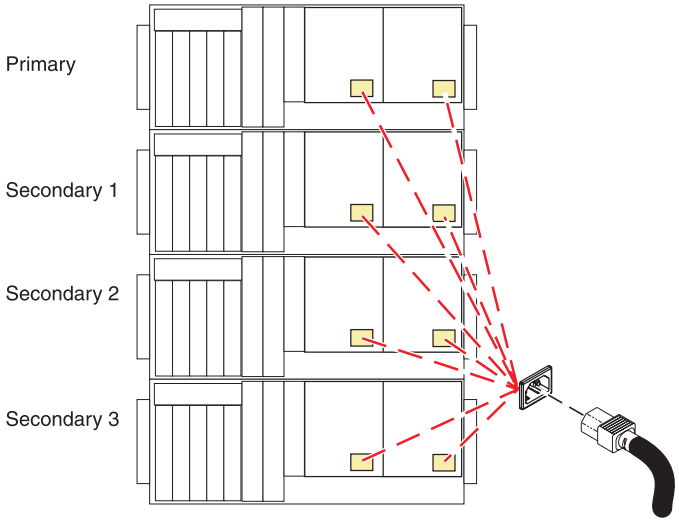


11. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



12. Verify the repair

If the power cords were disconnected to perform this procedure, reconnect them now starting with the third enclosure from the top, then the fourth enclosure, then the second enclosure and then the first (topmost) enclosure.

Ensure that the system is powered on.

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. If the system is running, you can replace a disk drive with the power on. If it is not, 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.

1.

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

Yes	No
↓	Go to Replace the disk drive nonconcurrently.

2.

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

For AIX, go to Replace the disk drive using AIX .

For Linux, go to Replace the disk drive using Linux .

For IBM i, go to Replace the disk drive using IBM i.

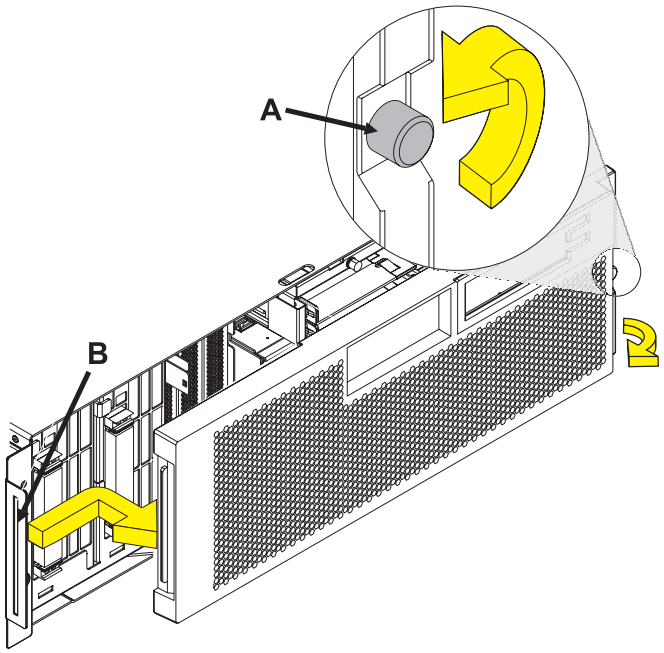
Replacing the disk drive using AIX

Use this procedure to remove and replace a disk drive concurrently with the AIX operating system.

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.

Remove the disk drive as a resource:

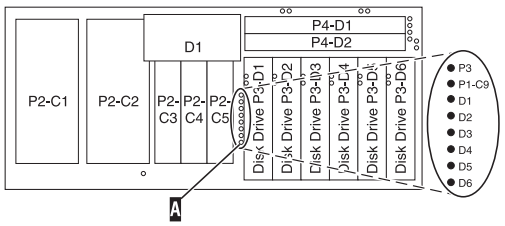
1. Log in as root user or use CE Login.
2. At the command line, type **diag** and press Enter.
3. Press Enter to continue.
4. On the Function Selection display, select **Task Selection**.
5. Select **Hot Plug Task**.
6. Select **RAID Hot Plug Devices**.
7. Select the adapter that is connected to the array that contains the disk drive you want to replace and press Enter.
8. Select **Commit**.
9. On the Identify and Remove Resources display, select **Identify**.
10. 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 figures show the locations of the concurrent maintenance lights **A**. 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.
11. On the Identify and Remove Resources display, select **Remove**.

    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*.
12. 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.



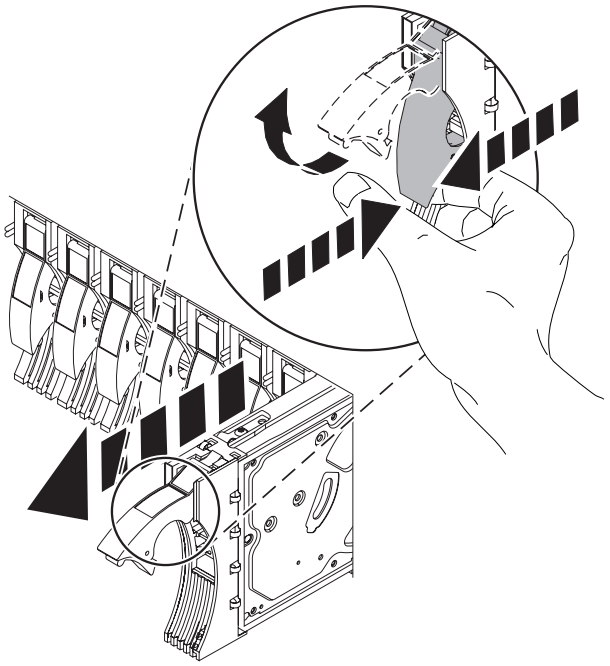
Note: If the disk drive slot is not in the Remove state, contact your next level of support.

3.

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.

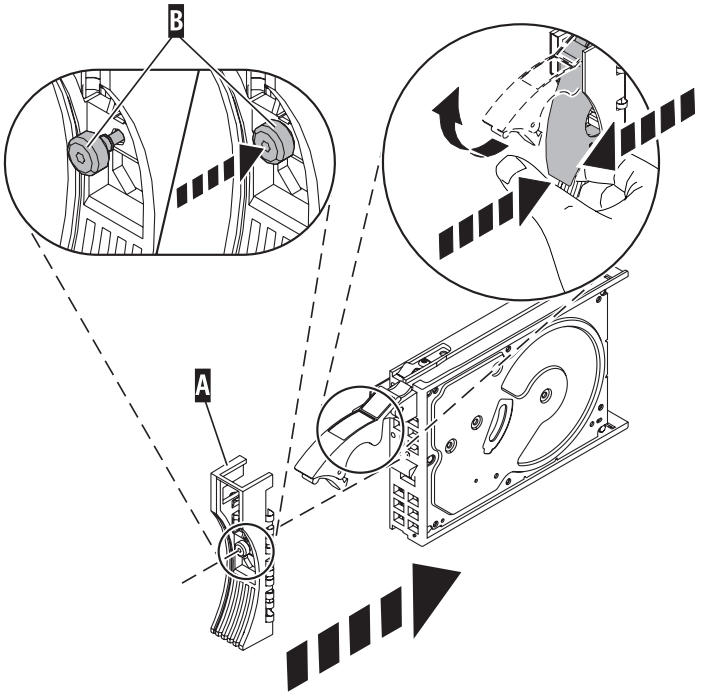


4.

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.



5.

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: 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.

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 RAID Hot-Plug Devices 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.

7.

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*.

---

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

Replacing the disk drive using Linux

This procedure is used to replace a disk drive in a location that is controlled by a system or logical partition that is running the Linux operating system.

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.

```
                                  Kernel Messages Log


Select one of the following:

    1. View most recent ipr error messages
    2. View ipr error messages
    3. View all kernel error messages
    4. View iprconfig error messages
    5. Set root kernel message log directory
    6. Set default editor
    7. Restore defaults
    8. View ipr boot time messages


Selection:

e=Exit
```

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 code phrase:
   `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

12. Look for the disk drive at the PCI location you recorded. The disk drive might have a Failed status.
13. 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*.
14. 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
                                                                        More...
Press Enter to Continue

e=Exit   q=Cancel   f=PageDn   b=PageUp
```

Figure 3. Example Disk Hardware Resource Information Details display

15. Record the physical location information.
16. 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.

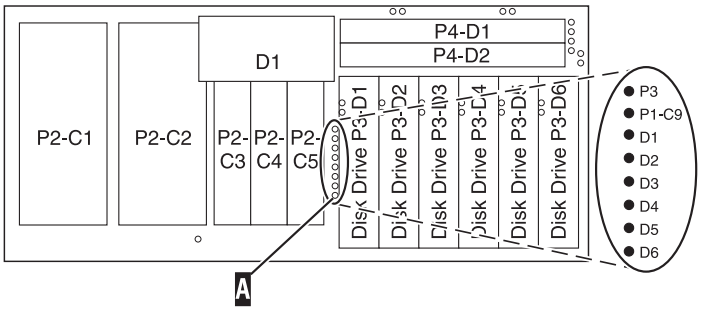
```
                                Concurrent Device Remove

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.

   Note: Ensure that the disk drive is not in use to prevent loss of data.
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 on page 17 or Figure 6 on page 17. If the handle is not all the way out, the disk

drive will not slide out of the system or expansion unit.

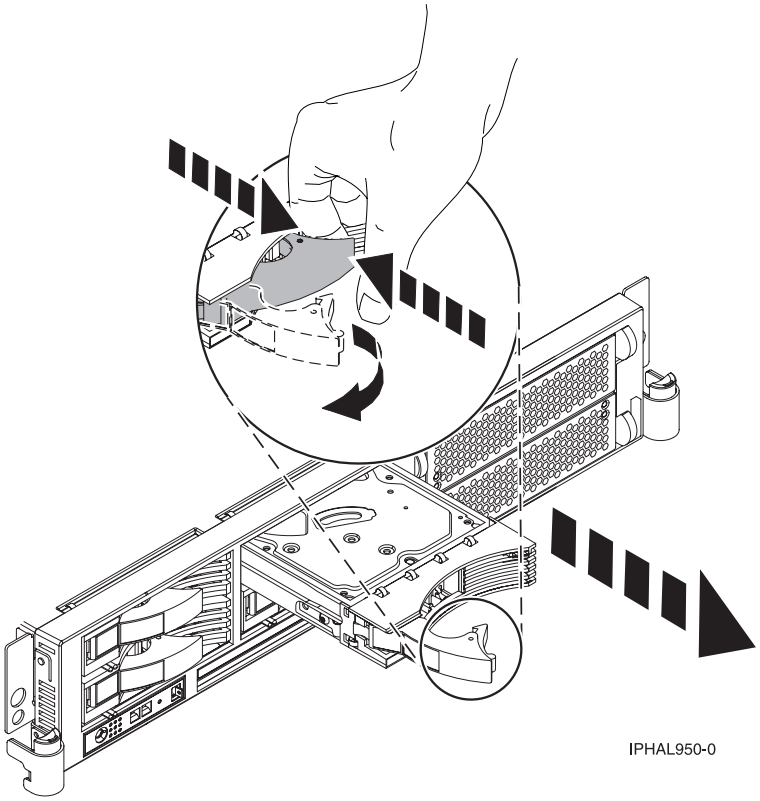


Figure 5. Removing a disk drive from the system unit

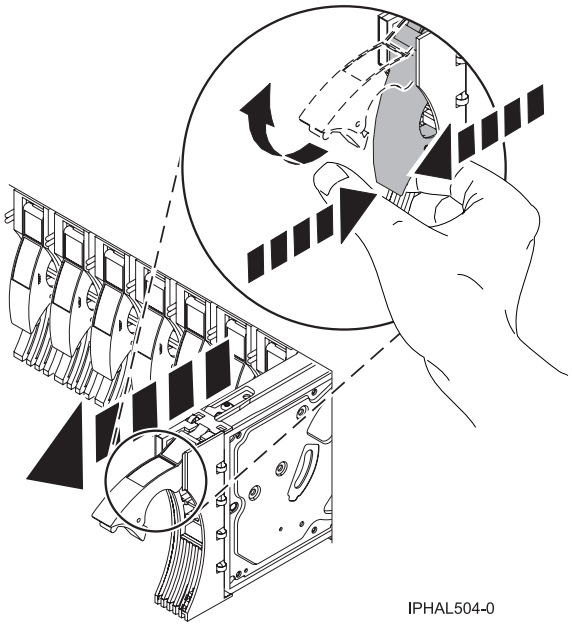


Figure 6. Removing a disk drive from the system unit

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

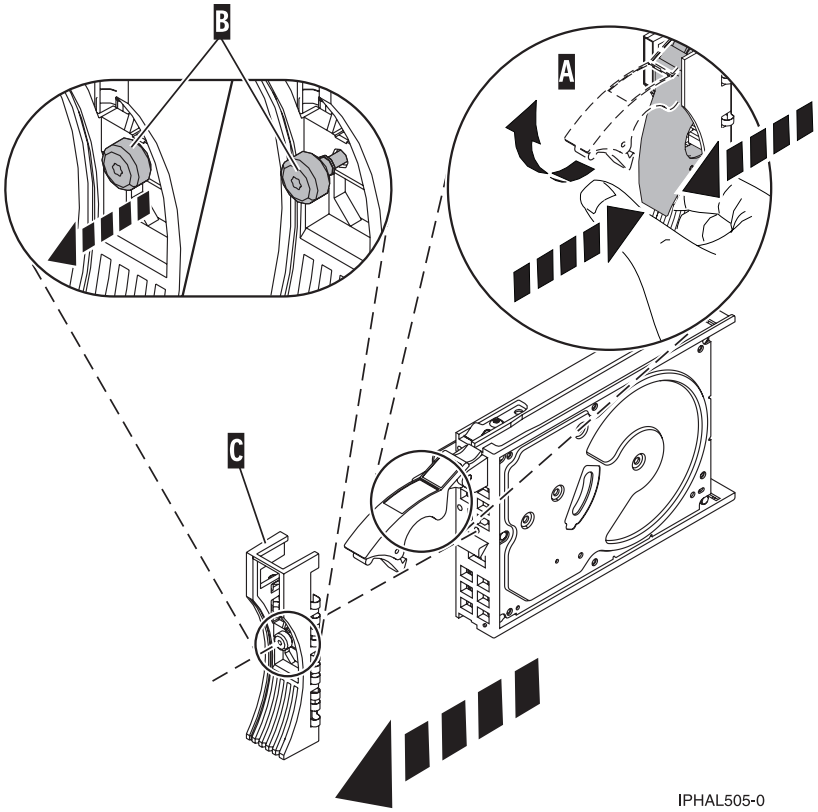


Figure 7. Removing a disk-drive bezel

10. Press Enter on the IBM Power RAID Configuration Utility to indicate that you have removed the disk drive.

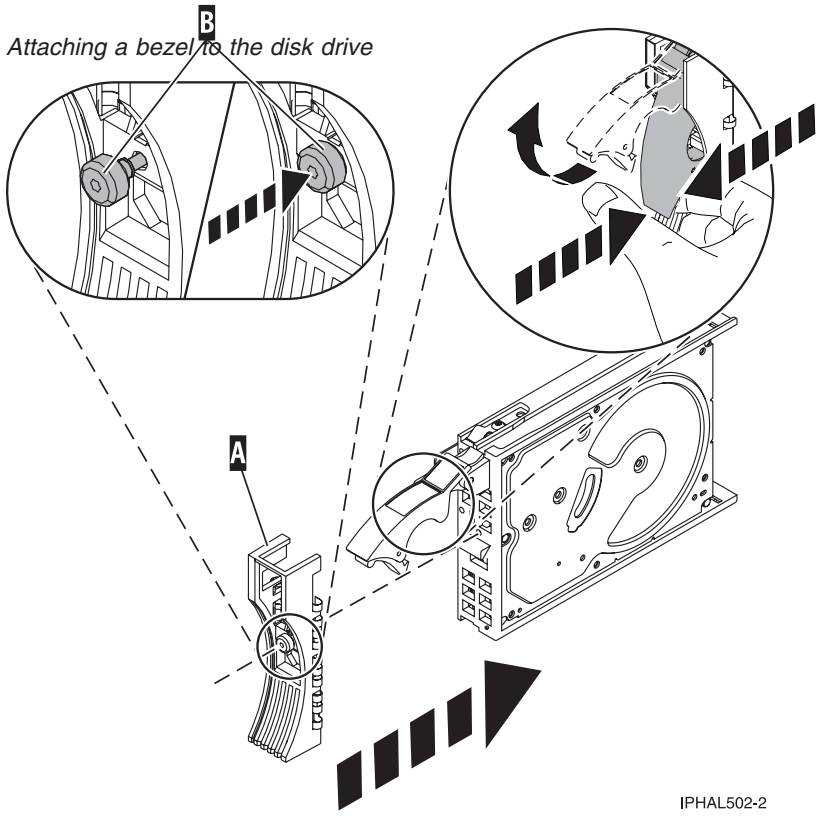
Replacing the disk drive

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 by squeezing and pulling it 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. Follow these steps to install the disk-drive bezel on the replacement disk drive:
   a. Attach the bezel **(A)** to the disk drive, as shown in the following figure.

b. Press in and then tighten the thumbscrew **(B)** to secure the bezel to the disk drive.

Figure 8. Attaching a bezel to the disk drive



5. From the IBM Power RAID Configuration Utility display, select **Work with disk unit recovery**. Press Enter.
6. 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 9. Example Concurrent Device Add display

7. Type option 1 (Select) next to the location from which you removed the disk drive.

   The Verify Device Concurrent Add display is shown.
8. Press Enter on the Verify Device Concurrent Add display. The Complete Device Concurrent Add display is shown.
9. 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.
10. 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 10 on page 20 or Figure 11 on page 20.

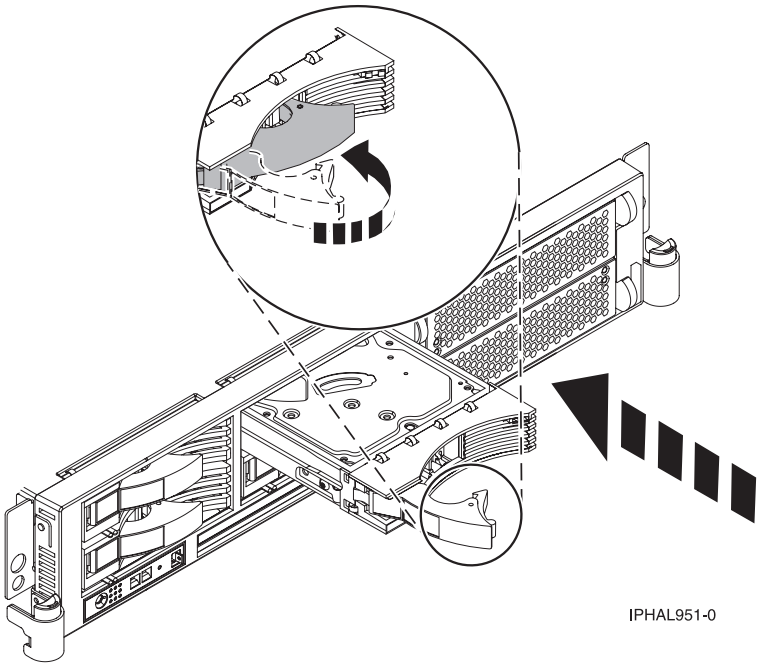


Figure 10. Installing a disk drive in the system unit

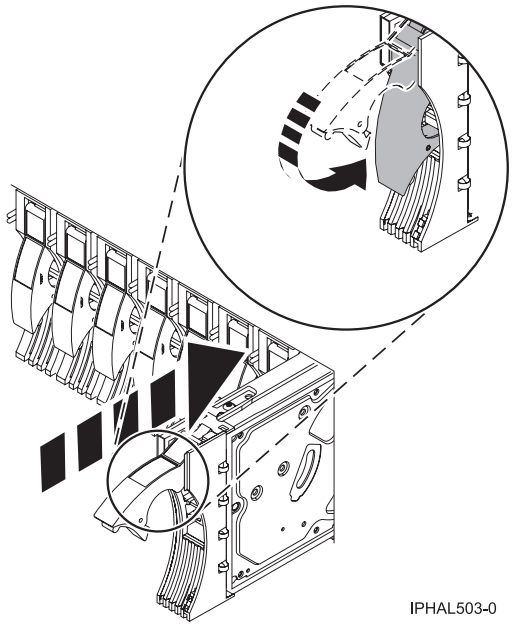


Figure 11. Installing a disk drive in the system unit

11. Press Enter on the Complete Device Concurrent Add display to indicate that the disk drive is installed.
12. Rebuild the data on the replacement disk drive. For instructions, go to "Rebuilding data on a replacement disk drive using Linux" on page 51.
13. 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.

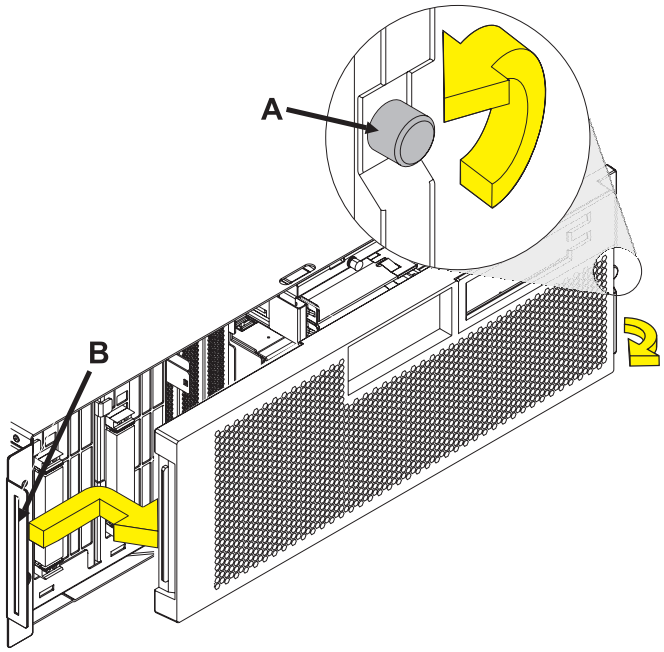
The component will not be serviced concurrently. If this system is powered on, power it off before continuing.

When the system is powered off, disconnect the AC input source from the enclosure being serviced. Do not apply power to the enclosure until directed to do so in this procedure.

2.

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)**.

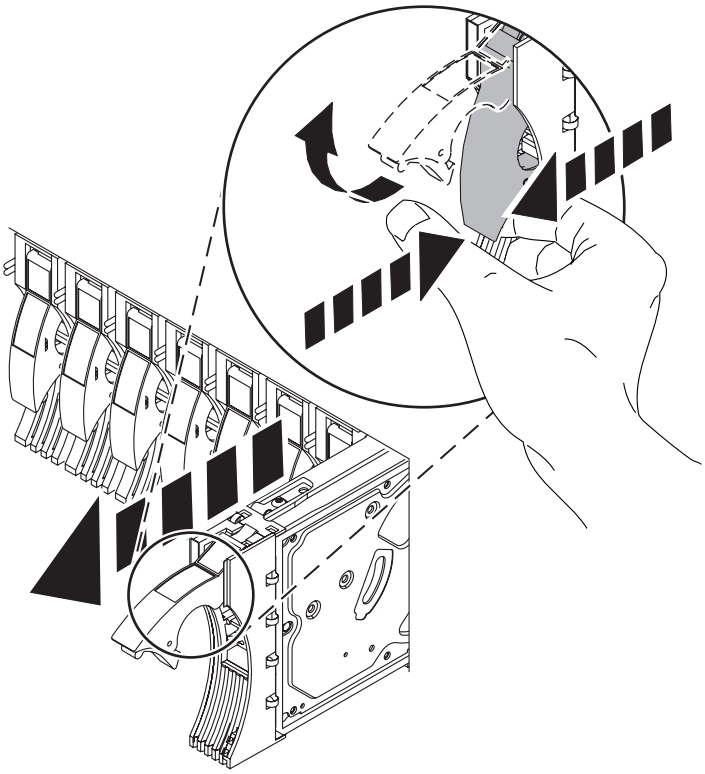


3.

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.

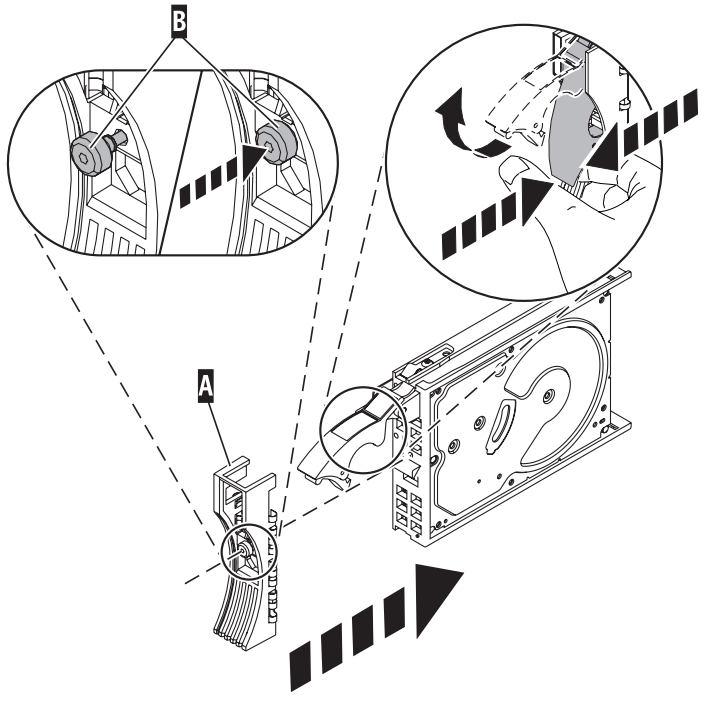


4.

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.



5.

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: It is important to ensure that when installing a disk drive, that the drive is fully seated and all the way into the system.
4. Reconnect the power source.
5. Power on the unit, then go to Verifying a repair. **This completes this procedure.**.

Saving data and initializing the disk unit in IBM i

Use this procedure to save data and initialize disk units in IBM i.

To complete this procedure, you might need the latest set of Save System (SAVSYS) or SAVSTG tapes that were made before the problem occurred. You will need three blank tapes.

1. Are you exchanging a disk unit because a disk unit failure caused system operations to stop completely?

   Yes: Continue with the next step.

   No: You may be able to use the Remove Units from Configuration function of DST. This function allows you to move all data from the disk unit you want to exchange to the other disk units in the same auxiliary storage pool (ASP). Go to step 20 on page 31.
2. Perform an initial program load (IPL) to dedicated service tools (DST) (see Performing an IPL to dedicated service tools). Does the Use Dedicated Service Tools (DST) display appear?

   Yes: Go to step 5.

   No: Continue with the next step.
3. Did any messages regarding missing disk units appear?

   Yes: Ignore the messages and go to step 5.

   No: Continue with the next step.
4. Repeat step 2. Does the same SRC occur again?

   Yes: The customer data is not recoverable. Go to step 7 on page 24.

   No: Use the new system reference code (SRC) to correct the problem. **This ends the procedure.**
5. From the Use Dedicated Service Tools (DST) display, perform the following to save the customer data from the failing disk unit:
   a. Select **Work with disk units → Work with disk unit recovery → Save disk unit data**.
   b. On the Select Disk Unit Data to Save display, select the disk unit from which you want to save the data. Record the ASP of the disk unit that you are saving.

      Note: If the disk unit is missing, you cannot save the customer data to tape at this time. Go to step 7 on page 24.
   c. Install a tape in the tape unit. The Specify Volume Identifier prompt appears.
   d. Enter the volume identifier for the tape. Write down the tape volume identifier for use later in this procedure. The Select Tape Unit prompt appears.
   e. Select the tape unit that you loaded with a tape. The Function Status display shows the percent of disk data saved.

Note: If the tape volume identifier that you entered does not match the tape volume identifier on the tape you loaded, the Device Intervention Required prompt appears. The message `Wrong volume loaded` appears at the bottom of the display. Select the Format option and press **Enter** to continue the save operation.

f. If the tape is full, the Device Intervention display appears. The message `Load next volume`appears at the bottom of the display. Insert the next tape into the tape unit and select the option to retry, and then press **Enter** to continue the save operation.

g. Continue saving the disk unit data until the status of the save operation is complete.

Note: Customer data is not recoverable if one of the following occurs:

- The copy operation does not complete.
- A large number of unreadable pages must be copied from the disk unit.

6. Does the display show that the status of the save operation is complete?

   No: Continue with the next step.

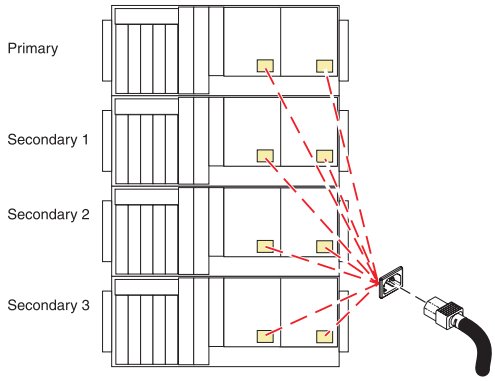
   Yes: Go to step 8.

7. Have you already exchanged the storage IOA?
   - **Yes:** Continue with the next step.
   - **No:** Perform the following:
     a. Power off the system.
     b. Exchange the storage IOA (see Part locations and location codes). If you do not know the part number, see System parts.
     c. Perform an IPL to dedicated service tools (DST) (see Performing an IPL to dedicated service tools).
     d. Choose from the following:
        – If the same SRC occurs, go to step 8.
        – If a different SRC occurs, use it to correct the problem.
        – If no SRC occurs, the problem has been resolved. **This ends the procedure.**
8. Power off the system and exchange the failing disk unit.

a. Power off the system and remove the power cords

Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



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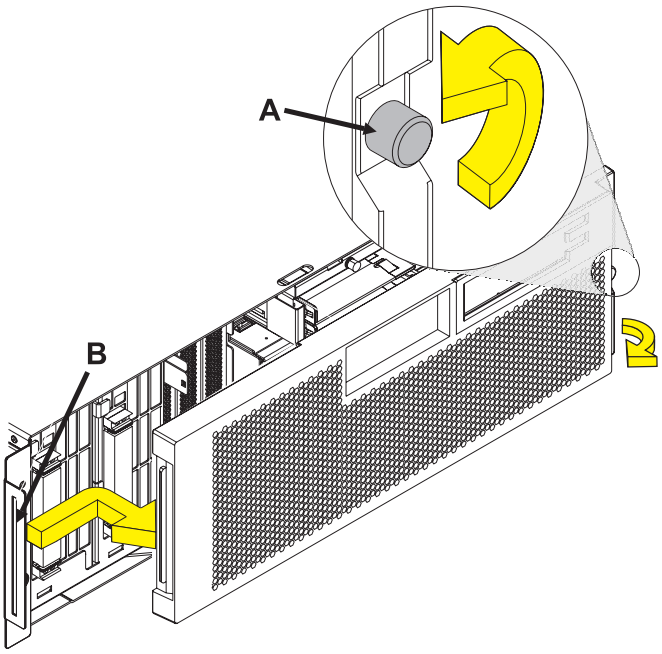
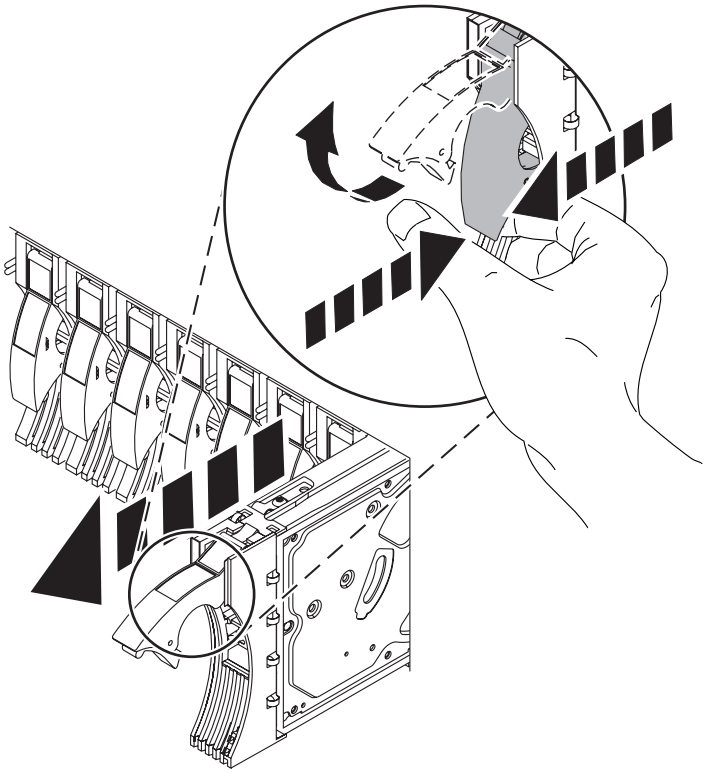
b. Access the unit.
   1) Open the front rack door.
   2) Loosen the thumbscrew **(A)** on the right side of the cover.
   3) Slide the cover to the right and remove it from the system unit slot **(B)**.



c. Remove the disk drive.

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.

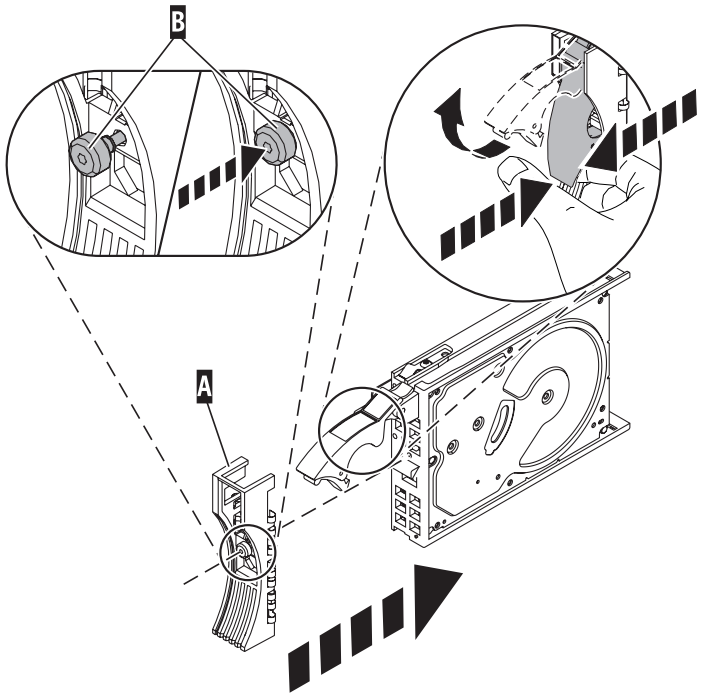
   The concurrent maintenance light for the slot turns off when you remove the disk drive.



d. 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.



e. Install the disk drive.

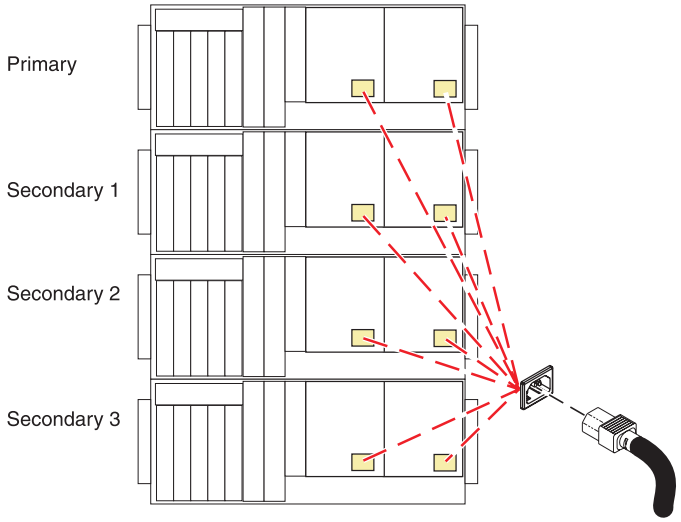
1. Support the bottom of the disk drive as you align it with the guide rails in the system unit. Do not hold the disk drive by the handle.
2. Slide the disk drive into the system until it stops.
3. Push the disk drive handle in until it locks.
   Note: When you install a disk drive, ensure that the drive is fully seated and all the way into the system.

f. Install the power cords.

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



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9. Did you just exchange disk unit 1 in the system unit?
   - **Yes:** Go to step 11 on page 29.
   - **No:** Format and initialize the new disk unit by performing the following:
     a. Perform an IPL to DST (see Performing an IPL to dedicated service tools). You may ignore any messages regarding missing disk units.
     b. From the Use Dedicated Service Tools (DST) display, select **Work with disk units → Work with disk unit recovery → Disk unit problem recovery procedures → Initialize and format disk unit**.
     c. Select the disk unit you want to initialize and format.
     d. Press **F10**, on the confirmation display. The system formats and initializes the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).
10. Is most of the customer data recoverable (see step 5 on page 23)?
    - **No:** Go to step 18 on page 30.
    - **Yes:** Restore the customer data from the tape to the new disk unit by performing the following:
      a. Return to the Work With Disk Unit Recovery display and select **Restore disk unit data**.
      b. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.
      c. Install into the tape unit the first tape to which the data was saved.
      d. On the Select Tape Unit display, select the tape unit from which you want data restored.

e. On the Restore Disk Unit Data display, select the disk unit on which you want to restore the data.

f. Press **F10** to confirm the restore. The Function Status display shows the percentage of customer data restored. The system will IPL to the Use dedicated service tools (DST) display when the restore has completed.

Note: Any damaged objects that were restored must be loaded again by the customer. Refer the customer to *Backup and Recovery*, SC41-5304.

g. **This ends the procedure.**

11. Is the customer data recoverable (see step 5 on page 23)?

No: Go to step 14 on page 30.

Yes: Perform an IPL from removable media and select the option to install Licensed Internal Code and restore disk unit data.See Managing the Hardware Management Console.

12. Did you get a Disk Configuration Error Report with the warning *Unit has incorrect logical partition configuration*?

- **No:** Continue with the next step.
- **Yes:** You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:
  a. Select the **Use dedicated service tools (DST)** option from the IPL or Install the System display.
  b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.
  c. From the Use Dedicated Service Tools (DST) display, select **Work with system partitions → Recover configuration data → Recover primary partition configuration data**.
  d. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and the correct system serial number, and then press **Enter**. The system automatically copies the configuration data to the primary partition's load source, and performs an IPL.

13. Restore the customer data from the tape to the new disk unit by performing the following:

a. Select **Use Dedicated Service Tools (DST)** from the IPL or Install the System display.

b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.

c. From the Use Dedicated Service Tools (DST) display, select **Work with disk units → Work with disk unit recovery → Restore disk unit data**.

d. Enter the tape volume identifier. This is the volume identifier that you entered during the save procedure.

e. Install the first tape to which the data was saved in the tape unit.

f. On the Select Tape Unit display, select the tape unit from which you want the data restored.

g. On the Restore Disk Unit Data display, select the disk unit on which you want to restore the data.

h. Press **F10** to confirm the restore. The Function Status display shows the percentage of customer data restored.

Note: When the load-source disk is restored, the system automatically performs an IPL to the Use Dedicated Service Tools (DST) display. This occurs after the restore operation completes.

i. When all customer data from the tape to the disk restores successfully, the display shows that the status of the restore operation as complete. Press **Enter** to complete the restore operation.

j. Power off the system.

Note: Any damaged objects that were restored must be loaded again by the customer. Refer the customer to *Backup and Recovery*, SC41-5304.

k. The system is ready for the next IPL. **This ends the procedure.**

14. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover configuration. See Managing the Hardware Management Console.
15. Did you get a Disk Configuration Error Report with the warning `Unit has incorrect logical partition configuration`?
    - **No:** Continue with the next step.
    - **Yes:** You have logical partitions that need to be recovered before you can continue with this disk unit recovery procedure. Perform the following:
      a. Select the **Use Dedicated Service Tools (DST)** option from the IPL or Install the System display.
      b. Enter the password `22222222`. If this password is not valid, ask the customer for the correct password.
      c. From the Use Dedicated Service Tools (DST) display, select **Work with system partitions** → **Recover configuration data** → **Recover primary partition configuration data**.
      d. Review the information on the Select Disk Unit for Configuration Data Recovery display. Select the disk unit with the most recent date and the correct system serial number, and then press **Enter**. The system will automatically copy the configuration data to the primary partition's load source, and then perform an IPL.
16. The system ASP will be cleared because customer data was not recoverable. Recover the configuration to disk unit 1 in the system unit by performing the following:
    a. Enter **Use Dedicated Service Tools (DST)** from the IPL or Install the System display.
    b. Enter the password `22222222`. If this password is not valid, ask the customer for the correct password.
    c. From the Use Dedicated Service Tools (DST) display, select **Work with disk units** → **Work with disk unit recovery**.
    d. Select **Recover configuration** on the Work with Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit. Continue with the next step.

       Note: A warning message will state that recovering the configuration destroys all system data.
17. Did a message appear stating that your request to recover the configuration was not successful?

    Yes: You are working on a system with only one disk unit, and the recover configuration function cannot be performed with only one disk unit. Go to step 18.

    No: Go to step 19.
18. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by performing the following:
    a. Return to the Work with Disk Units display. Select **Work with disk configuration** → **Work with ASP configuration** → **Delete ASP data**.
    b. Enter the **Delete** option for the ASP that you recorded in step 5 on page 23, and confirm the deletion.
    c. Return to the Work with Disk Units display, and select **Work with disk unit recovery** → **Replace configured unit**.
    d. On the Select Configured Unit to Replace display, select the configured disk unit to exchange.
    e. On the Select Replacement Unit display, select the new disk unit.
    f. Press **Enter** to confirm the replace operation (this operation takes 10 to 15 minutes to complete). **This ends the procedure.** The auxiliary storage pool to which the disk unit is assigned was erased. The customer must restore the data to the auxiliary storage pool. Refer the customer to *Backup and Recovery*, SC41-5304.
19. The ASP to which the failing disk unit was assigned was erased. The customer should perform one of the following:

- If the disk unit you exchanged is in ASP 1, refer the customer to *Backup and Recovery*, SC41-5304, to restore the operating system and all customer data. **This ends the procedure.**
- If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See *Backup and Recovery*, SC41-5304. **This ends the procedure.**

20. The remaining steps of this procedure require a dedicated system. Have the customer do a normal power-off procedure of the system.
21. Perform an IPL to DST (see Performing an IPL to dedicated service tools). Is the IPL or Install the System display shown, or is DST available?

    No: Go to step 2 on page 23.

    Yes: Select **Use dedicated service tools (DST)** on the display or use a function key. Have the customer enter the password to get to the Use Dedicated Service Tools (DST) display. Continue with the next step.
22. Perform the following:
    a. From the Use Dedicated Service Tools (DST) display, select **Work with disk units → Work with disk configuration → Display disk configuration → Display disk configuration status**.
    b. Record the ASP, unit, serial number, type, and resource name of the disk unit.
    c. On the Display Disk Configuration Status display, ensure the following:
       - The disk unit is not the load-source disk unit (disk unit 1).
       - No disk units are missing from the configuration (indicated by an asterisk (*) next to the unit number).
       - The status field of the disk unit to be removed shows `Configured`.

       Are all of the above conditions true?

       Yes: Continue with the next step.

       No: You cannot use the Remove Units from Configuration function. Go to step 2 on page 23.
23. Return to the Display Disk Configuration display and select **Display disk configuration capacity**. Does the *% Used* field for the disk unit to be removed show an asterisk (*)?

    No: Continue with the next step.

    Yes: You cannot use the Remove Units from Configuration function. Go to step 2 on page 23.
24. Return to the Work with Disk Units display and perform the following:
    a. Select **Work with disk unit recovery → Disk unit problem recovery procedures → Analyze disk unit surface**.
    b. Select the disk unit to analyze.
    c. Press **F10** to analyze the disk unit surface.
    d. Wait until the Analyze function is complete. This will take several minutes.

    Are there any pages with errors?

    No: Continue with the next step.

    Yes: You cannot use the Remove Units from Configuration function. Go to step 2 on page 23.
25. Return to the Work with Disk Units display and perform the following:
    a. Select **Work with disk configuration → Work with ASP configuration → Remove units from configuration**.
    b. Select the disk unit to be removed. If the disk unit does not display, go to step 2 on page 23.
    c. If the Confirm Continuation display appears, press **Enter** to continue. Wait for the next display.
    d. If there is enough storage in the ASP, the Confirm Remove Disk Units display appears. If there is not enough storage, an error message display appears. Does any error message display appear?

       No: Continue with the next step.

       Yes: Go to step 2 on page 23.

26. Press **Enter** to verify the Remove Disk Units function. The Remove Disk Units function takes several minutes. When it is complete, a message will appear stating whether it was successful. Was the Remove Disk Units function successful?

    Yes: Continue with the next step.

    No: Go to step 2 on page 23.

27. On the Work with ASP Configuration display, select **Display disk configuration capacity**. Press **F11** twice to display nonconfigured units. Is the unit you removed shown as a nonconfigured unit?

    Yes: Continue with the next step.

    No: Go to step 2 on page 23.

28. You can exchange the disk unit at a later time because the disk unit is removed from the configuration Do you want to exchange the disk unit now?

    Yes: Continue with the next step.

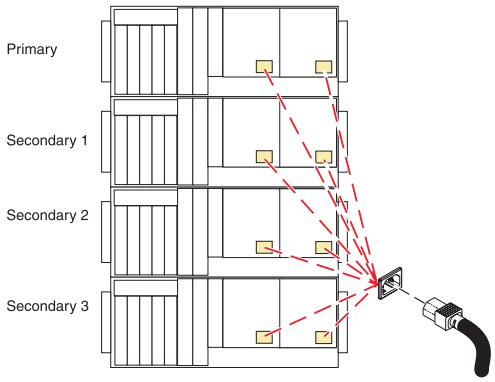
    No: This ends the procedure.

29. Power off the system and exchange the failing disk unit.

    a. Power off the system and remove the power cords.

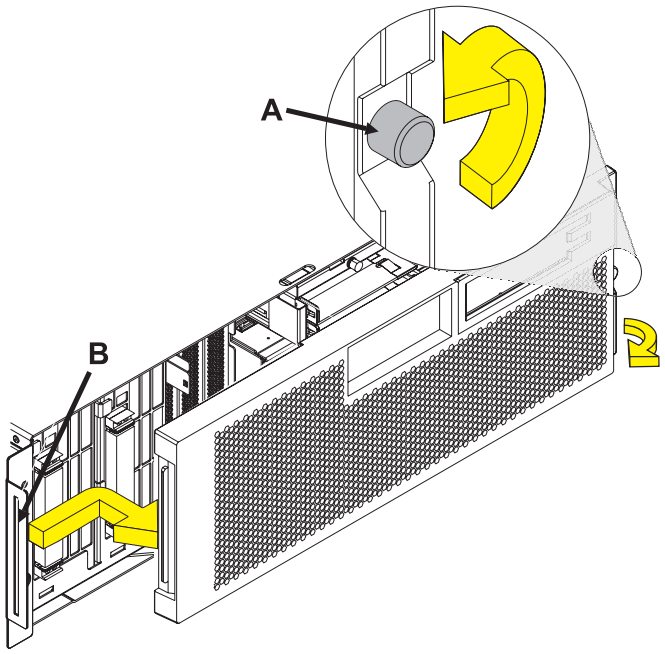
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



b. Access the unit:

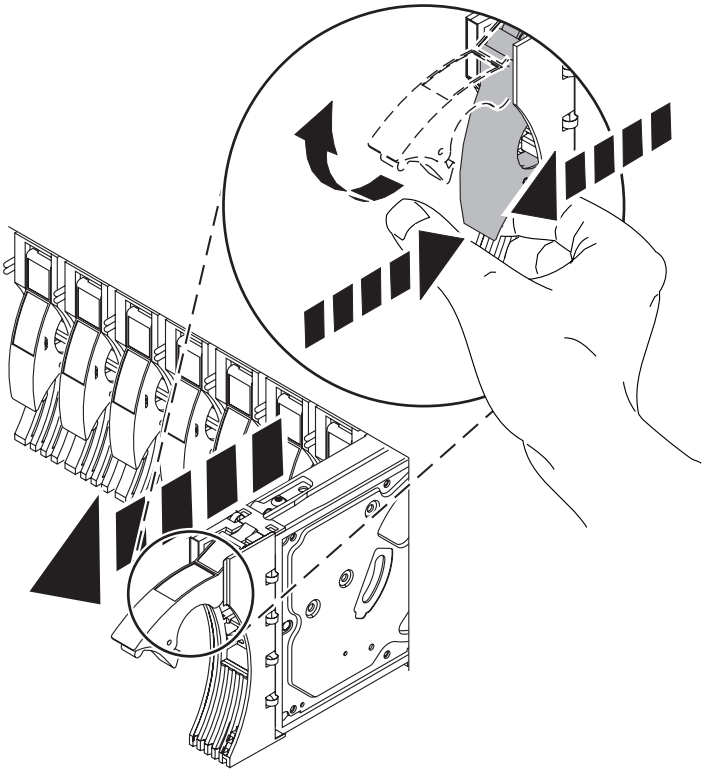
1. Open the front rack door.
2. Loosen the thumbscrew **(A)** on the right side of the cover.
3. Slide the cover to the right and remove it from the system unit slot **(B)**.



c. Remove the disk drive:

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.

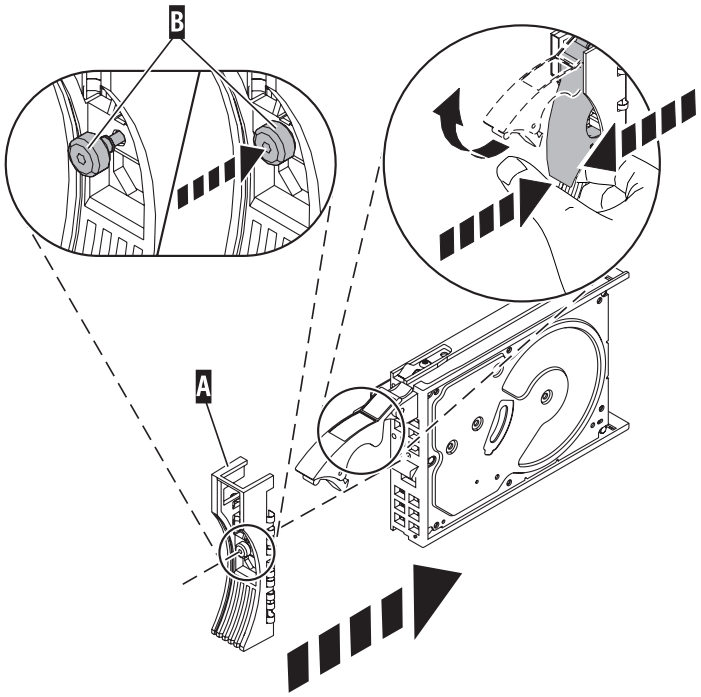
   The concurrent maintenance light for the slot turns off when you remove the disk drive.



d. 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.



e. Install the disk drive:

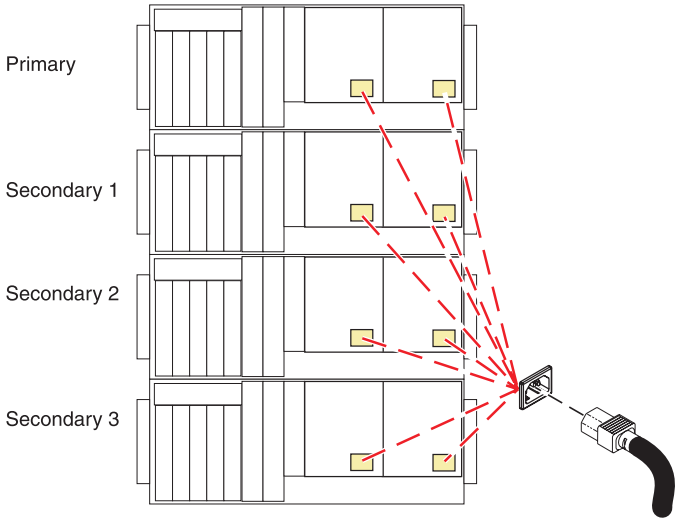
1. Support the bottom of the disk drive as you align it with the guide rails in the system unit. Do not hold the disk drive by the handle.
2. Slide the disk drive into the system until it stops.
3. Push the disk drive handle in until it locks.
   Important: When you install a disk drive, ensure that the drive is fully seated and all the way into the system.

f. Install the power cords:

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



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30. Format and initialize the new disk unit by doing the following:
    a. Perform an IPL to DST (see Performing an IPL to dedicated service tools).
    b. From the Use Dedicated Service Tools (DST) display, select **Work with disk units → Work with disk unit recovery → Disk unit problem recovery procedures → Initialize and format disk unit**.
    c. Select the disk unit you want to initialize and format.
    d. Press **F10** on the confirmation display. The system initializes and formats the new disk unit. The display shows when the status is complete (this may take 30 minutes or longer).
31. Use the ASP, unit, serial number, type, and resource name information that you recorded in step 22 on page 31 to perform the following steps:
    a. Return to the Work with Disk Units display and select **Work with disk configuration → Work with ASP configuration → Add units to ASPs**.
    b. Specify the ASP from which the disk units were removed.
    c. Select the unit to add to the ASP.
    d. When the Confirm Add Units display appears, press **Enter** to continue. Wait for the next display. The Add Disk Units function takes several minutes. When it is complete, a message appears stating whether it was successful.
32. Was the Add Disk Units function successful?

    No: Continue with the next step.

Yes: On the Work with ASP Configuration display, select **Display disk configuration capacity**. The unit you that added should be shown in the correct ASP. **This ends the procedure.**

33. Do you have more field replaceable units (FRUs) to exchange?

    Yes: Go to step 29 on page 32.

    No: Ask your next level of support for assistance. **This ends the procedure.**

Initializing the disk unit and copying to disk in IBM i

Use this procedure to initialize the disk unit and copy it to disk.

1. Perform an IPL to dedicated service tools (DST) (see Performing an IPL to dedicated service tools). Does the Use Dedicated Service Tools (DST) display appear?
   - **Yes:** Continue with the next step.
   - **No:** Repeat this step and then choose one of the following:
     - If the same system reference code (SRC) occurs again, the customer data is not recoverable. Go to step 12 on page 44.
     - If a different SRC occurs , use the new SRC to correct the problem. **This ends the procedure.**
2. Is this a single disk unit system?

   No: Continue with the next step.

   Yes: Perform "Saving data and initializing the disk unit in IBM i" on page 23. **This ends the procedure.**
3. Disk unit 1 contains the load-source disk unit. Is the failing disk unit the load-source disk unit?

   Yes: Continue with the next step.

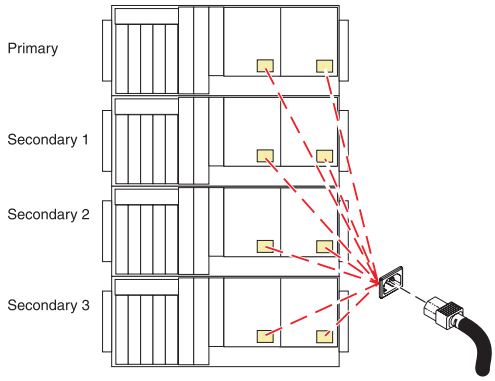
   No: Go to step 17 on page 46.
4. Find another disk unit on the system and perform the following to install the new disk unit.

   Note: Be very careful with the disk unit you remove. You will install it again when the service actions to the failing load-source disk unit are complete.

a. Power off the system and remove the power cords.

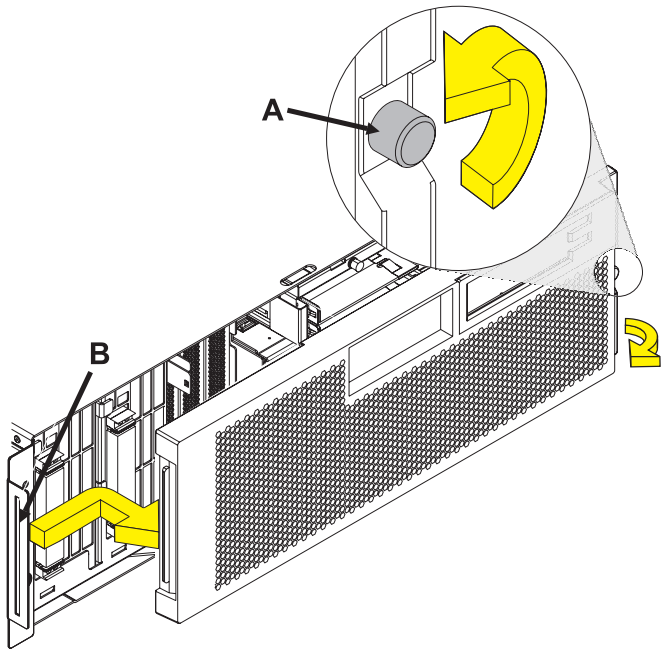
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



b. Access the unit.

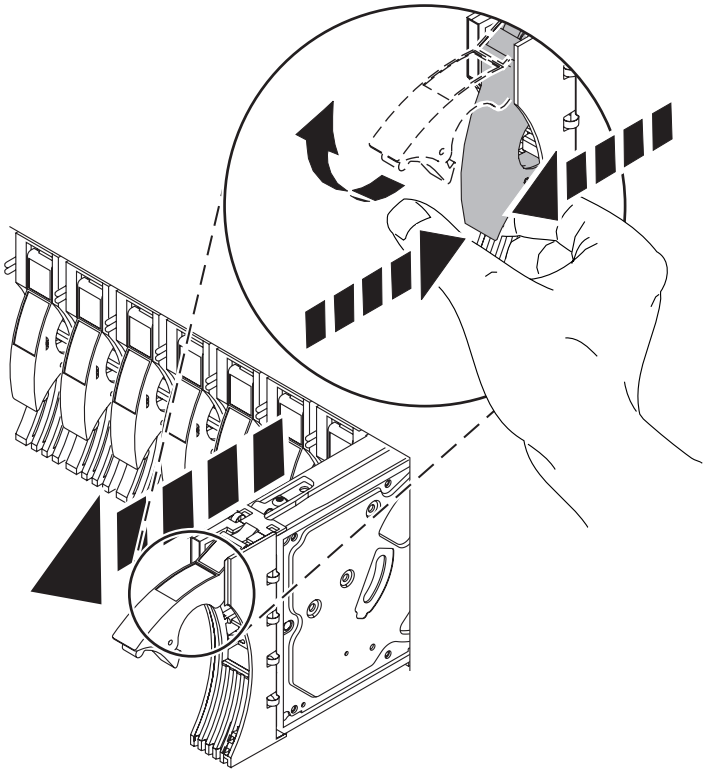
1. Open the front rack door.
2. Loosen the thumbscrew **(A)** on the right side of the cover.
3. Slide the cover to the right and remove it from the system unit slot **(B)**.



c. Remove the disk drive.

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.

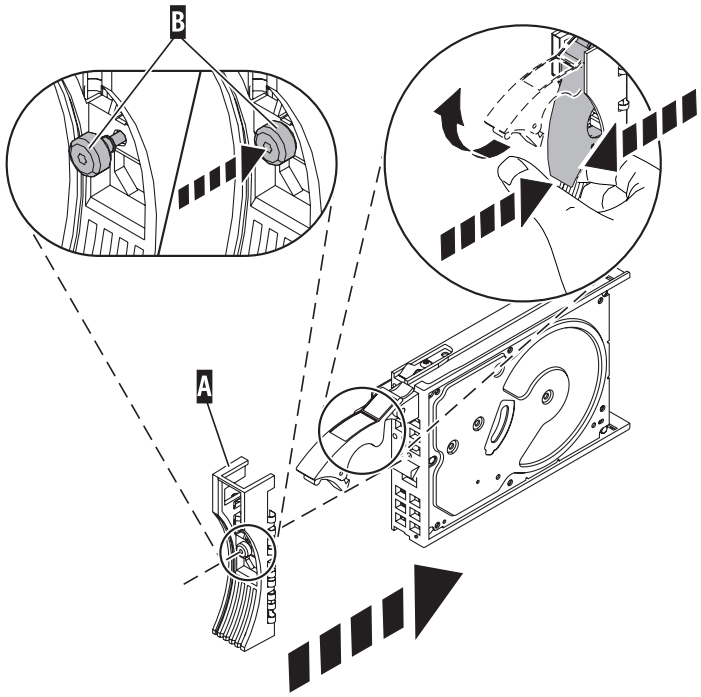
   The concurrent maintenance light for the slot turns off when you remove the disk drive.



d. 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.



e. Install the disk drive.

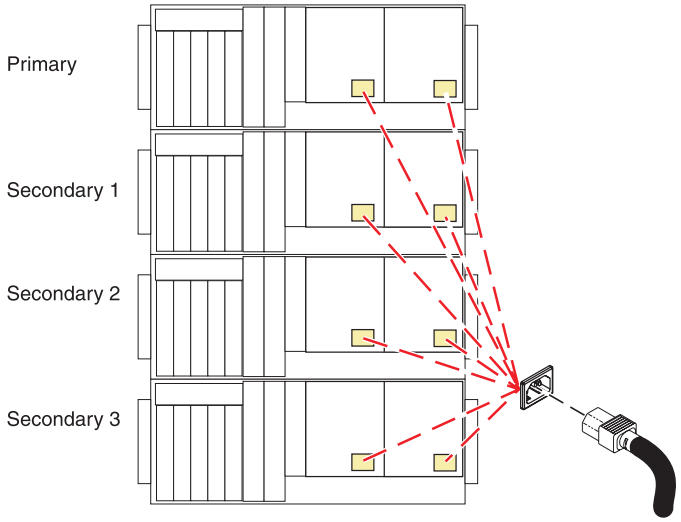
1. Support the bottom of the disk drive as you align it with the guide rails in the system unit. Do not hold the disk drive by the handle.
2. Slide the disk drive into the system until it stops.
3. Push the disk drive handle in until it locks.
   Note: It is important to ensure that when installing a disk drive, that the drive is fully seated and all the way into the system.

f. Install the power cords.

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



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5. Perform an IPL to DST (see Performing an IPL to dedicated service tools). Does the Use Dedicated Service Tools (DST) display appear?

   Yes: Continue with the next step.

   No: Repeat step 1 on page 36.

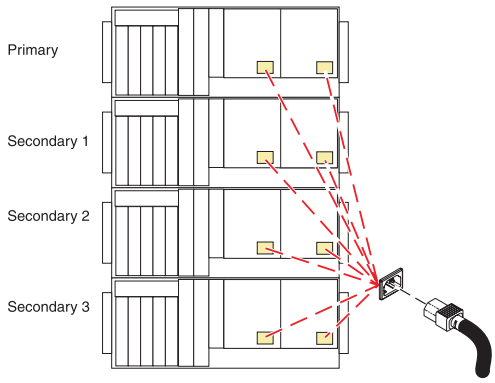
6. Perform the following to format and initialize the disk drive that you installed in step 4 on page 36:
   a. From the Use Dedicated Service Tools (DST) display, select **Work with disk units → Work with disk unit recovery → Disk unit problem recovery procedures → Initialize and format disk unit**.
   b. Select the unconfigured unit that you installed in step 4 on page 36 as the unit to work with.
   c. Press F10 to verify the initialization and formatting. The initialization and formatting may take 30 minutes or longer to complete.
7. Perform the following to copy data from the load-source disk unit to the disk drive you installed in step 4 on page 36:
   a. Return to the Work with Disk Unit Recovery display.
   b. Select **Copy disk unit data**.
   c. Select the load-source disk unit (disk unit 1) as the unit to copy.
   d. Select the unconfigured unit that you installed in step 4 on page 36 as the unit to copy to.
   e. The console displays the percentage of the data copied. Write down the number of unreadable pages if it displays; you will use it later in this procedure.

f. Wait until the status of the copy is *Complete*. Customer data is not recoverable if one of the following occurs:
   - The copy operation does not complete.
   - There is a large number of unreadable pages to copy from the disk unit.

8. Perform the following to remove the failing load-source disk unit from the system:
   a. Power off the system and remove the power cords.

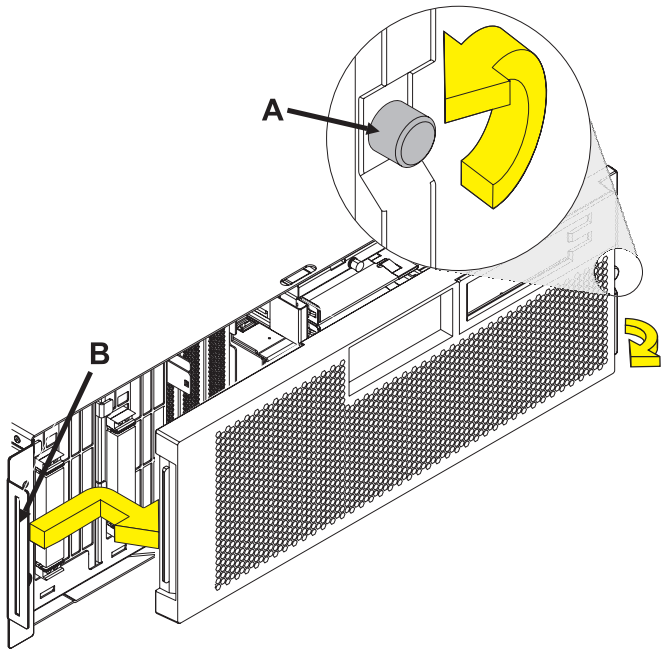
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



b. Access the unit.

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)**.



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c.

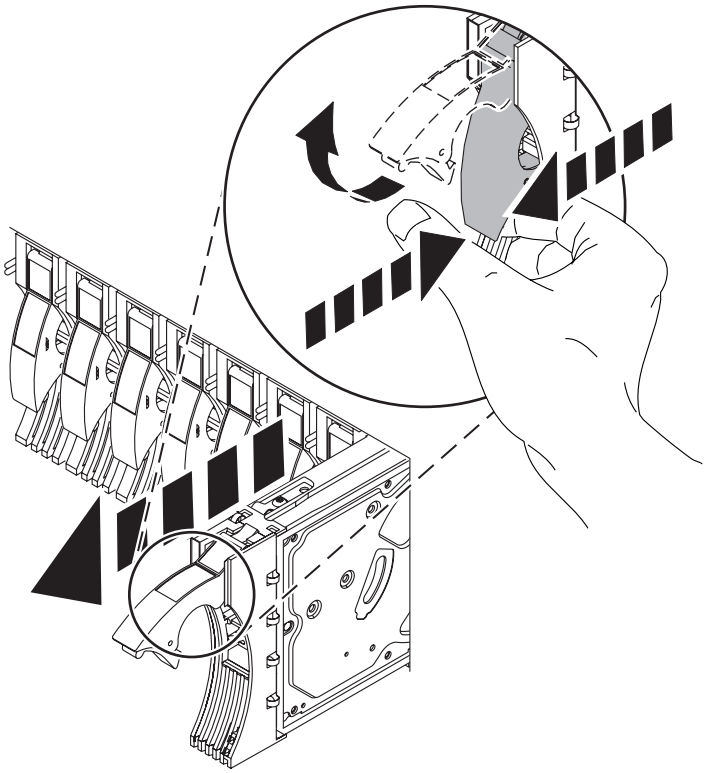
Find the load-source disk unit.

---

d. Remove the disk drive.

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.



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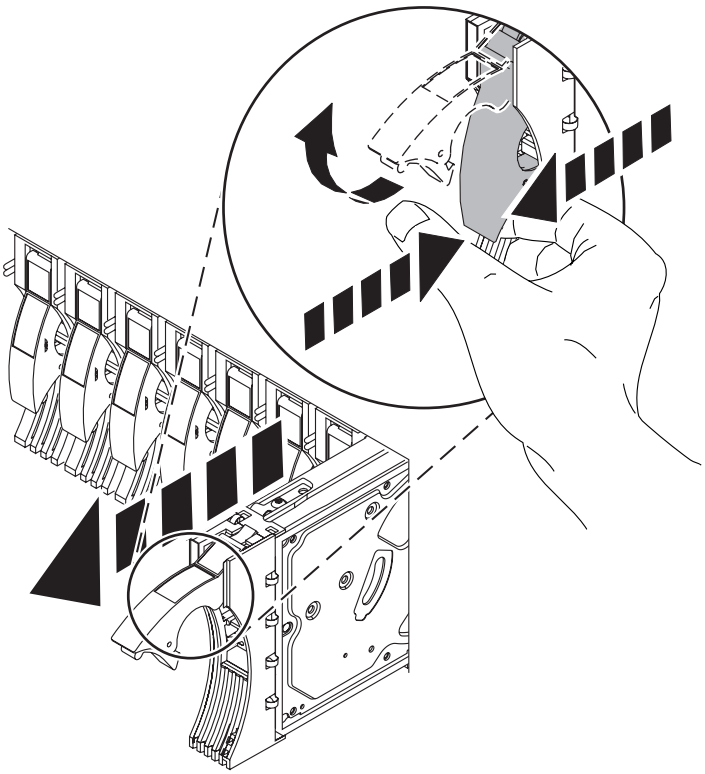
9. If you have not yet done so, perform the following steps.
   a. Slide the disk unit at the location you found in step 4 on page 36 out of the system.

      Note: Be very careful with the disk unit—it contains the load-source data.

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.



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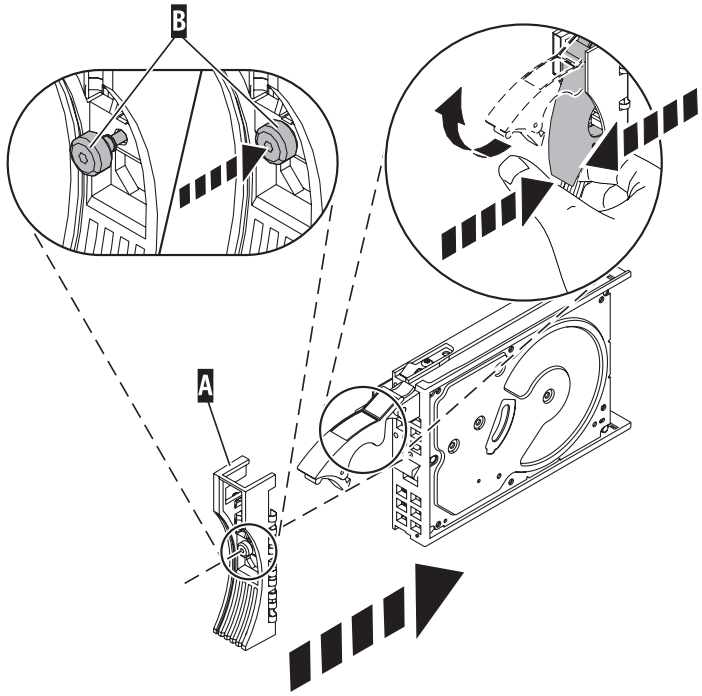
   b. Install the new disk unit into the location that used to contain the load-source disk unit.
      1) Install the bezel on the new disk drive.

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.



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2) 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: It is important to ensure that when installing a disk drive, that the drive is fully seated and all the way into the system.

---

10. Install the disk unit that you removed in step 4 on page 36.
11. Were any pages unreadable during the copy operation (see step 7 on page 40)?
    - **No:** The system is ready for the next IPL. **This ends the procedure.**
    - **Yes:** Perform an IPL from removable media and restore the Licensed Internal Code (seeManaging the Hardware Management Console).

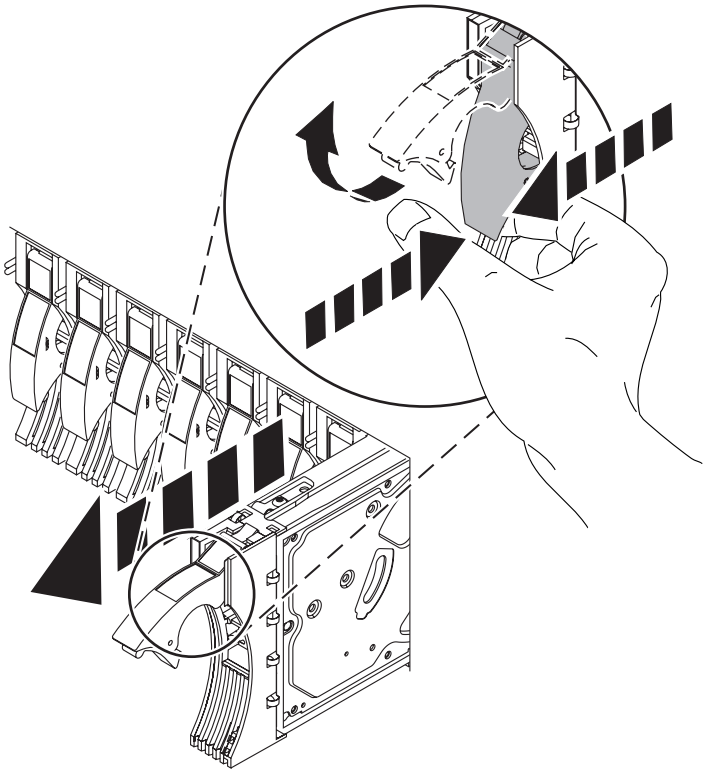
      Note: Some objects may be damaged. The customer may have to load the damaged objects again. See *Backup and Recovery*, SC41-5304.

      This ends the procedure.
12. Perform the following to remove the failing load-source disk unit on the system:
    a. Power off the system.
    b. Find the load-source disk unit.
    c. Slide the disk unit out of the system.

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.



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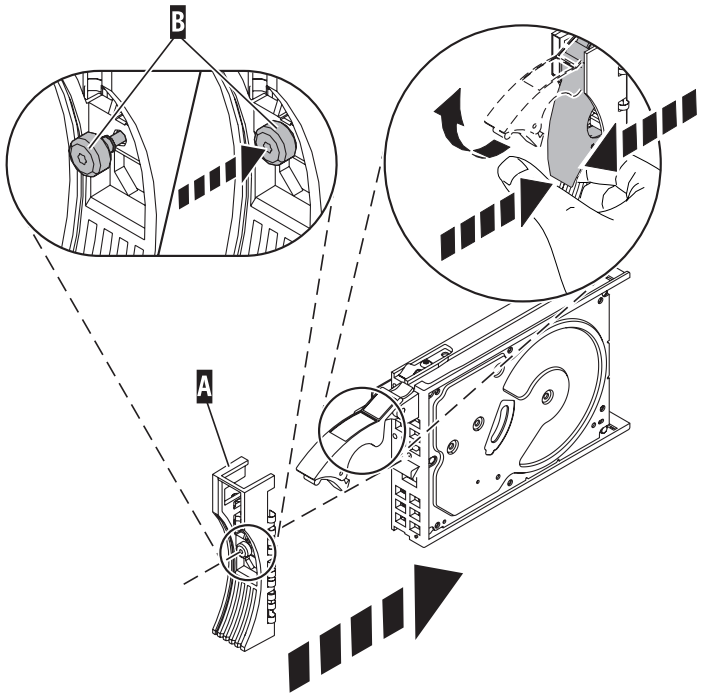
d. Install the new disk unit.

1) 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.



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2) 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: It is important to ensure that when installing a disk drive, that the drive is fully seated and all the way into the system.

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13. Perform an IPL from removable media and select the option to install Licensed Internal Code and recover the configuration (see Managing the Hardware Management Console).
14. Did you get a Disk Configuration Error Report with a *Unit has incorrect logical partition configuration* warning?

    No: Continue with the next step.

    Yes: You have logical partitions that need to be recovered. Go to Performing an IPL to dedicated service tools and then continue with the next step.
15. The system ASP will be cleared because customer data was not recoverable. Recover the configuration to disk unit 1 in the system unit by performing the following:
    a. Select **Use Dedicated Service Tools** (DST) from the IPL or Install the System display.
    b. Enter the password 22222222. If this password is not valid, ask the customer for the correct password.
    c. From the Use Dedicated Service Tools (DST) display, select **Work with disk units → Work with disk unit recovery**.
    d. Select **Recover configuration option** on the Work With Disk Unit Recovery display. This option assembles the system configuration information on disk unit 1 in the system unit.

    Notes:

1) A warning message will appear stating that recovering the configuration destroys all system data.
2) The recover configuration function cannot be performed on a system with only one disk unit. A message may appear stating that your request to recover the configuration was not successful.

e. Continue with the next step.

16. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
    - If the disk unit you exchanged is in ASP 1, refer the customer to *Backup and Recovery*, SC41-5304. You must restore the operating system and all customer data.
    - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See*Backup and Recovery*, SC41-5304. **This ends the procedure.**
17. Is the failing unit missing from the configuration?

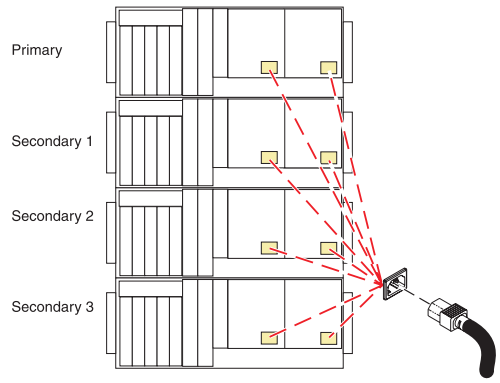
    No: Find another disk unit on the system, other than the load-source disk unit. Continue with the next step.

    Yes: Go to step 26 on page 50.
18. Perform the following to install a new disk unit on the system:

    a. Power off the system and remove the power cords.

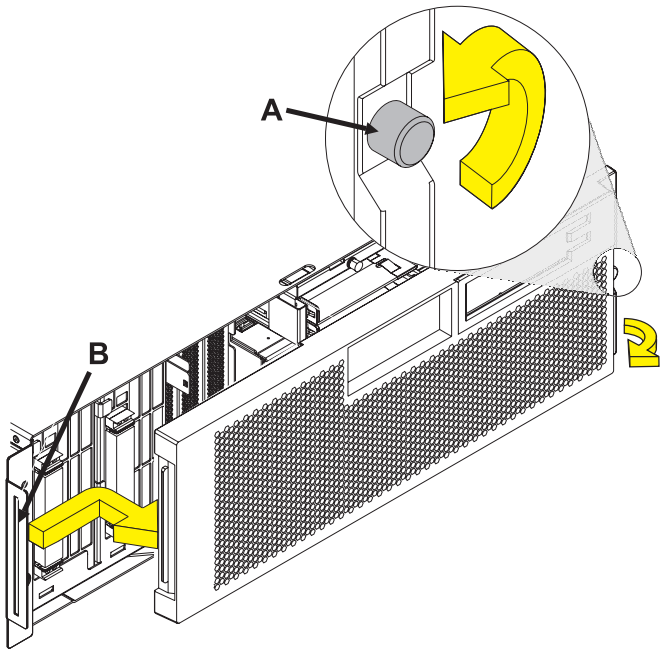
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



b. Access the unit.

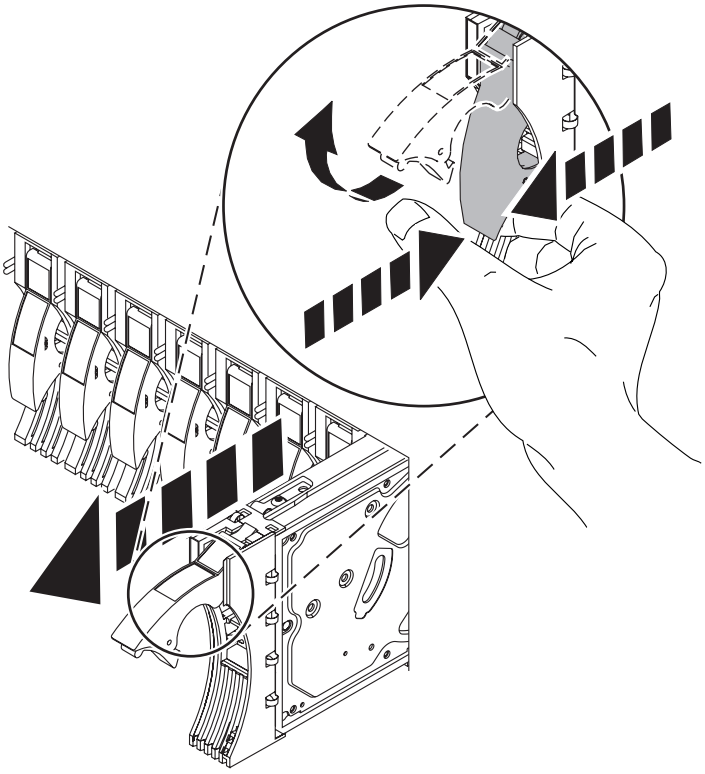
1. Open the front rack door.
2. Loosen the thumbscrew **(A)** on the right side of the cover.
3. Slide the cover to the right and remove it from the system unit slot **(B)**.



c. Remove the disk drive.

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.

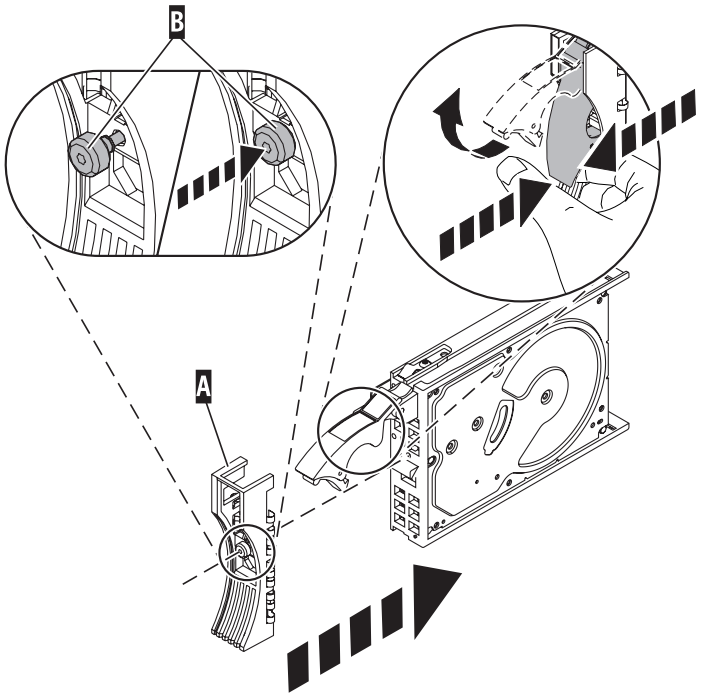
   The concurrent maintenance light for the slot turns off when you remove the disk drive.



d. 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.



e. Install the disk drive.

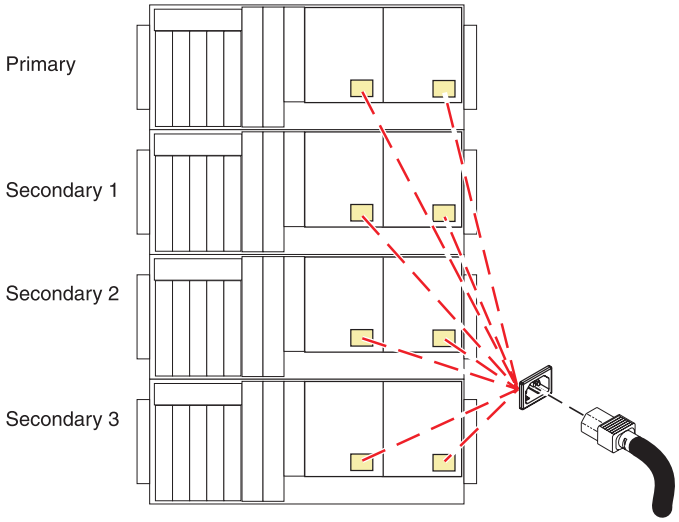
1. Support the bottom of the disk drive as you align it with the guide rails in the system unit. Do not hold the disk drive by the handle.
2. Slide the disk drive into the system until it stops.
3. Push the disk drive handle in until it locks.
   Note: It is important to ensure that when installing a disk drive, that the drive is fully seated and all the way into the system.

f. Install the power cords.

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



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19. Perform an IPL to DST (see Performing an IPL to dedicated service tools). Does the Use Dedicated Service Tools (DST) display appear?

    Yes: Continue with the next step.

    No: Repeat step 1 on page 36.

20. Perform the following to format and initialize the disk drive you installed in step 18 on page 46:
    a. From the Use Dedicated Service Tools (DST) display, select **Work with disk units → Work with disk unit recovery → Disk unit problem recovery procedures → Initialize and format disk unit**.
    b. Select the unconfigured disk unit that you installed in step 18 on page 46 as the unit to work with.
    c. Press F10 to verify the initialization and formatting. The initialization and formatting may take 30 minutes or longer to complete.
    d. Return to the Work with Disk Unit Recovery display.
21. Perform the following to copy data from the failing disk drive to the disk drive you installed in step 18 on page 46:
    a. Select **Copy disk unit data** on the Work with Disk Unit Recovery display.
    b. Select the failing unit as the unit to copy.
    c. Select the unconfigured unit that you installed in step 18 on page 46 as the unit to copy to.
    d. The console displays the percentage of the data copied. Write down the number of unreadable pages if it displays; you will use it later in this procedure.

e. Wait until the status of the copy is *Complete*. Continue with the next step.

Note: Customer data is not recoverable if one of the following occurs:

- The copy operation does not complete.
- A large number of unreadable pages must be copied from the disk unit.

22. Perform the following to remove the failing disk unit from the system:
    a. Power off the system.
    b. Find the failing disk unit. Slide the disk unit out of the system.
23. Perform the following to move the new disk unit into the location that held the failing disk unit:
    a. Remove the new disk unit from the location you found in step 17 on page 46. Be very careful with the disk unit—it contains sensitive data.
    b. Install the new disk unit into the location that contained the failing disk unit, which you removed in step 22.
24. Install the disk unit you removed in step 18 on page 46.
25. Were any pages unreadable during the copy operation performed in step 21 on page 49?

    No: The system is ready for the next IPL. **This ends the procedure.**

    Yes: Some objects may be damaged. The customer may have to load the damaged objects again. Refer the customer to *Backup and Recovery*, SC41-5304. **This ends the procedure.**
26. Are there multiple failing disk units under the same IOA?
    - **No:** Continue with the next step.
    - **Yes:** Perform the following:
      a. Power off the system.
      b. Exchange the storage IOA (see Part locations and location codes). If you do not know the part number, see System parts.
      c. Go to step 1 on page 36.
27. Because the disk data was not recoverable, clear the auxiliary storage pool (ASP) to which the disk unit is assigned by doing the following:
    a. Return to the Work with Disk Units display and select **Work with disk configuration → Work with ASP configuration → Delete ASP data**.
    b. Enter **Delete** for the ASP that you recorded in step 3 on page 36, and confirm the deletion.
    c. Return to the Work with Disk Units display and select **Work with disk unit recovery → Replace configured unit**.
    d. On the Select Configured Unit to Replace display, select the configured disk unit to exchange.
    e. On the Select Replacement Unit display, select the replacement disk unit.
    f. Press **Enter** to confirm the replace operation (this operation takes 10 to 15 minutes to complete). The auxiliary storage pool to which the disk unit is assigned was erased. The customer must restore the data to the auxiliary storage pool. Refer the customer to *Backup and Recovery*, SC41-5304.
28. The ASP to which the failing disk unit was assigned is cleared. The customer should do the following:
    - If the disk unit you exchanged is in ASP 1, refer the customer to *Backup and Recovery*, SC41-5304. You must restore the operating system and all customer data. **This ends the procedure.**
    - If the disk unit is in a user ASP (ASP 2 through ASP 16), data in the ASP is lost. See *Backup and Recovery*, SC41-5304. **This ends the procedure.**

Restoring profile data

Explains how to read the profile data from the previously backed-up file on the HMC and load this data to the managed system.

Selecting this menu item restores profile data to the HMC from a backup file stored on the HMC hard drive.

Note: This is not a concurrent procedure. When the data is restored, the managed system powers on to Partition Standby.

To restore stored profile data on the HMC hard drive, you must be a member of one of the following roles:

- Super administrator
- Service representative

To restore profile data, do the following:

1. In the contents area, select the managed system.
2. From the menu, select **Selected > Profile Data > Restore**.
3. Select the profile information that you want to restore from the list of backup files.
4. Select a restore option.
5. Click **OK**.

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.

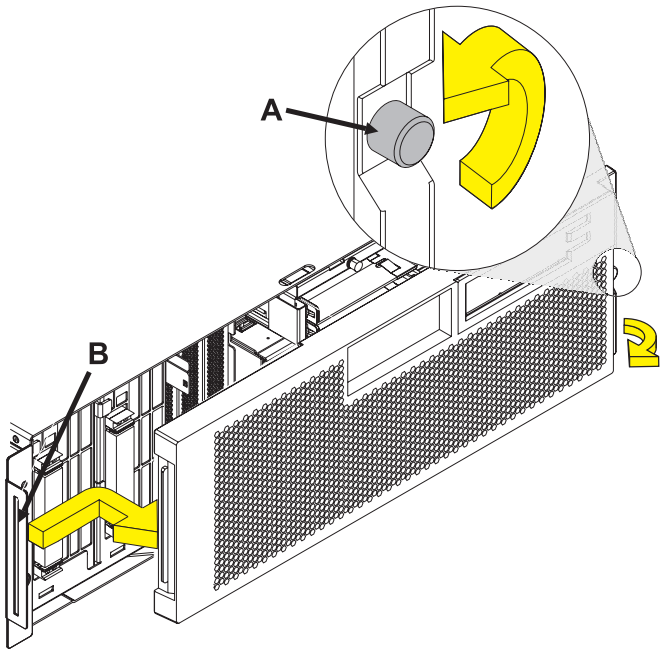
Replacing the disk drive using IBM i

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 54. If the disk drive is parity protected, go to step 4 on page 53.

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 54.

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 items:

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 is shown in the preceding list, the failing disk drive is parity protected.

Is the failing disk drive parity protected?

Yes: Go to step 9 on page 55.

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 guide for instructions.

Go to step 9 on page 55.

6.

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

Yes: Go to step 9 on page 55.

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 steps:

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 55.

8.

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

Perform a backup of the data in the failing ASP.

Go to step 9 on page 55 to replace the failing mirrored disk.

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

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

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.

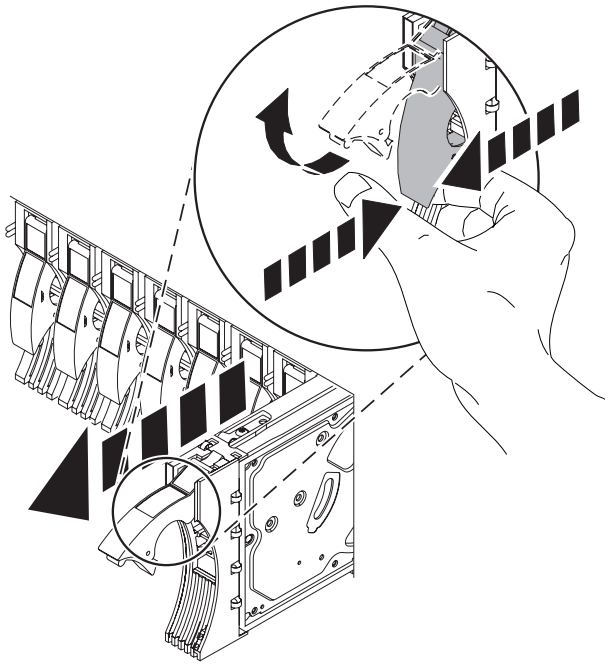
   Important: Do not press Enter at this time.
4. Locate the concurrent maintenance light that corresponds to the position of the disk drive that you are replacing.
   Important: When you press Enter, after a one minute delay, this light comes on and begins to blink rapidly. You then have nine seconds to remove the disk drive.
5. Press Enter on the console.
6. When the light blinks rapidly, perform the next step to remove the disk drive within 9 seconds.

10.

Remove the disk drive by:

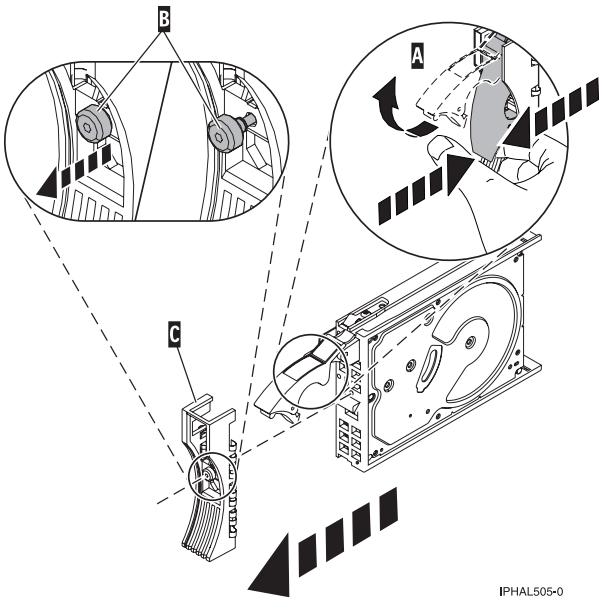
1. Unlock the disk drive handle by squeezing it and pulling it out toward you as shown.
2. Support the bottom of the disk drive as you slide it out of the system or expansion unit. Do not hold the disk drive by the handle.

   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.

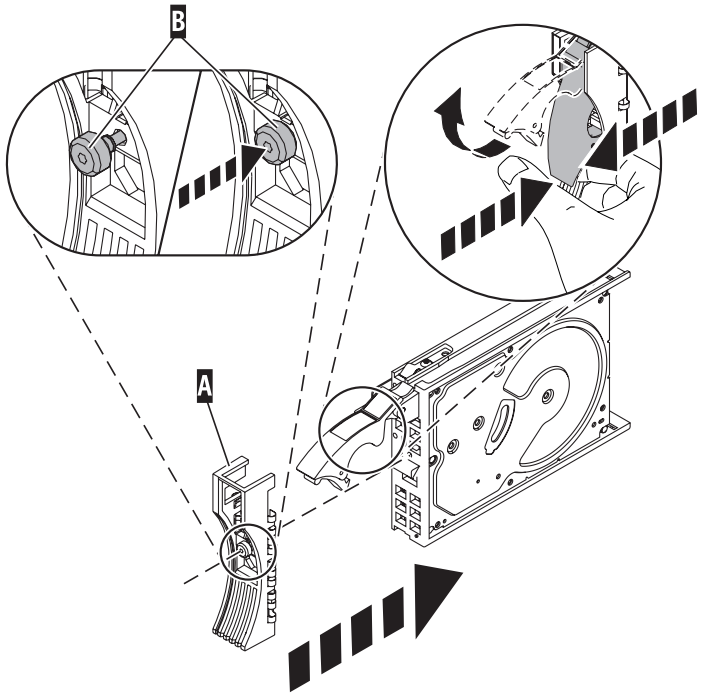


12.

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.

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.

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.

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 20 on page 58.

No: Continue with the next step.

17.

Was the failing disk drive parity protected?

Yes: Go to step 20.

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 Guide 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 **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.

Was the failing disk drive mirrored?

Yes: Go to step 22 on page 59.

No: Continue with the next step.

21.

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*.

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

Disk unit enclosure

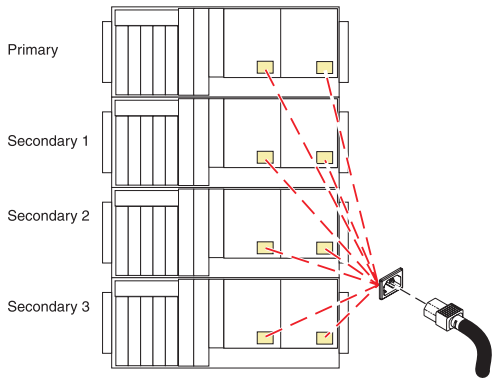
Use this procedure to service a disk unit enclosure.

Note: Remove any cable cassettes (3650, 3651, 5909) first, if installed.

1. **Do not power off the system and remove the power cords:**

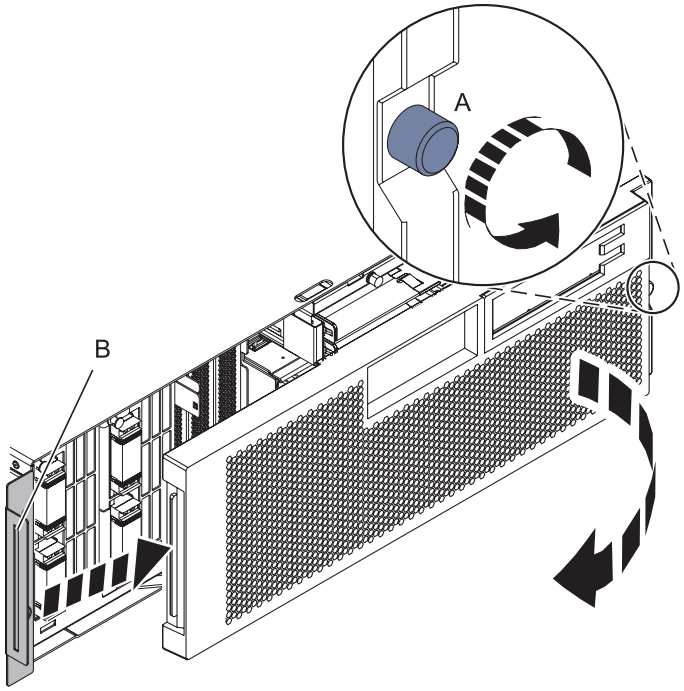
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



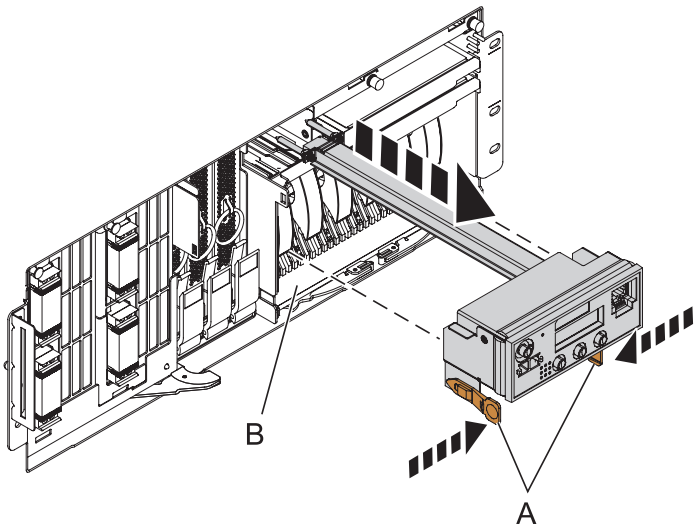
2. Remove the Front Cover

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)**.



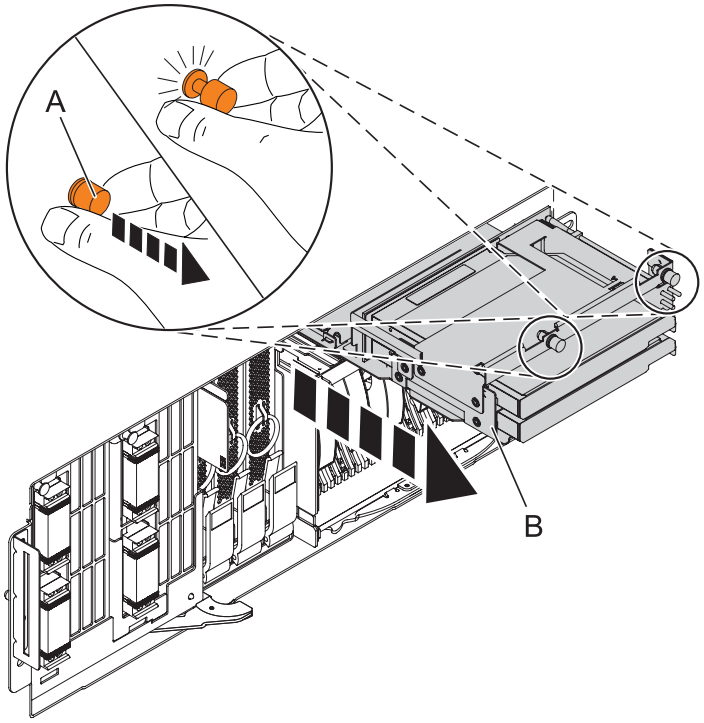
3. Remove the Control Panel or Control Panel Filler

In the enclosure you are servicing, remove the control panel or, if present, the control panel filler, by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges, and pulling it out of its bay **(B)**.



4. Remove the Media Device Enclosure

1. Pull the two terra-cotta locking knobs **(A)** out until they unlock.
2. Pull the enclosure **(B)** out of the system chassis.



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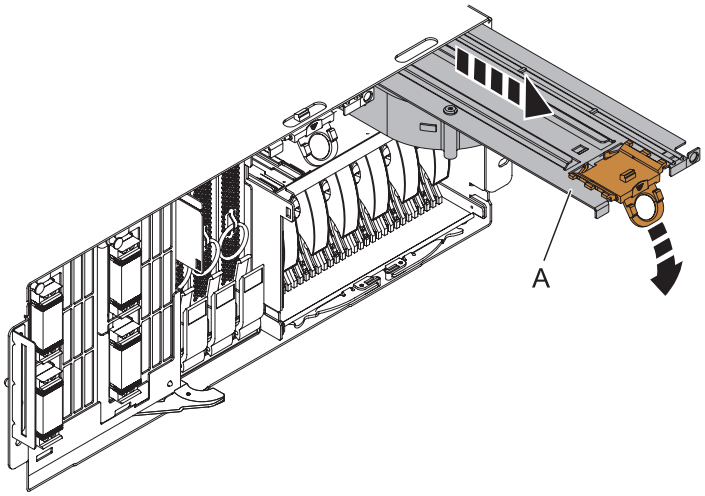
5. Remove the Fans

1. Pull the ring **(A)** downward to disengage it from the system unit.
2. Using the ring, pull the fan straight out of the system unit.
3. Repeat these steps until both fans are removed.



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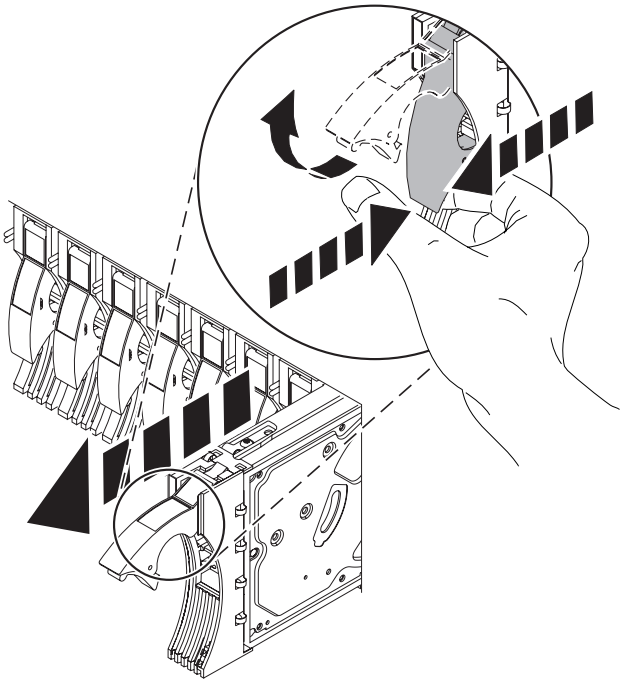
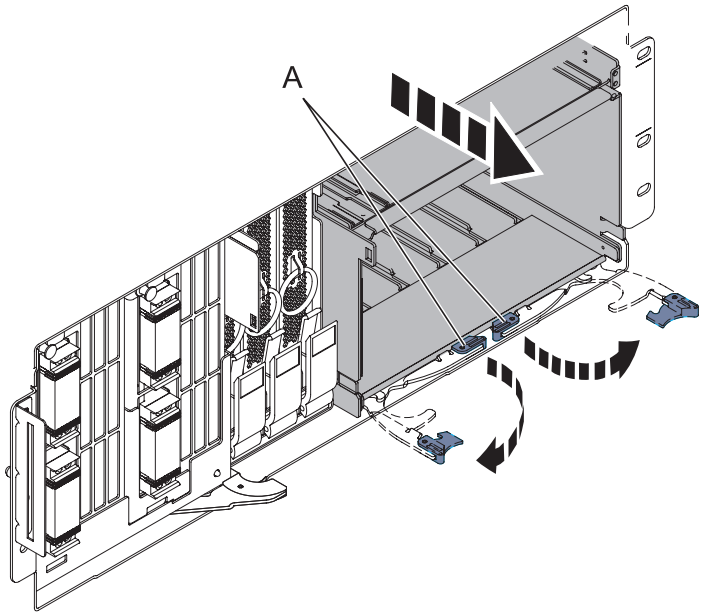
6. Remove all disk units and fillers

1. Label the disk unit you plan to remove.
2. Squeeze the two surfaces of the latching handle together and pull the handle **(A)** towards you to unlock the disk unit from the slot.
3. While supporting the bottom of the disk unit, slide the disk unit straight out of the enclosure. **Note:** Do not hold the disk unit by the handle.
4. Place the disk unit in a location protected from electrostatic discharge.
5. Pull any disk unit fillers forward and out of the system.
6. Repeat these steps until ALL disk units and fillers have been removed.



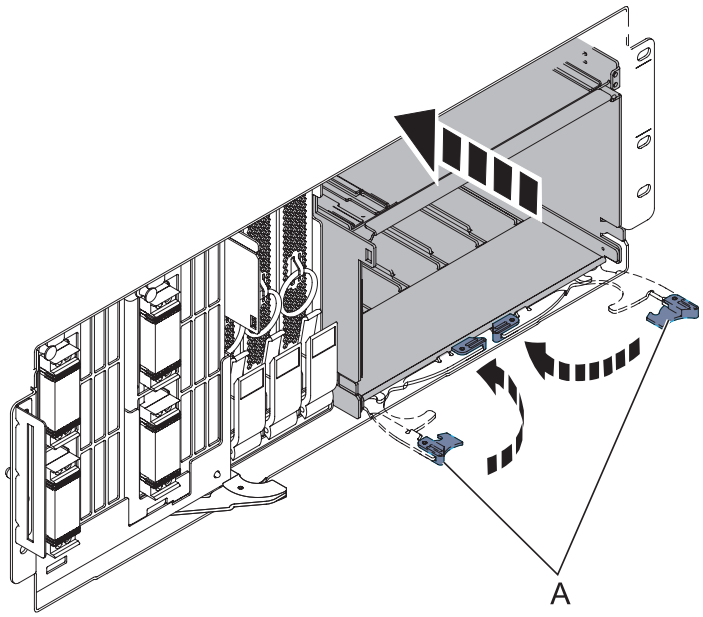
7. Remove the disk unit enclosure

1. Press down and rotate handles **(A)**.
2. Slide the enclosure out of the machine.



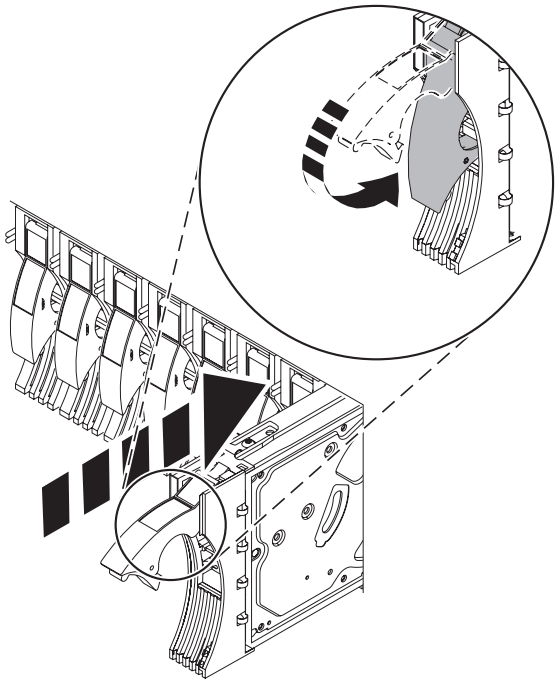
8. Install the new disk unit enclosure

1. Insert the disk unit enclosure into the system unit.
2. Slide the disk unit enclosure into the system until you feel it lock into place.
3. Rotate the handles **(A)** in the direction shown.



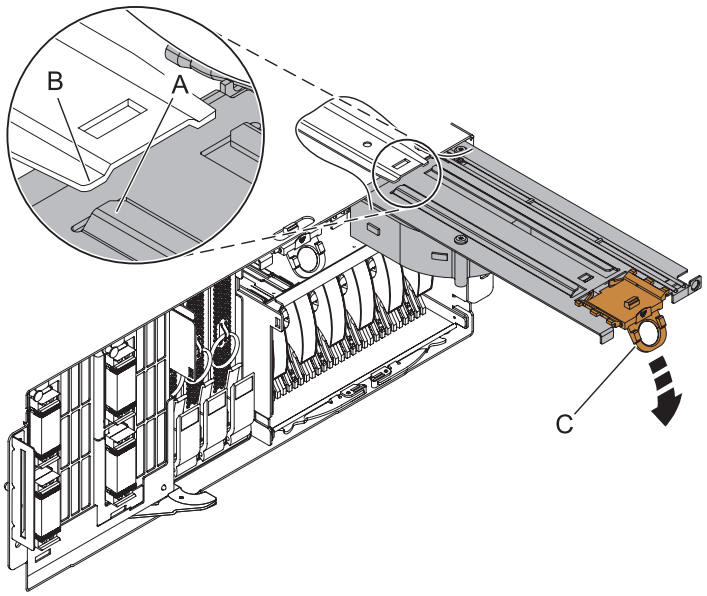
9. Install all disk units and fillers

1. Support the bottom of the disk unit as you align it with the guide rails in the enclosure.
2. Slide the disk unit into the disk unit enclosure until it stops.
3. Push the handle towards the disk unit to lock it into place.
4. Push any disk unit fillers forward and into the system.
5. Repeat these steps until ALL disk units and fillers have been installed.



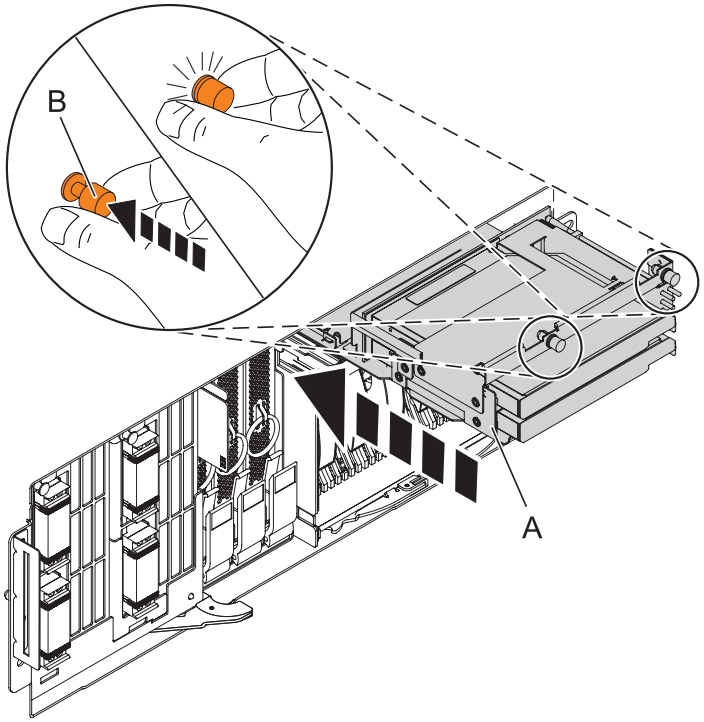
10. Install the Fans

1. Align the fan **(A)** with the guide rails **(B)** inside of the fan slot.
2. Press the fan all the way into the fan slot.
3. Lift up the ring **(C)** to lock the fan into place.
4. Repeat these steps until both fans are installed.



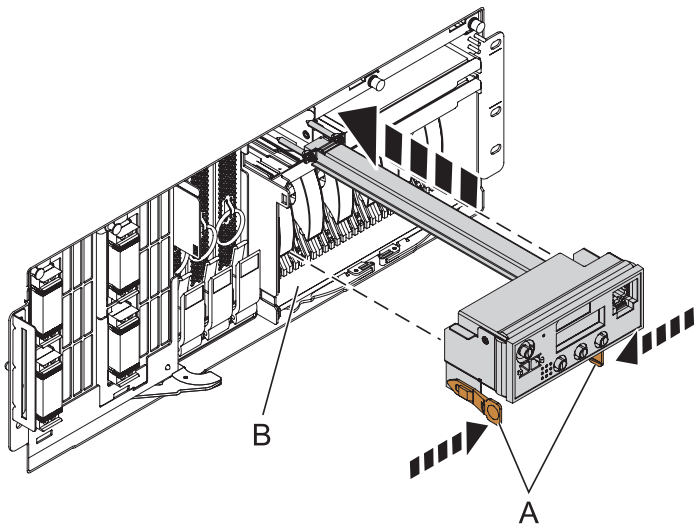
11. Install the Media Device Enclosure

1. Align the media device enclosure with the chassis opening.
2. Push the media device enclosure **(A)** into place, and then push the two terra-cotta locking knobs **(B)** into the locked position.



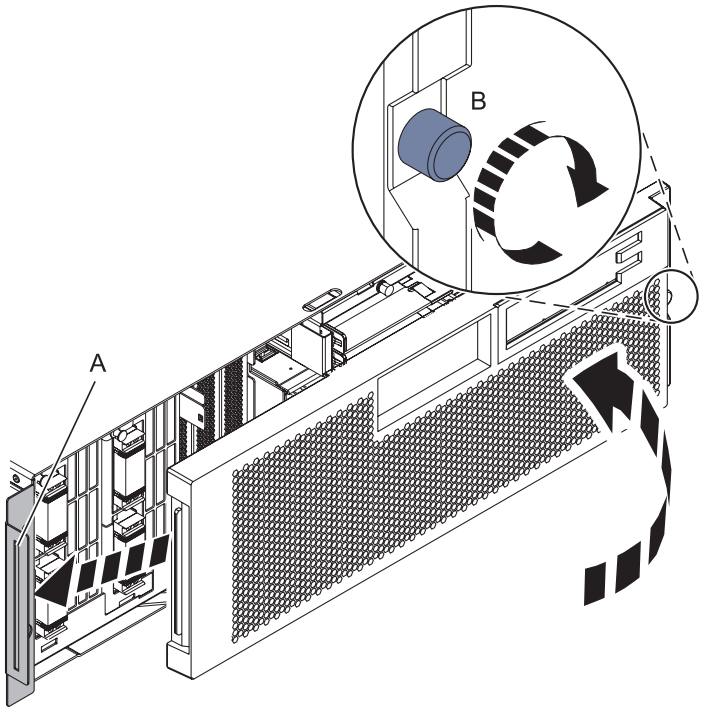
12. Install the Control Panel or Control Panel Filler

In the enclosure you are servicing, carefully slide the control panel or, if present, the control panel filler, into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



13. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.

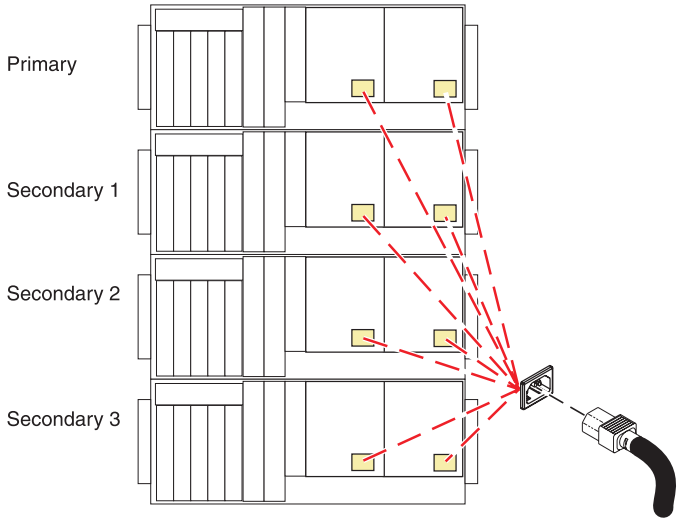


14. **Install the power cords**

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



15. Reinstall any cable cassettes (3650, 3651, 5909) if they were previously uninstalled.
16. **Verify the repair**

If the power cords were disconnected to perform this procedure, reconnect both power cords in each enclosure now starting with the third enclosure from the top, then the fourth enclosure, then the second enclosure and then the first (topmost) enclosure.

Ensure that the system is powered on.

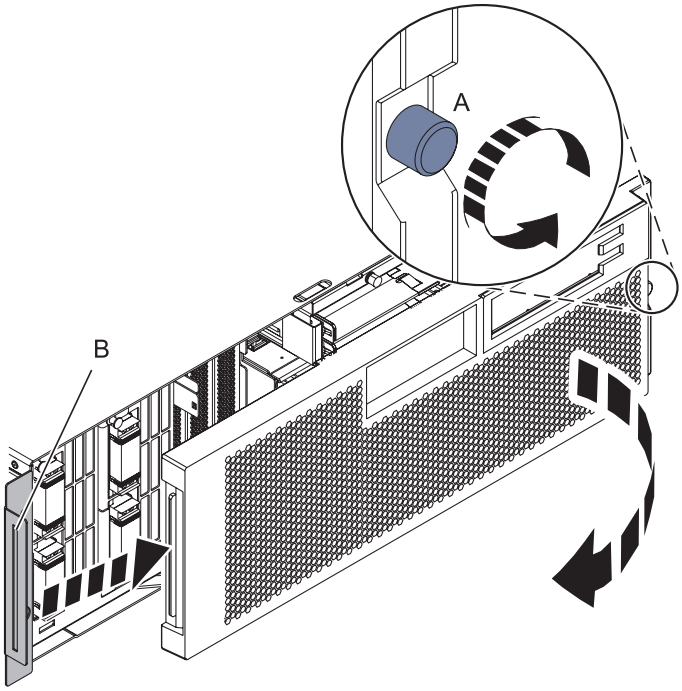
Go to Verifying a repair.

Fans

Use this procedure to replace a fan.

1. Remove the Front Cover

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)**.

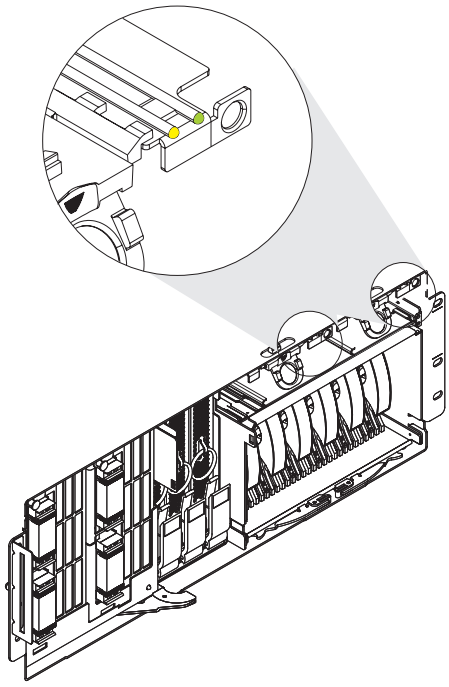


2.

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

- A second air moving device (AMD) must already be installed. This AMD unit has a green LED and an amber LED. The green LED must be on, the amber LED may be on or 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 non-concurrent repair.



3.

Continue the repair concurrently or nonconcurrently.

Do you choose to replace the fan concurrently?

Concurrent repair. Continue the repair with unit power on.	Non concurrent repair. Power off the unit and continue the repair.
↓	Go to step 9 on page 73.

---

4. **Use this procedure to service the Fan.**

The fan will be serviced concurrently. Power should not be removed from the system during this procedure.

Continue with the next step.

---

5. **Determine if there is a control panel present in the enclosure.**

If a control panel is present in the same enclosure as the FRU being serviced, it must be removed.

A control panel is present in the same enclosure as the FRU being serviced:

Yes	No
↓	Go to step 9 on page 73 to remove the control panel filler.

6. 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.

7. Prepare the Control Panel for concurrent replacement

1. In the navigation area of the ASMI, expand **Conurrent Maintenance** then select **Control panel**.
2. At the Preparing the control panel window, select **Remove**and click **Continue**.
3. Select the control panel's location and click **Save Settings**.
4. The message **Opeation completed successfully** is displayed.

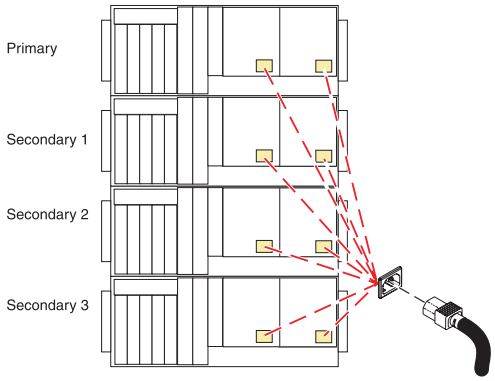
Did the operation complete successfully?

No	Yes
↓	Go to step 9 on page 73

8. **Do not power off the system and remove the power cords:**

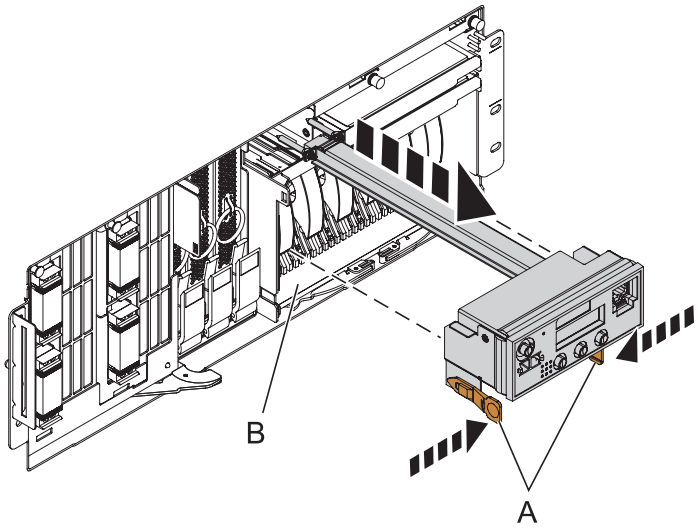
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



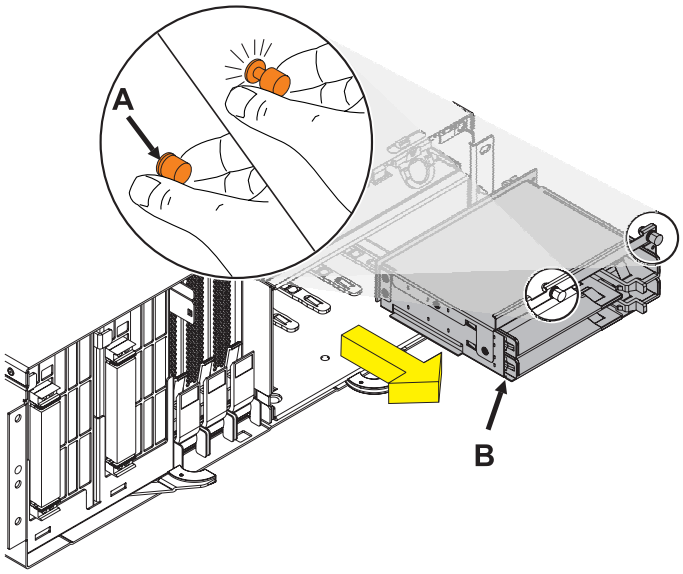
9. Remove the Control Panel or Control Panel Filler

In the enclosure you are servicing, remove the control panel or, if present, the control panel filler, by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges, and pulling it out of its bay **(B)**.



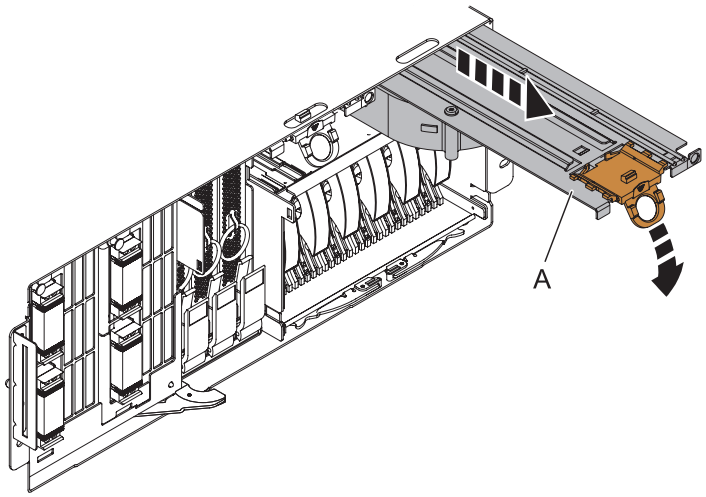
10. Remove the Media Device Enclosure

1. Pull the two terra-cotta locking knobs **(A)** out until they unlock.
2. Pull the enclosure **(B)** out of the system chassis.



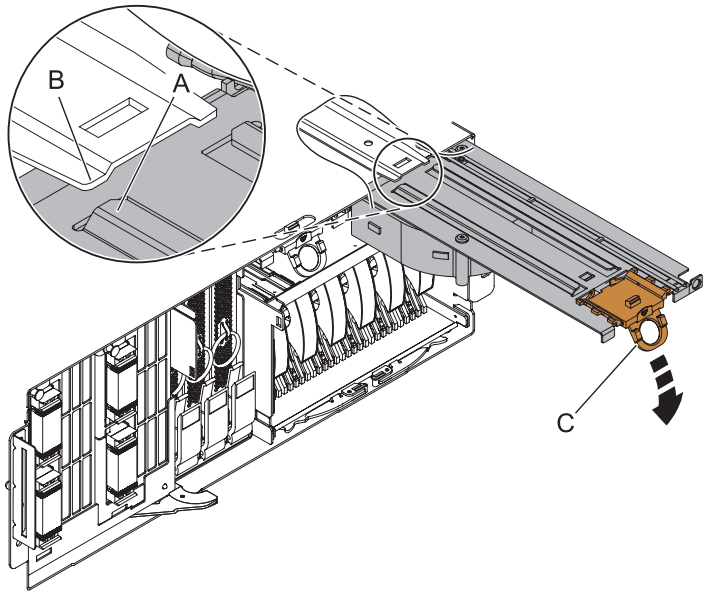
11. Remove the Fan

1. Pull the ring **(A)** downward to disengage it from the system unit.
2. Using the ring, pull the fan straight out of the system unit.



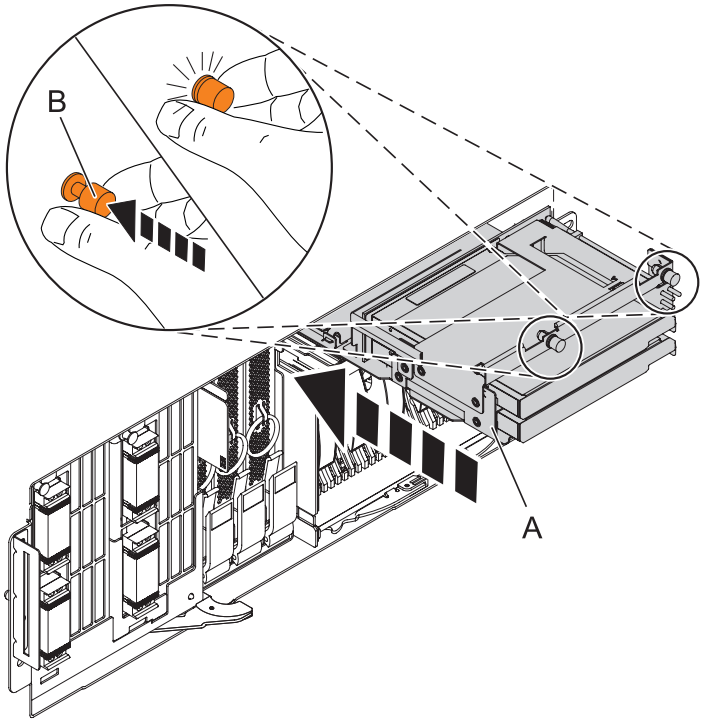
12. Install the new Fan

1. Align the fan **(A)** with the guide rails **(B)** inside of the fan slot.
2. Press the fan all the way into the fan slot.
3. Lift up the ring **(C)** to lock the fan into place.



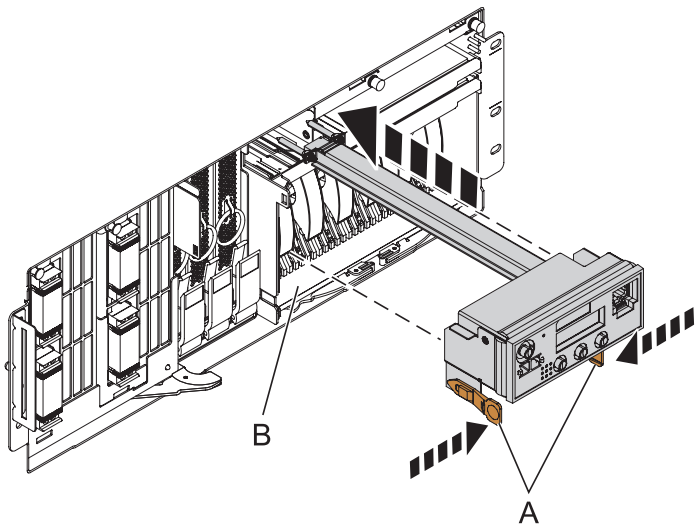
13. Install the Media Device Enclosure

1. Align the media device enclosure with the chassis opening.
2. Push the media device enclosure **(A)** into place, and then push the two terra-cotta locking knobs **(B)** into the locked position.



14. Install the Control Panel or Control Panel Filler

In the enclosure you are servicing, carefully slide the control panel or, if present, the control panel filler, into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



15.

Are you performing a concurrent repair?

Yes	Non-concurrent repair.
↓	Go to step 17 on page 77.

---

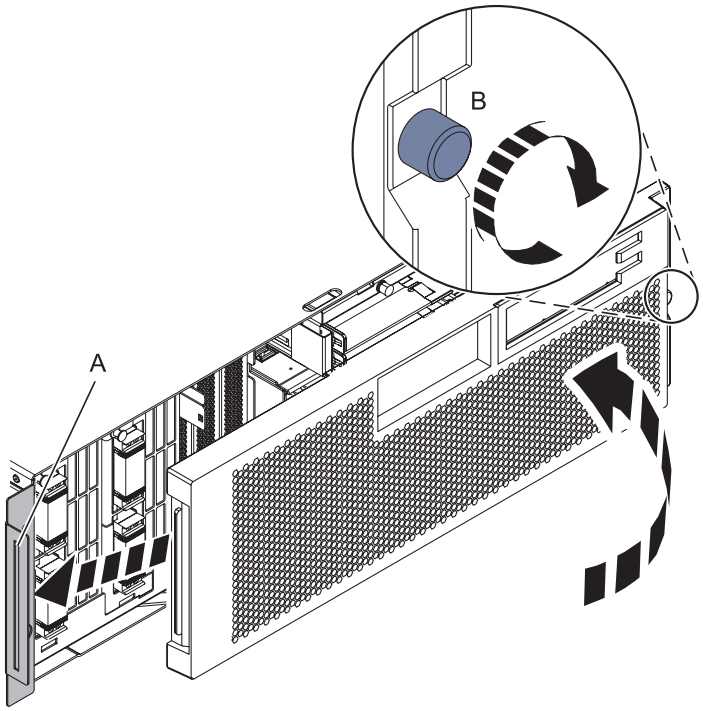
16. Install the Control Panel

1. In the navigation area of the ASMI, expand "**Concurrent Maintenance**" and then select "**Control panel**".
2. At the Preparing the control panel window, select "Install" and click "Continue".
3. Choose the control panel's location and click "Save Settings".
4. If the operation was successful, the Operation completed successfully window will display.

---

17. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.



18.

Are you doing a concurrent repair?

No	Yes
↓	Go to step 20 on page 78.

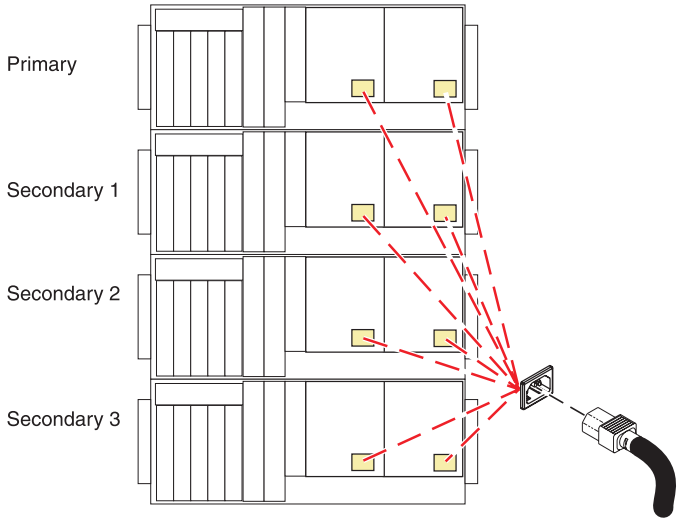
---

19. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



20. Verify the repair

Go to Verifying a repair.

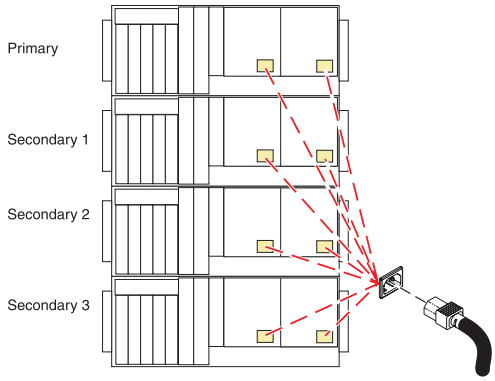
I/O Backplane

Use this procedure to service the I/O backplane.

1. **Do not power off the system and remove the power cords:**

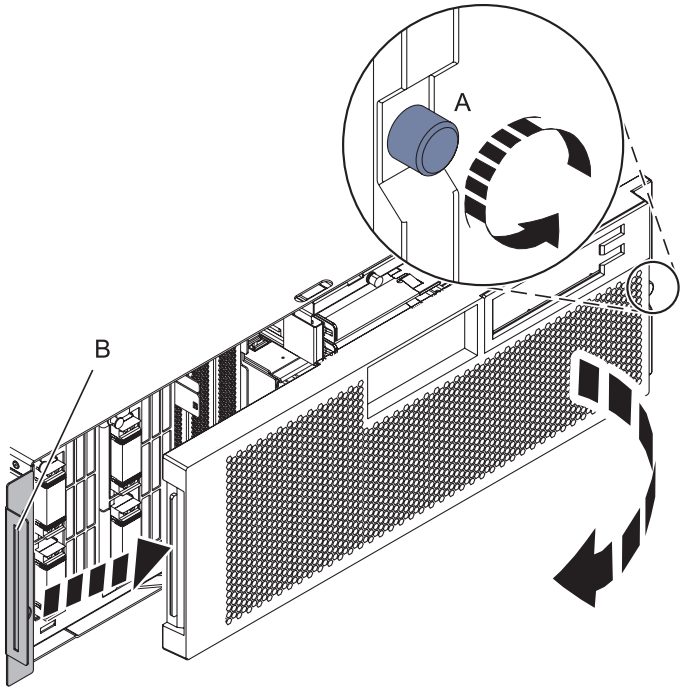
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



2. Remove the Front Cover

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)**.

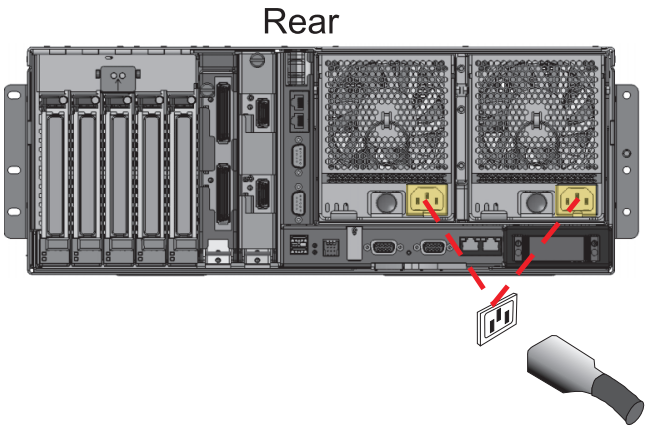


3. Open the back rack door

Open the back rack door.

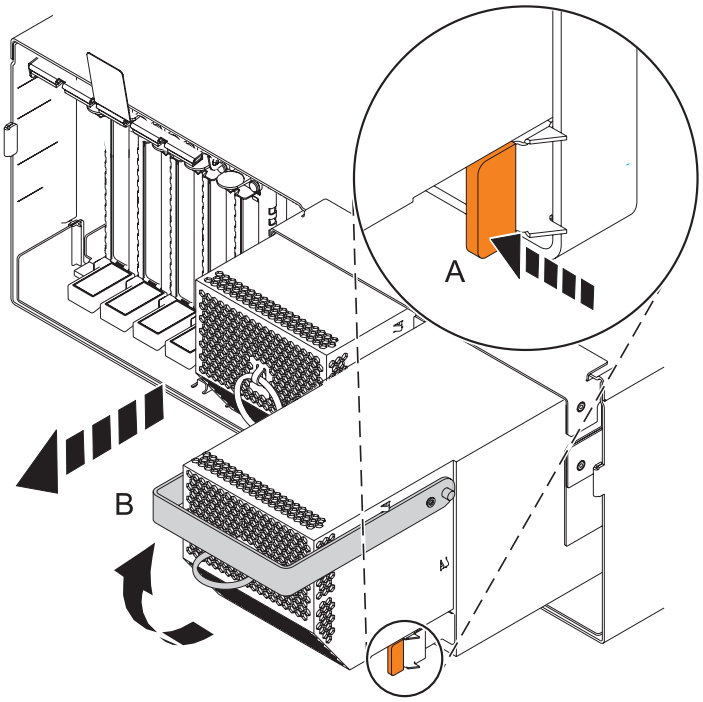
4. **Disconnect both power cords**

Disconnect BOTH power cords from the enclosure.



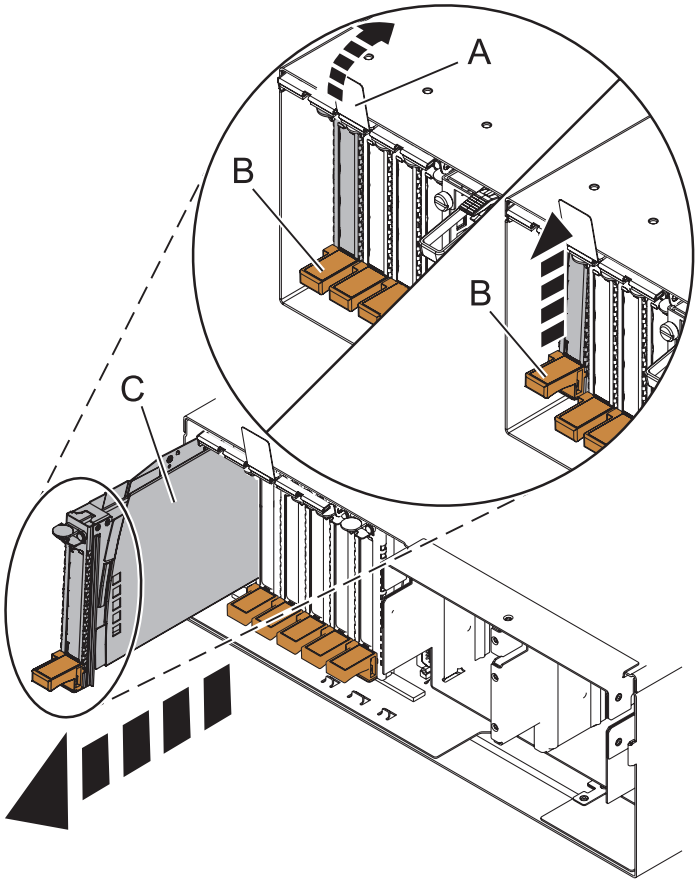
5. Remove both power supplies

1. Push the handle latch **(A)** to release the handle.
2. Lift the handle **(B)** up and into the open position.
3. Using the handle, pull the power supply out of the power supply bay.
   CAUTION: This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). Use care when lifting, removing, or installing this part or unit. (C008)
4. Repeat these steps until both power supplies are removed.



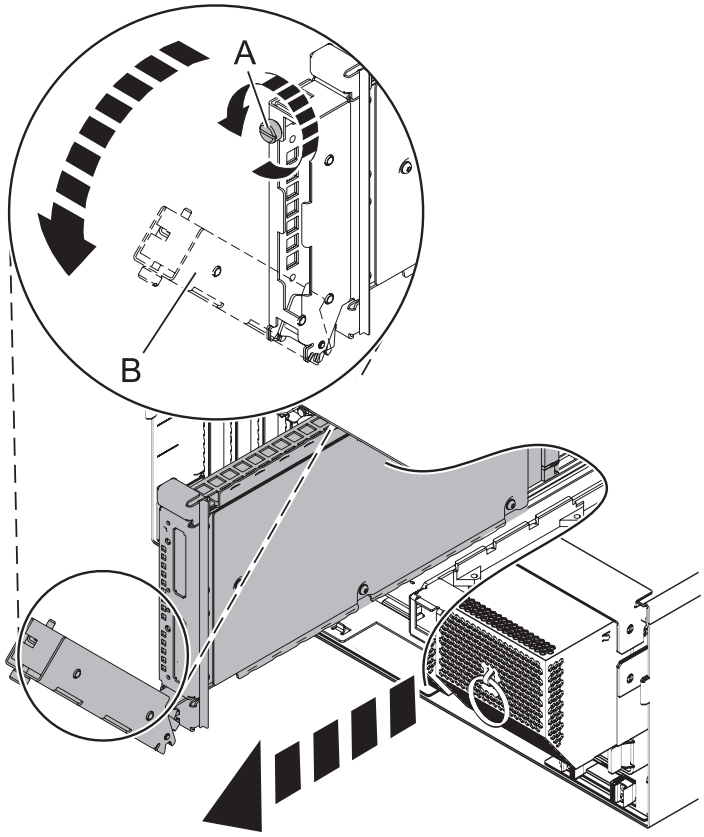
6. Remove all PCI cards

1. Label and remove all Peripheral Component Interconnect (PCI) cables from the rear of the system.
2. Lift and hold the PCI adapter EMC shield **(A)** in the open position.
3. Lift the lower cassette handle up **(B)** as shown.
4. Pull the PCI cassette **(C)** out of the system unit.
5. Lower the PCI adapter EMC shield into the closed position.
6. Repeat these steps until all PCI adapter cards or PCI adapter fillers in slots C1 through C5 have been removed.



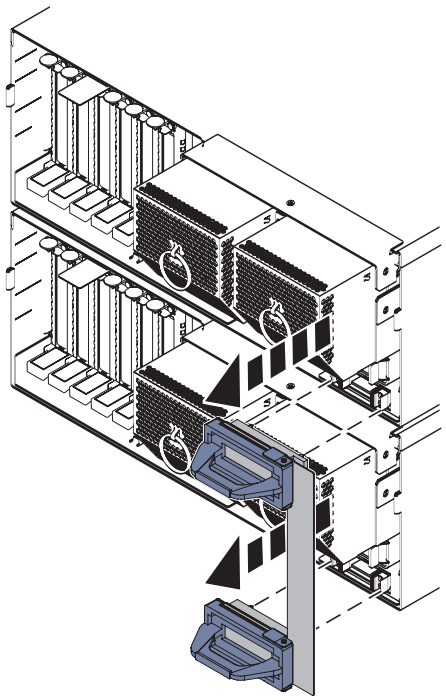
7. Remove the RIO/HSL Adapter Card

1. Label and remove all RIO/HSL cables from the rear of the system.
2. Rotate the thumbscrew **(A)** counterclockwise to unfasten the card.
3. Pull the handle **(B)** down.
4. Pull the card from its slot.
5. Repeat these steps to remove a second NIC card (if present).



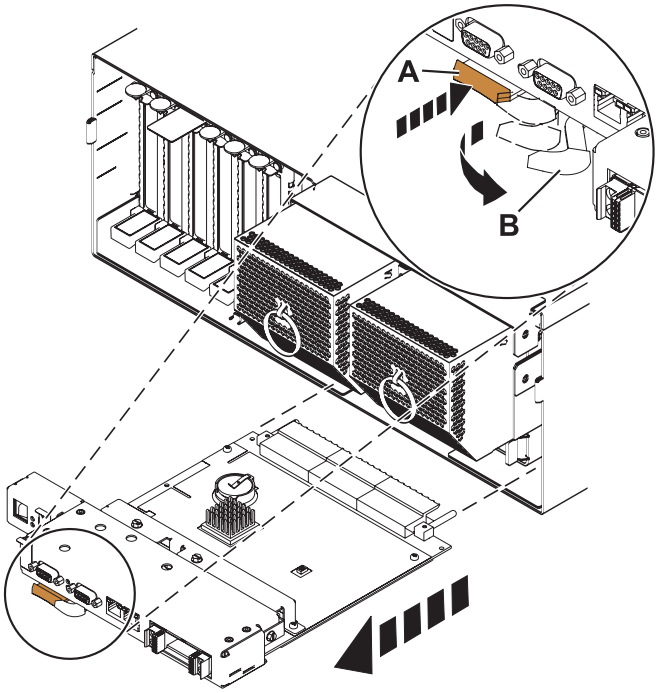
8. Remove the Service Processor Cable if installed

1. Grasp the service processor cable handle on one system unit and pull it from the system unit.
2. Repeat the process for the other system unit.



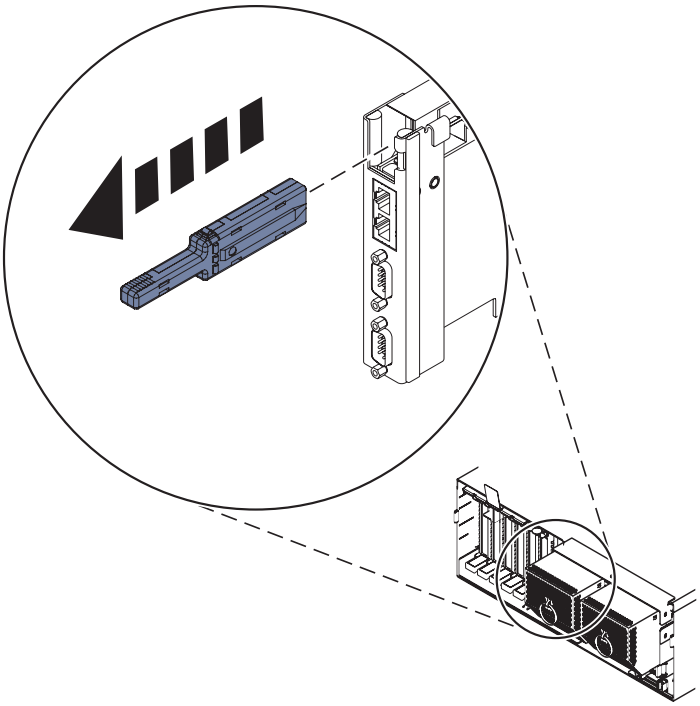
9. Remove the Service Processor Assembly

1. Label and disconnect all cables connected to the service processor assembly.
2. Press the thumb release **(A)** on the service processor assembly to unlock the handle.
3. Pull the handle to the right to unseat the service processor assembly.
4. Pull the service processor assembly from the card enclosure using the handle and supporting the bottom of the card.



10. Remove the VPD Card

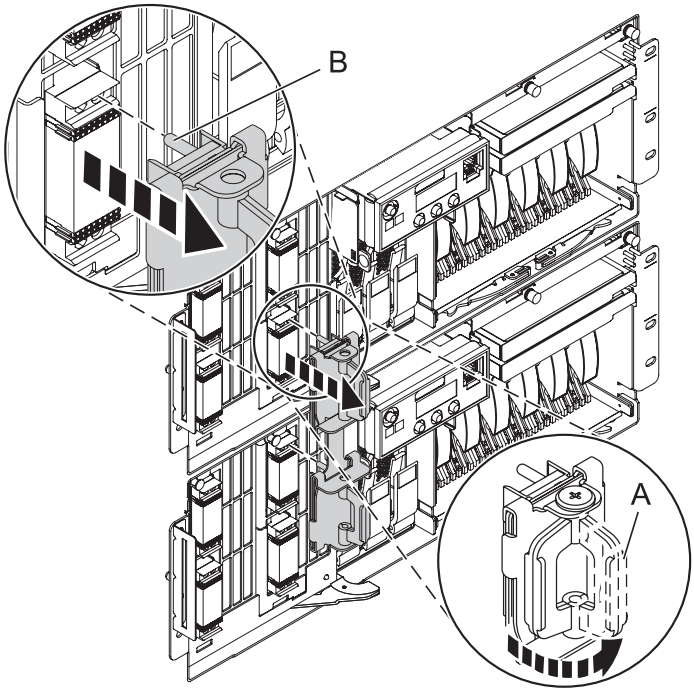
Pull the VPD card free by the blue handle and remove from the system.



11. Disconnect the SMP Cable if installed

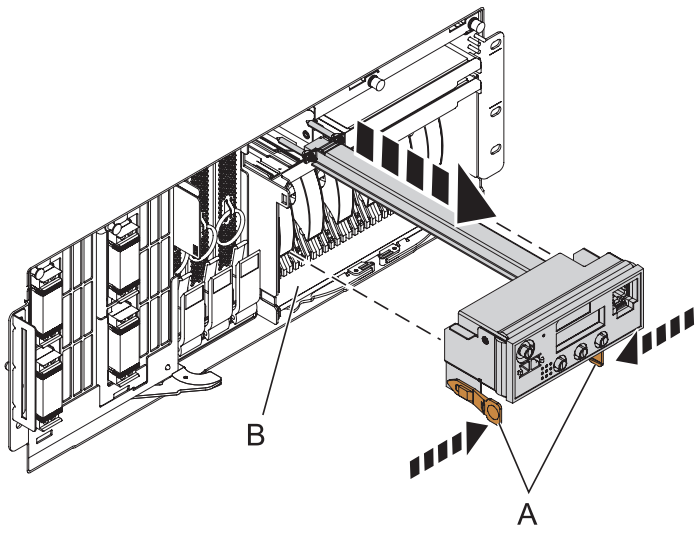
1. Carefully pull the handle **(A)** from the system until the connector is unseated.
2. When the guide pins **(B)** are free, carefully pull the SMP processor cable away from the system unit.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



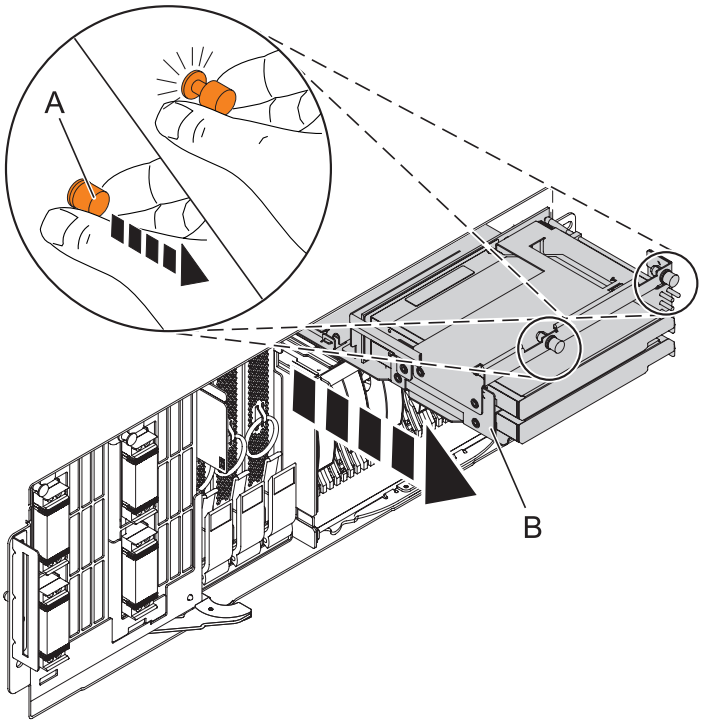
12. Remove the Control Panel or Control Panel Filler

In the enclosure you are servicing, remove the control panel or, if present, the control panel filler, by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges, and pulling it out of its bay **(B)**.



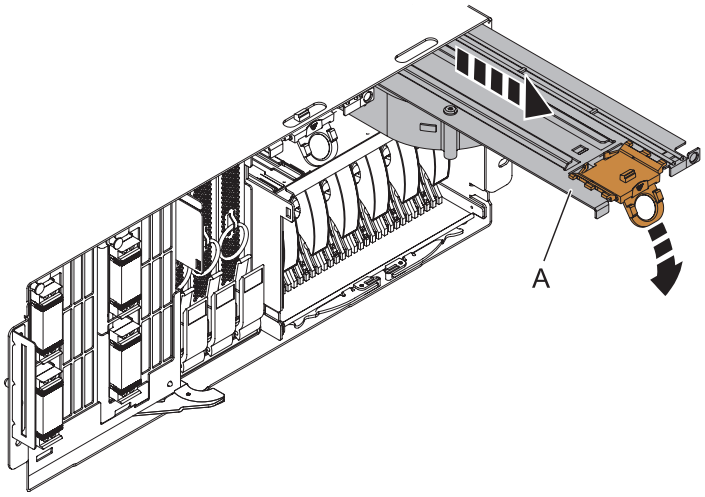
13. Remove the Media Device Enclosure

1. Pull the two terra-cotta locking knobs **(A)** out until they unlock.
2. Pull the enclosure **(B)** out of the system chassis.



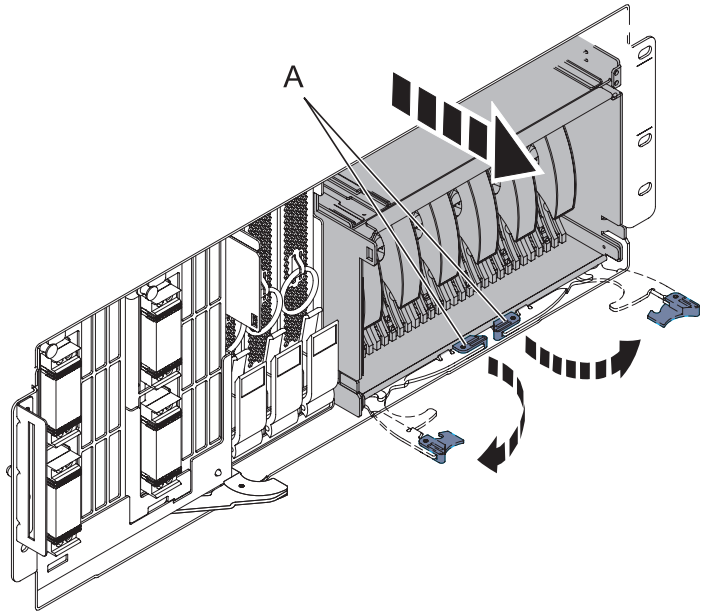
14. Remove the Fans

1. Pull the ring **(A)** downward to disengage it from the system unit.
2. Using the ring, pull the fan straight out of the system unit.
3. Repeat these steps until both fans are removed.



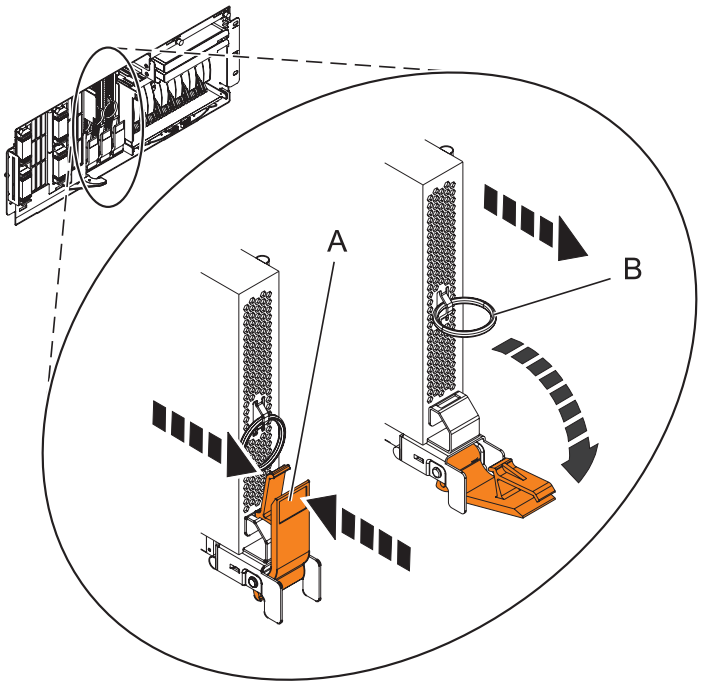
15. Remove the disk unit enclosure

1. Press down and rotate handles **(A)**.
2. Slide the enclosure out of the machine.



16. Remove the Voltage Regulator Assemblies

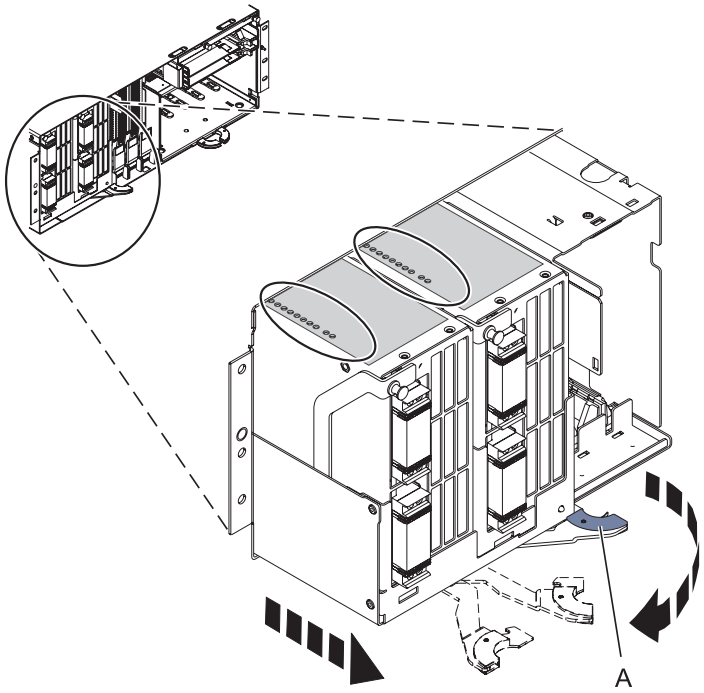
1. Squeeze the top of the latch **(A)** to release it, then rotate the latch out and then down.
2. Grasp the pull ring **(B)** and slowly pull the voltage regulator out of the enclosure. **NOTE:** Pulling the voltage regulator assembly out of the card enclosure requires a large amount of force. The voltage regulator assembly is of substantial weight, so grasp it firmly when it is free of the card enclosure.
3. Repeat these steps until all voltage regulator assemblies have been removed.



17. Remove the System Backplane Assembly

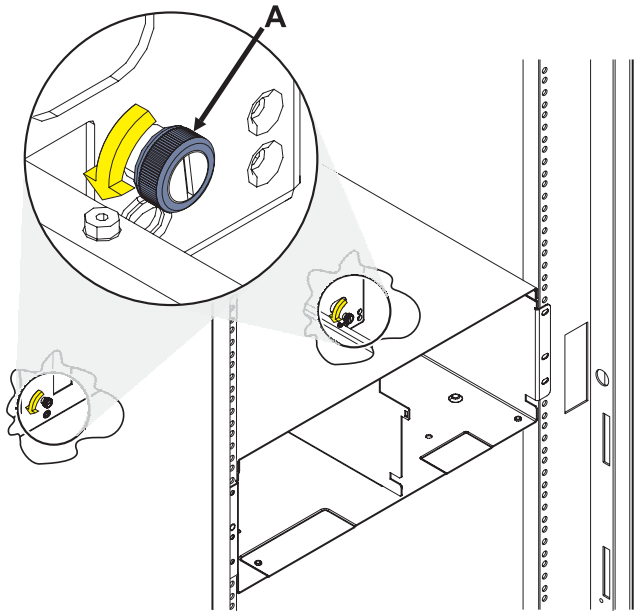
Note: A shipping support clamp has been installed on your server. Removal is not required. This clamp will not interfere with the drawer front covers or machine operation. If removed, store for re-use when the server is relocated.

1. Push the blue lever to the left and out from the system **(A)** to unlock the system backplane assembly.
2. Pull the system backplane assembly out of the system using both hands. **ATTENTION:** The system backplane assembly weighs 35 lbs and should not be pulled out using the blue lever. Grasp the backplane assembly firmly with both hands when it is free of the system.



18. Loosen the thumbscrews

Loosen the two thumbscrews **(A)** at the front of the backplane.



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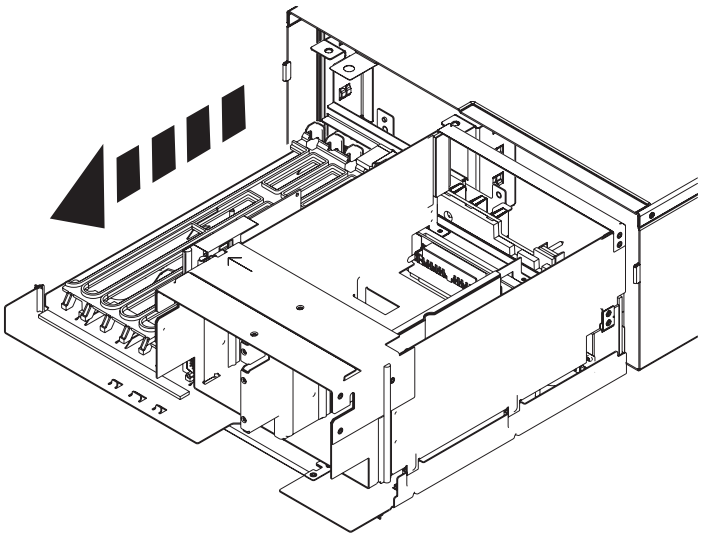
19. Remove the I/O backplane from the rear of the system

1. Slide the I/O backplane from the enclosure and set it aside.



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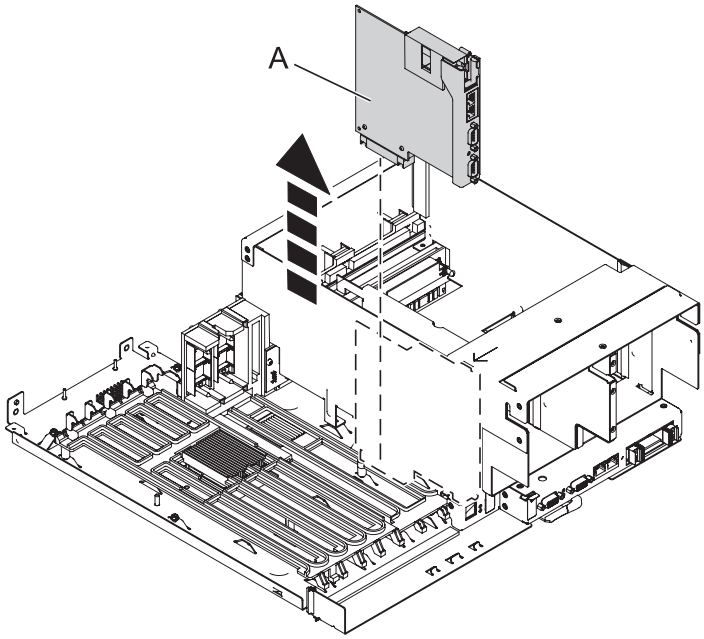
20. Remove the VPD passthru card

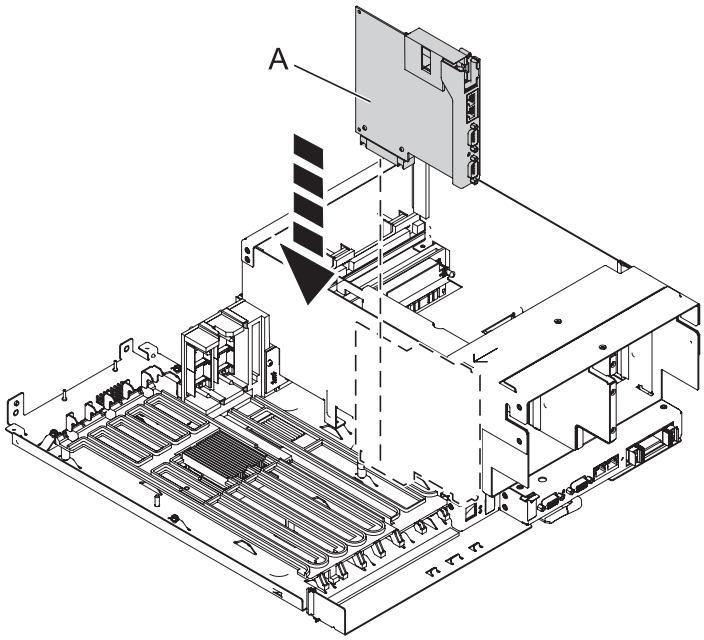
Remove the passthru card from the I/O backplane assembly by pulling it straight up and out of the I/O backplane assembly.



21. Install the VPD passthru Card on the New I/O Backplane

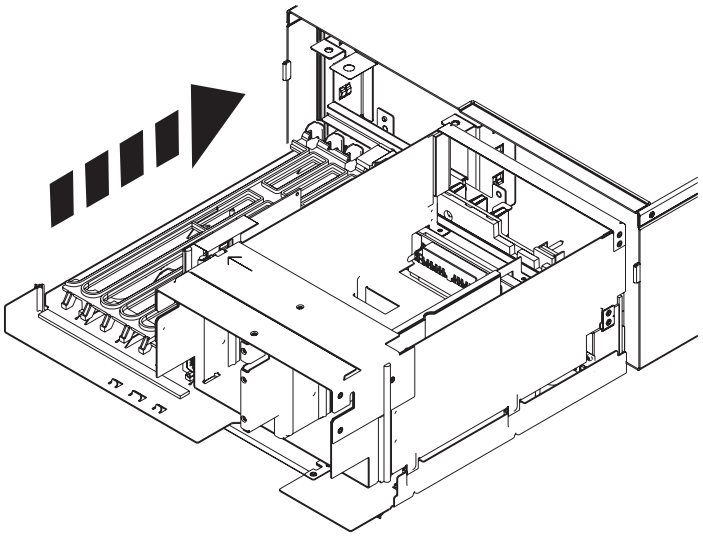
1. Note the metal tab on the top edge of the pass-through card.
2. Insert the card into the connector on the I/O backplane ensuring that the metal tab engages the slot on the top edge of the shroud for the power supplies.

ATTENTION: If the tab does not engage the slot in the shroud, the passthru card will not connect securely and damage to the pins on the connector could occur.



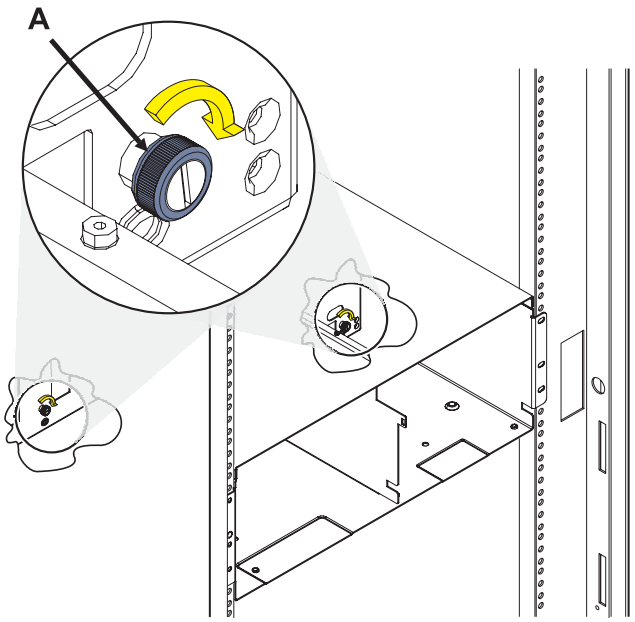
22. Install the new I/O Backplane

1. Carefully slide the I/O backplane into the enclosure.



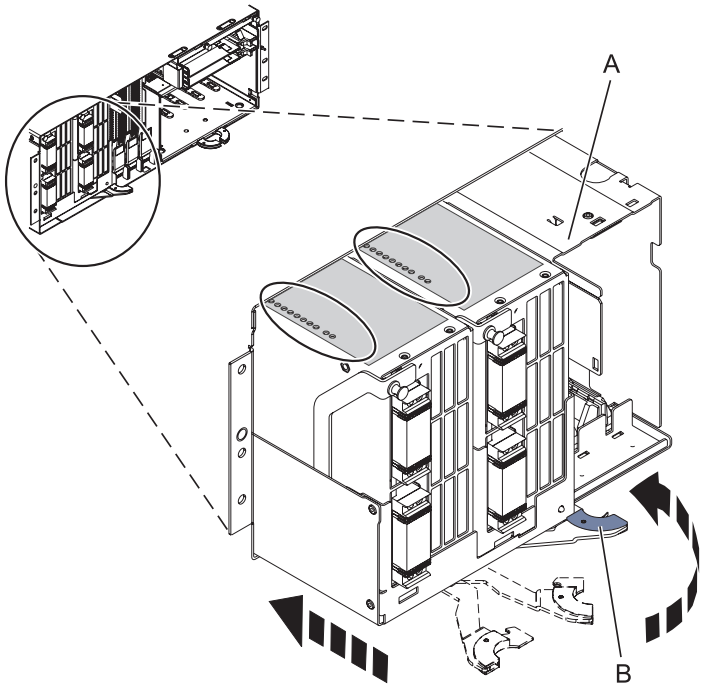
23. Tighten the thumbscrews

1. Tighten the two thumbscrews **(A)** at the front of the backplane.
2. Ensure the backplane is seated properly.



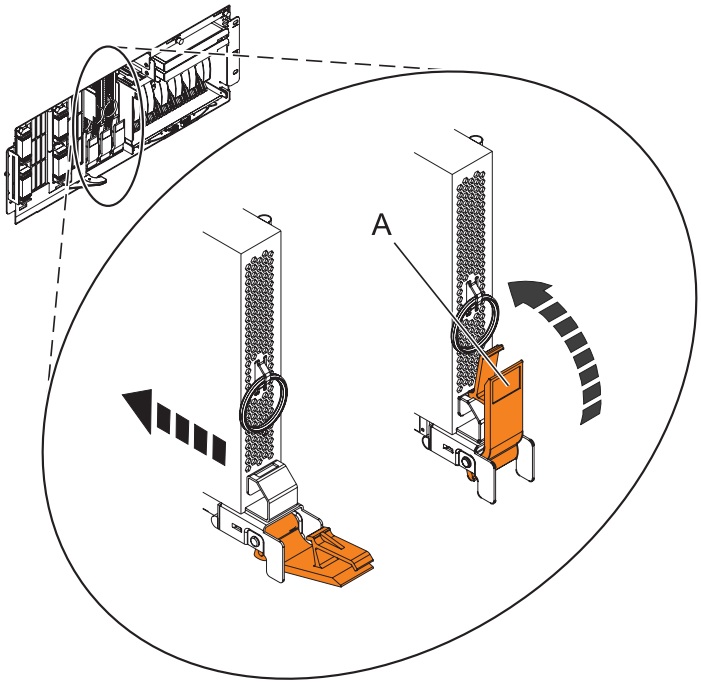
24. Install the System Backplane Assembly

1. Align the system backplane assembly with the slot in the system.
2. Slide the system backplane assembly into the system **(A)**.
3. Push the blue lever **(B)** to the right and in toward the system to lock the system backplane assembly.



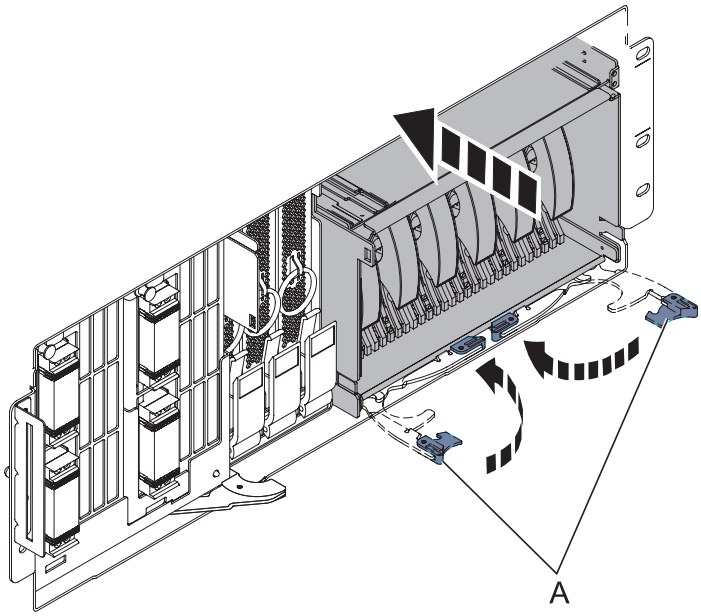
25. Install the Voltage Regulator Assemblies

1. Ensure that the voltage regulator assembly latch **(A)** is rotated out and down into the unlocked position.
2. Carefully grasp the voltage regulator assembly and slide it into the enclosure.
3. When the voltage regulator assembly is all the way into the card enclosure, rotate the latch **(A)** up into the locked position.
4. Repeat these steps until all voltage regulator assemblies have been installed.



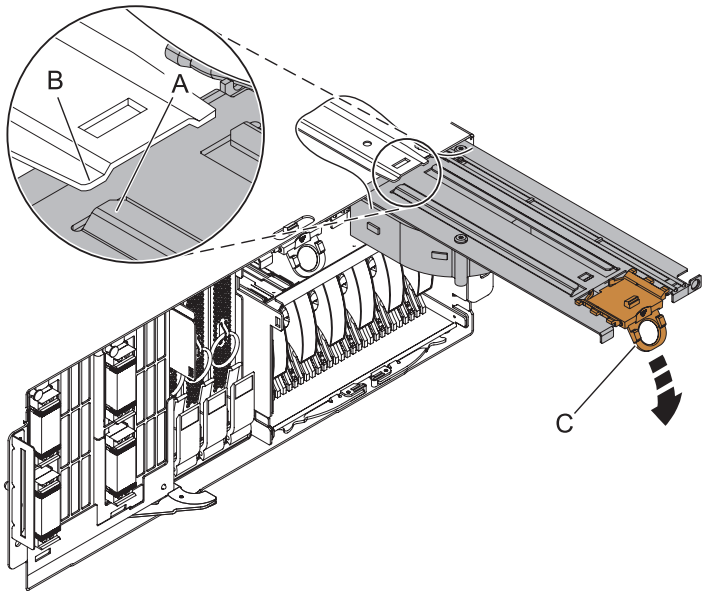
26. Install the disk unit enclosure

1. Insert the new disk unit enclosure into the system unit.
2. Slide the disk unit enclosure into the system until you feel it lock into place.
3. Rotate the handles **(A)** in the direction shown.



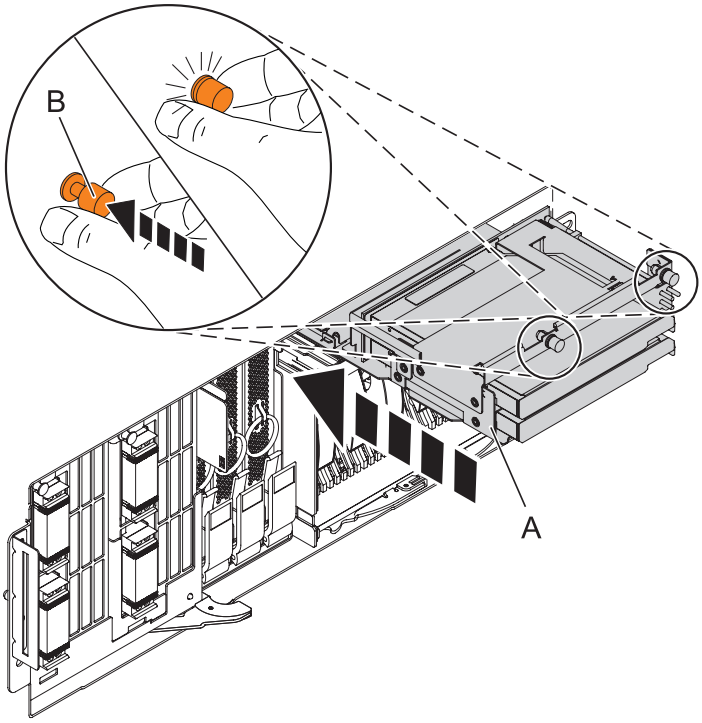
27. Install the Fans

1. Align the fan **(A)** with the guide rails **(B)** inside of the fan slot.
2. Press the fan all the way into the fan slot.
3. Lift up the ring **(C)** to lock the fan into place.
4. Repeat these steps until both fans are installed.



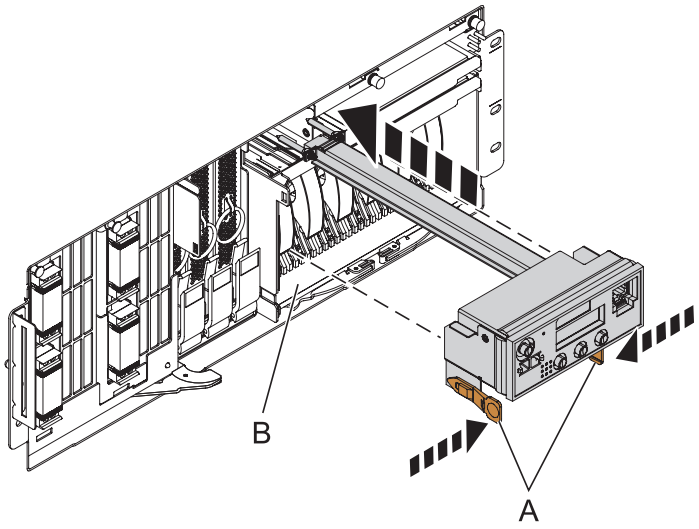
28. Install the Media Device Enclosure

1. Align the media device enclosure with the chassis opening.
2. Push the media device enclosure **(A)** into place, and then push the two terra-cotta locking knobs **(B)** into the locked position.



29. Install the Control Panel or Control Panel Filler

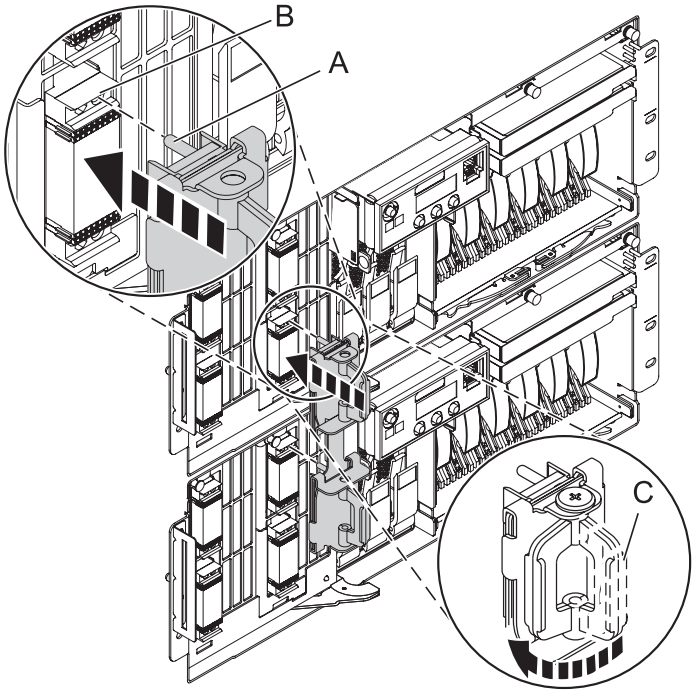
In the enclosure you are servicing, carefully slide the control panel or, if present, the control panel filler, into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



30. Connect SMP Cable if installed

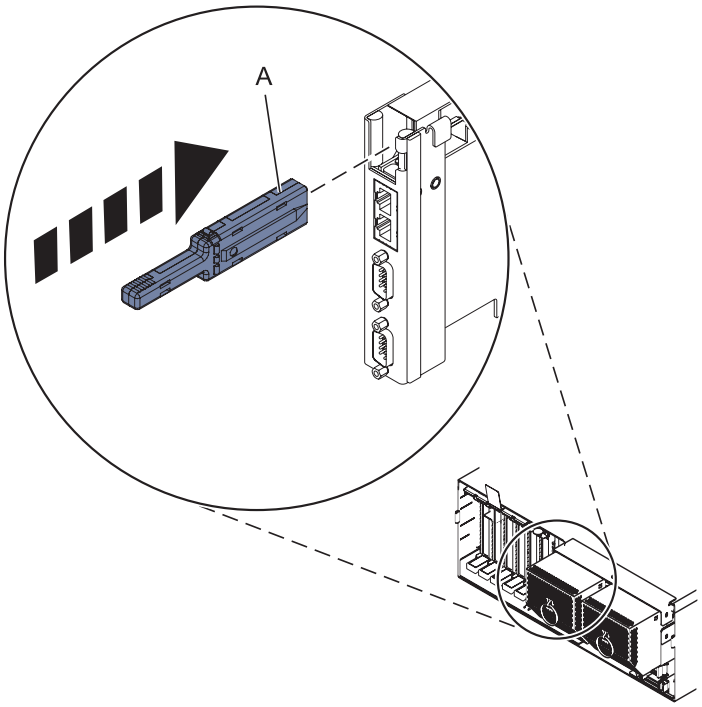
1. Align the guide pins **(A)** with the connectors **(B)** on the system unit.
2. Using the handle **(C)**, carefully push the SMP processor cable into the system unit connector.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



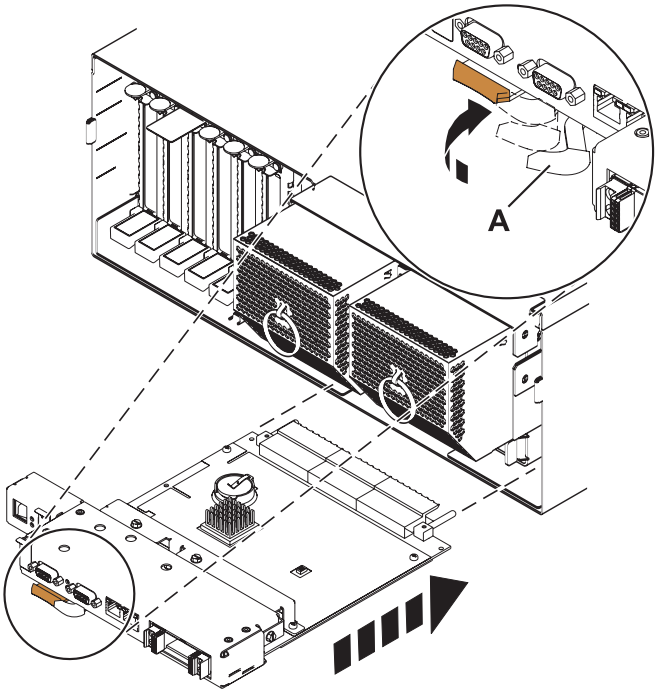
31. Install the VPD Card

1. Insert the VPD card with the key **(A)** positioned to the right as shown.
2. Push until fully seated.



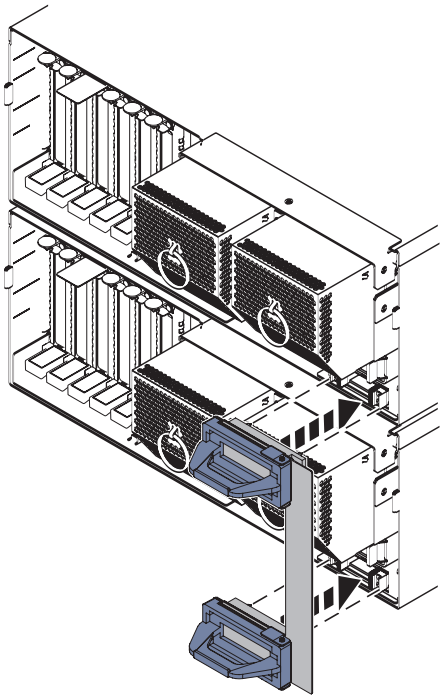
32. Install the Service Processor Assembly

1. Align the service processor assembly with the card slot.
2. Slide the service processor assembly all the way into the card slot in the card enclosure.
3. Push the handle **(A)** toward the service processor assembly until the release tab locks the handle in place. This will secure the service processor assembly into the card slot.
4. Reconnect all service processor assembly cables.



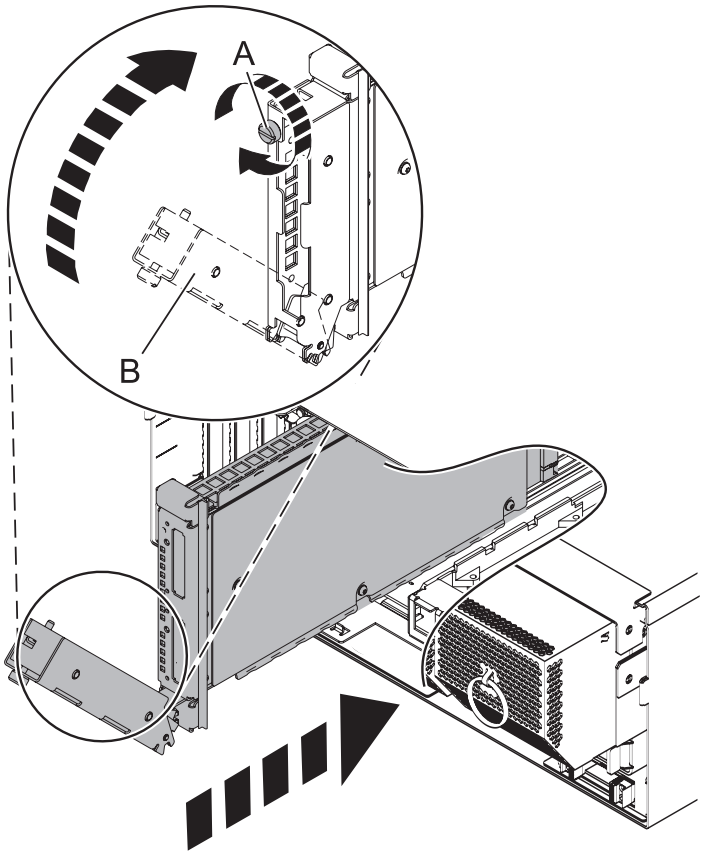
33. Install the Service Processor Cable if removed

1. Align the pins on the back of the service processor cable handle with the alignment holes on the back of one of the system units.
2. Using the handle, push the cable connector in place.
3. Repeat the process for the other system unit.



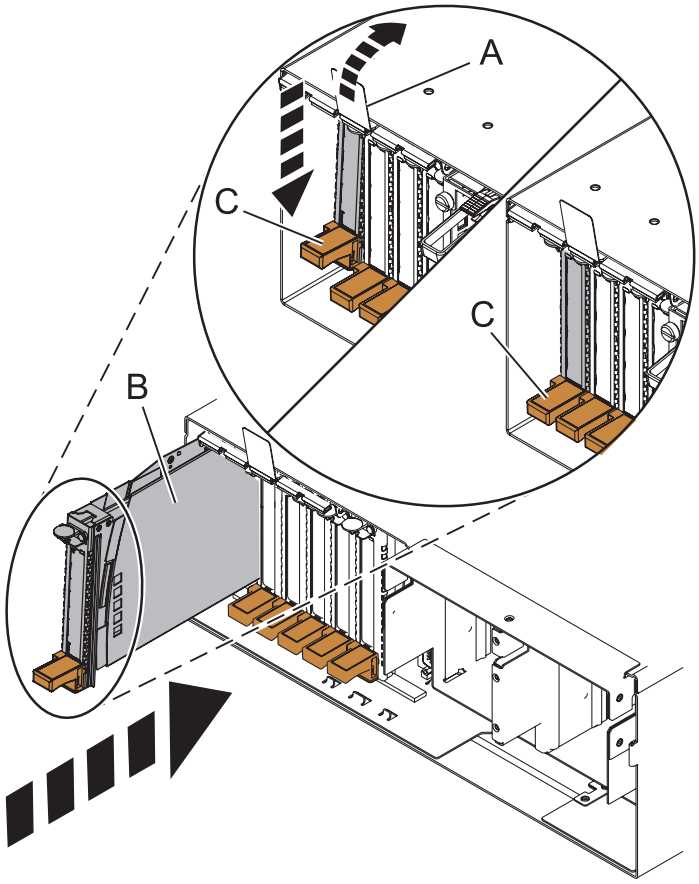
34. Install the RIO/HSL adapter card

1. Push the card into its slot.
2. Push the handle **(B)** up and toward the system until the handle stops against the adapter card.
3. Rotate the thumbscrew **(A)** clockwise to fasten the card.
4. Repeat these steps to install a second NIC card if necessary.



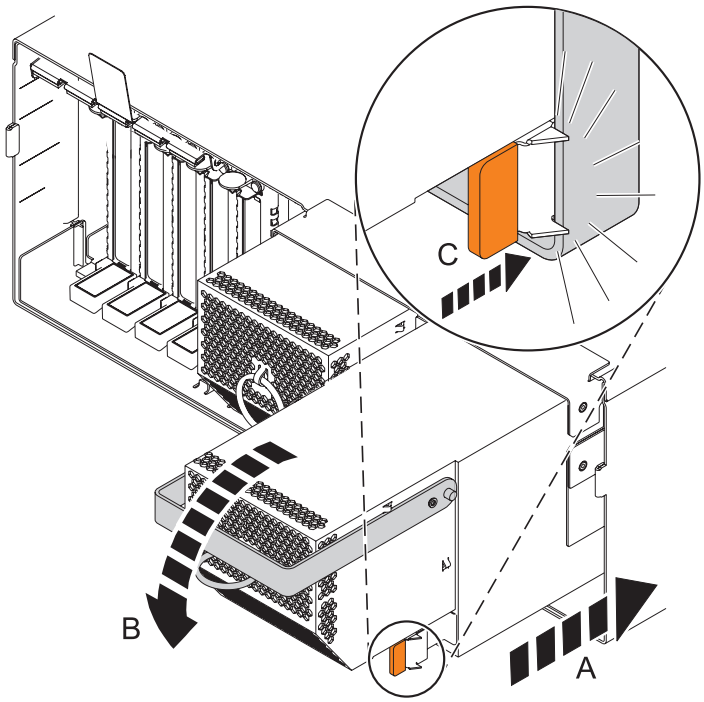
35. Install all PCI Adapter Cards

1. At the back of the system, identify the cassette slot you want to use.
2. Ensure that the cassette handle is in the open position.
3. Lift and hold the PCI adapter EMC shield **(A)** in the open position.
4. Slide the cassette **(B)** into the cassette slot as shown.
5. When the cassette is fully inserted into the system, firmly press downward on the lower cassette handle **(C)**.
6. Lower the PCI adapter EMC shield into the closed position.
7. Repeat these steps until all PCI adapter cards or PCI adapter fillers in slots C1 through C5 have been installed.
8. Install all previously removed PCI cables to the rear of the system.



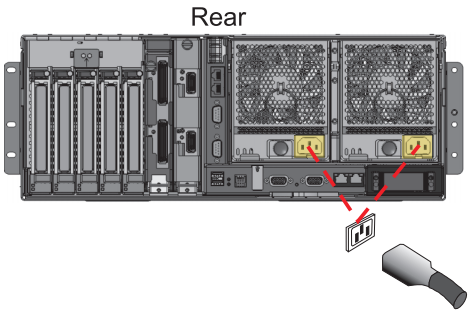
36. Install both power supplies

1. With the handle and latch in the open position, place the power supply in the power supply bay **(A)**.
2. Push the power supply completely into the power supply bay.
3. Close the handle **(B)**, and then push the handle latch into the closed position **(C)**.
4. Repeat these steps until both power supplies are installed.



37. Connect both power cords

Connect BOTH power cords to the enclosure.



38. 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.

39. Set System Enclosure Type

The enclosure serial number is stored in the I/O backplane. When an I/O backplane is replaced, the seven digit serial number printed on a bar-coded label on the system unit, needs to be manually inputted and stored in the new I/O backplane using ASMI.

Note: To perform this operation, your authority level must be Authorized Service Provider (ID: celogin).

To input the enclosure serial number:

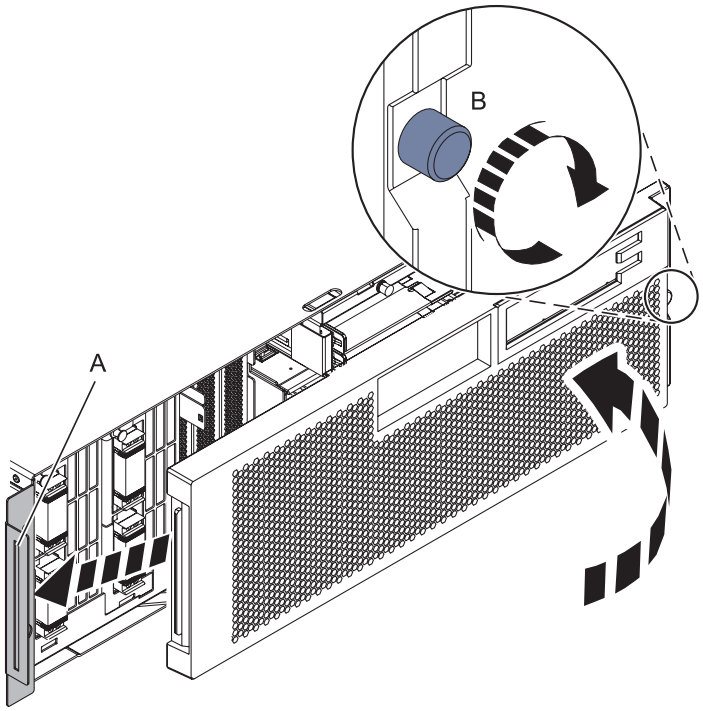
1. On the ASMI Welcome pane, specify your user ID and password, and click ″Log In″.
2. In the navigation area, expand ″System Configuration″ and ″Program Vital Product Data″.
3. Select ″System Enclosures″. In the right pane, the current system enclosures are displayed.
4. On the system being serviced, 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.

40. Close the back rack door

Close the back rack door.

41. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.

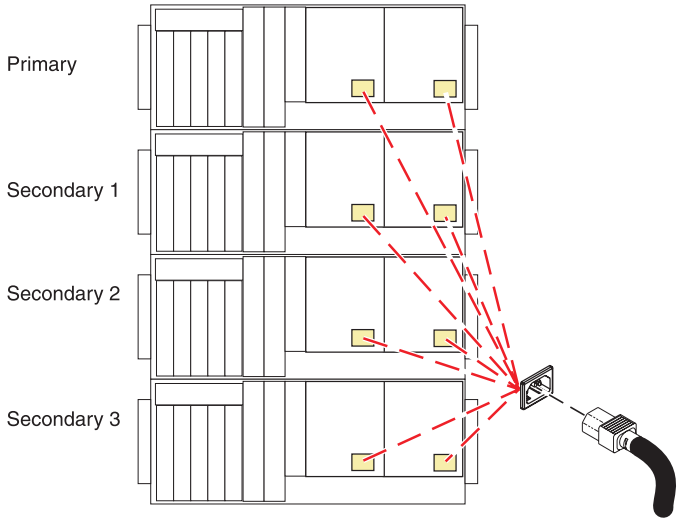


42. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



43. Verify the repair

Go to Verifying a repair.

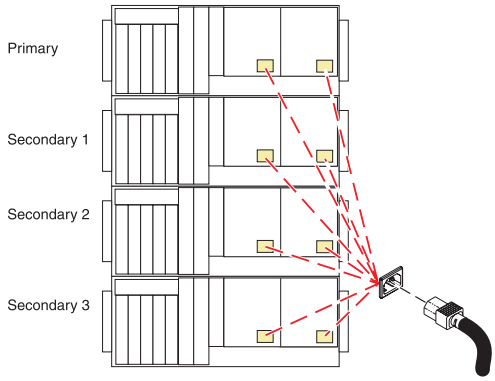
Media device enclosure

Use this procedure to service the media device enclosure.

1. **Do not power off the system and remove the power cords:**

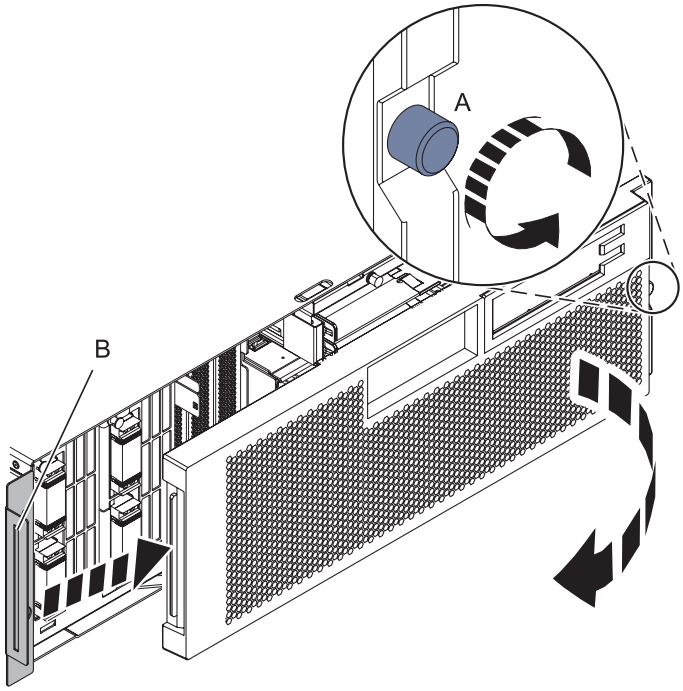
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



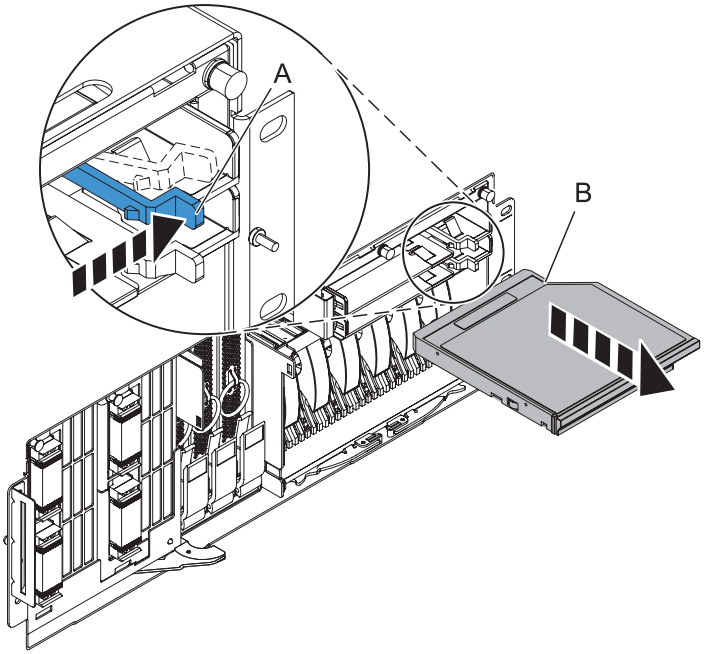
2. Remove the Front Cover

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)**.



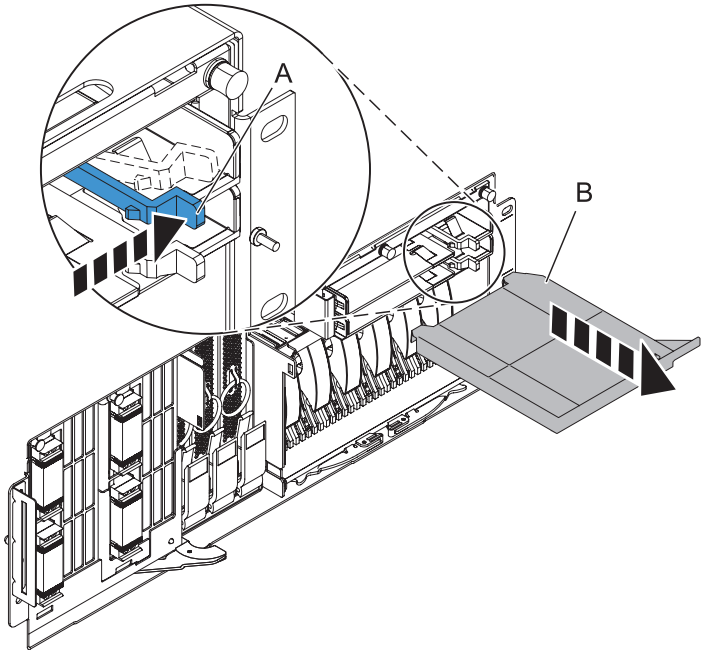
3. Remove the removable media device

If there is a media device present in the media-device enclosure, while pushing out on the blue plastic retaining tab **(A)**, pull the device **(B)** out of the system unit. Repeat this step if more than one media device is present in the media-device enclosure.



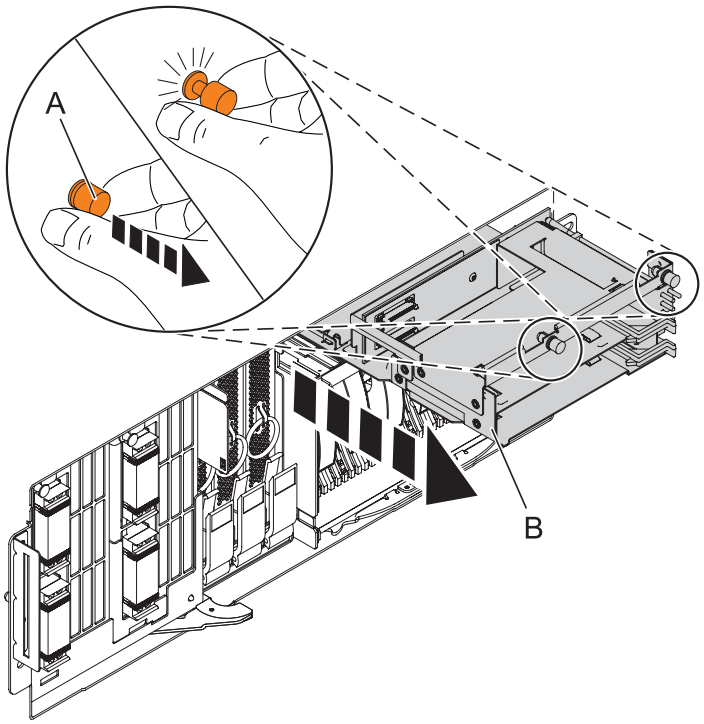
4. **Remove the filler panel**

If there is a filler panel present in the media-device enclosure, while pushing out on the blue plastic retaining tab **(A)**, pull the filler panel **(B)** out of the system unit. Repeat this step if more than one filler panel is present in the media-device enclosure.



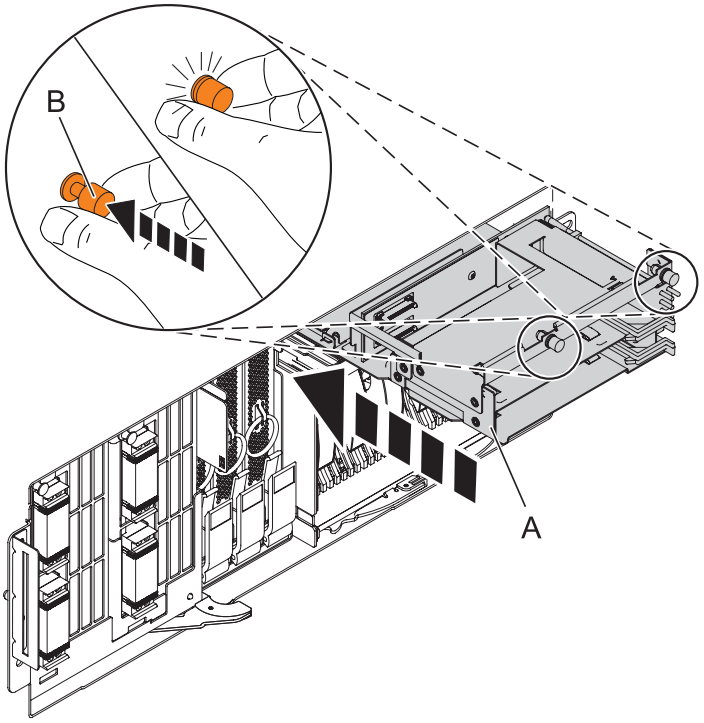
5. **Remove the Media Device Enclosure**

1. Pull the two terra-cotta locking knobs **(A)** out until they unlock.
2. Pull the enclosure **(B)** out of the system chassis.



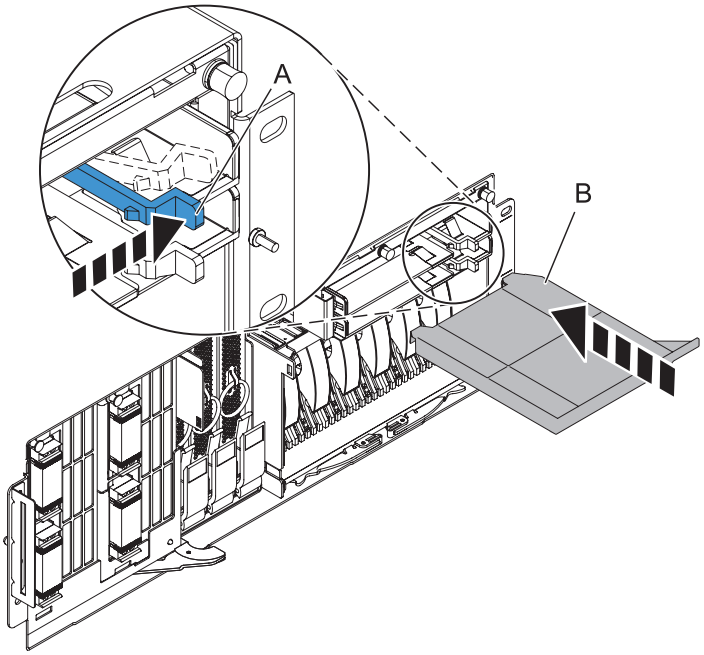
6. Install the new media device enclosure

1. Align the media device enclosure with the chassis opening.
2. Push the media device enclosure **(A)** into place, then push the two terra-cotta locking knobs **(B)** into the locked position.



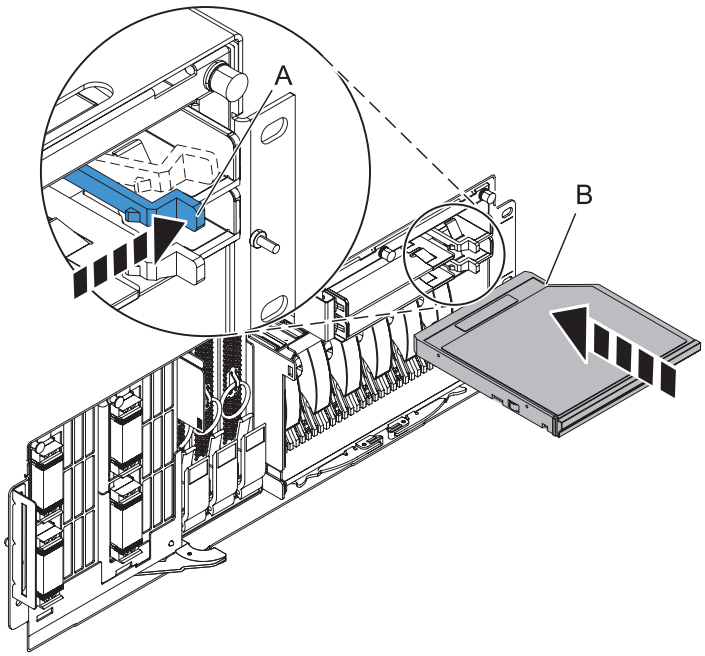
7. Install the filler panel

If there was a filler panel present in the media-device enclosure, while pushing out on the blue plastic retaining tab **(A)**, push the filler panel **(B)** fully into the system. Repeat this step if more than one filler panel was present in the media-device enclosure.



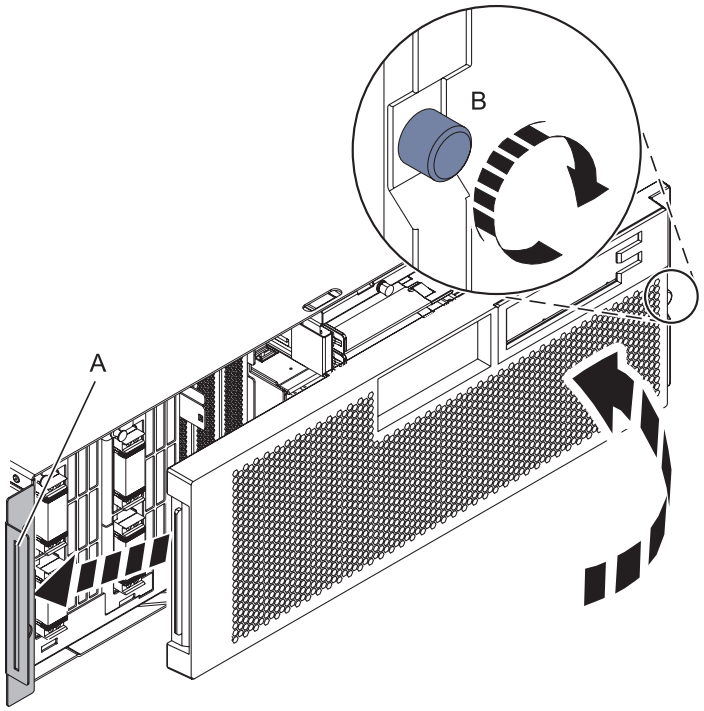
8. **Install the removable media device**

If there was a media device present in the media-device enclosure, while pushing out on the blue plastic retaining tab **(A)**, push the device **(B)** fully into the system. Repeat this step if more than one media device was present in the media-device enclosure.



9. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.

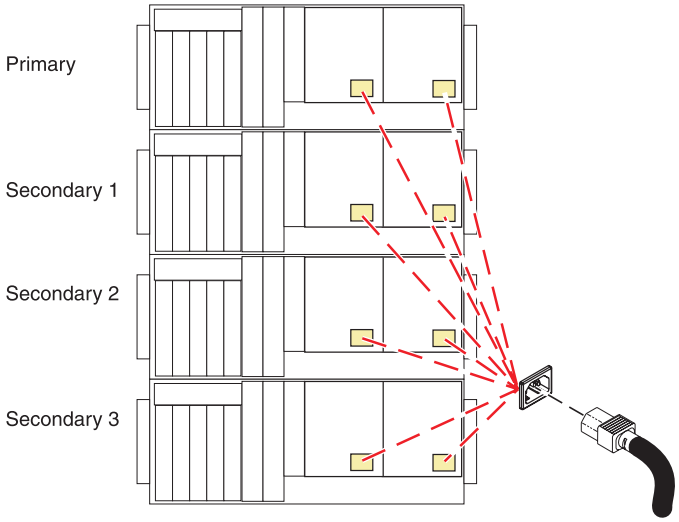


10. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



11. Verify the repair

Go to Verifying a repair.

Memory DIMM

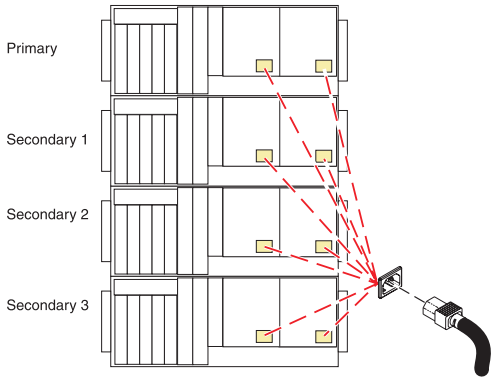
Use this procedure to service the memory DIMM.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the memory DIMM from the server. For instructions, see Exchanging a part using the Hardware Management Console.

1. **Do not power off the system and remove the power cords:**

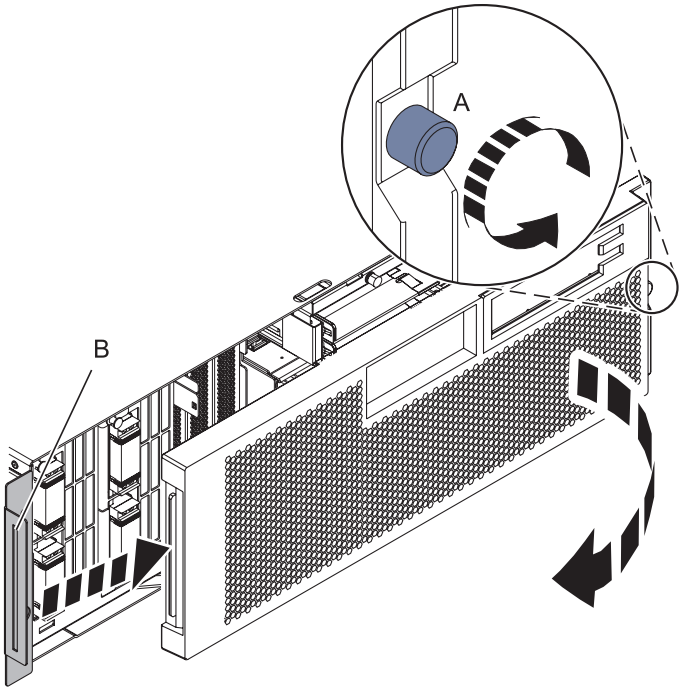
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



2. Remove the Front Cover

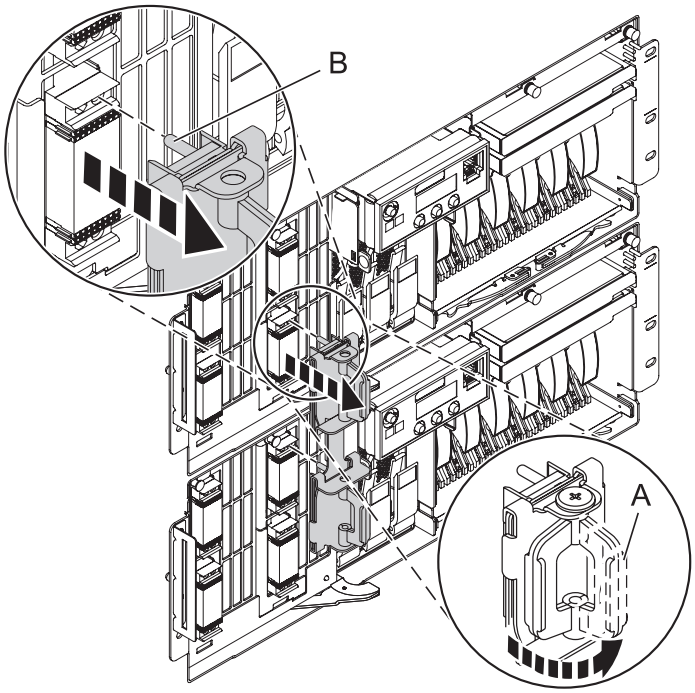
1. Open the front rack door.
2. Loosen the thumbscrew **(A)** on the right side of the cover.
3. Slide the cover to the right and remove it from the system unit slot **(B)**.



3. Disconnect the SMP Cable

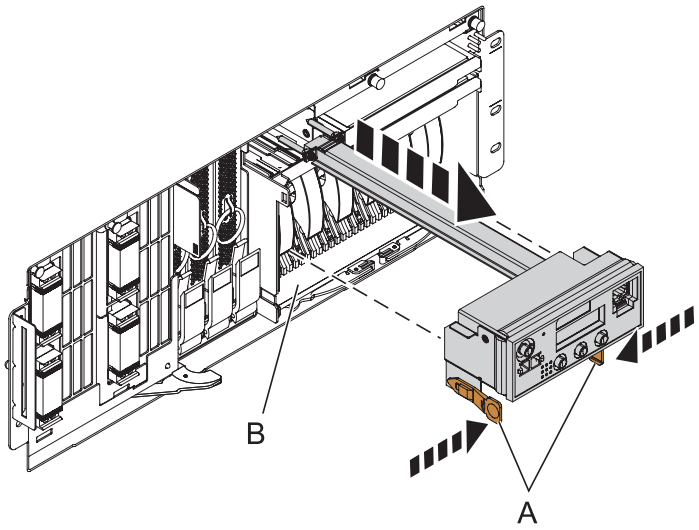
1. Carefully pull the handle **(A)** from the system until the connector is unseated.
2. When the guide pins **(B)** are free, carefully pull the SMP processor cable away from the system unit.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



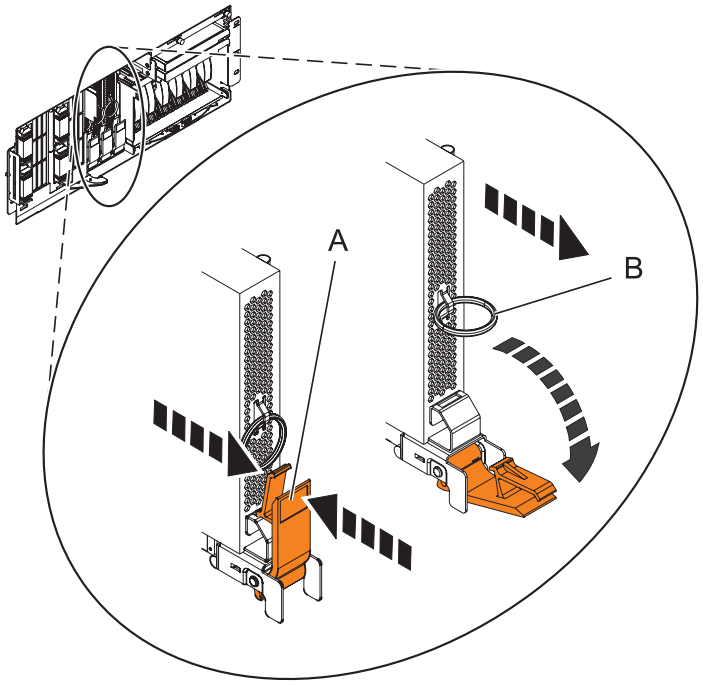
4. Remove the Control Panel or Control Panel Filler

In the enclosure you are servicing, remove the control panel or, if present, the control panel filler, by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges, and pulling it out of its bay **(B)**.



5. Remove the Voltage Regulator Assemblies

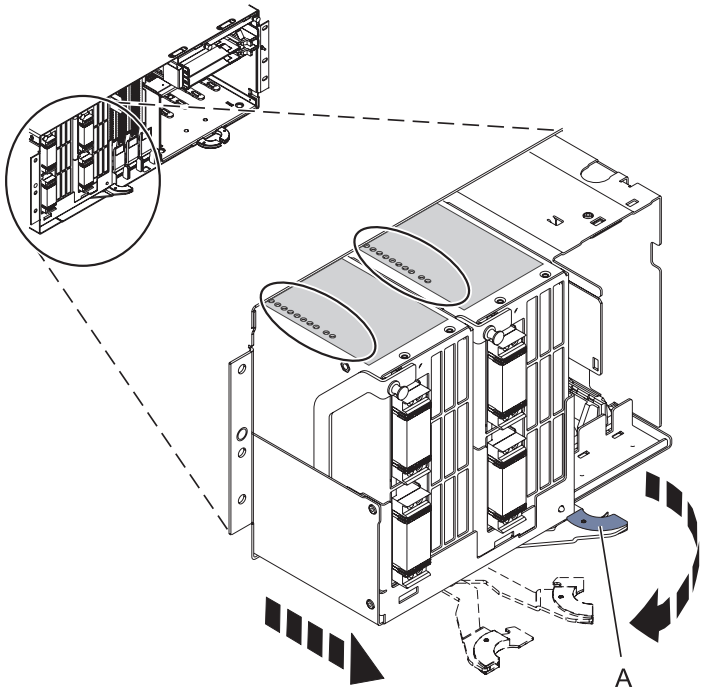
1. Squeeze the top of the latch **(A)** to release it, then rotate the latch out and then down.
2. Grasp the pull ring **(B)** and slowly pull the voltage regulator out of the enclosure. **NOTE:** Pulling the voltage regulator assembly out of the card enclosure requires a large amount of force. The voltage regulator assembly is of substantial weight, so grasp it firmly when it is free of the card enclosure.
3. Repeat these steps until all voltage regulator assemblies have been removed.



6. Remove the System Backplane Assembly

Note: A shipping support clamp has been installed on your server. Removal is not required. This clamp will not interfere with the drawer front covers or machine operation. If removed, store for re-use when the server is relocated.

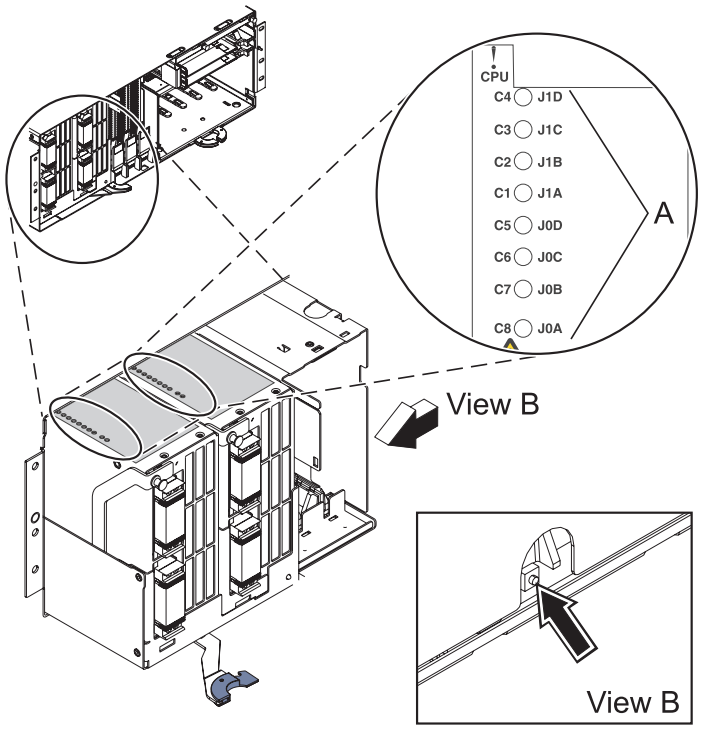
1. Push the blue lever to the left and out from the system **(A)** to unlock the system backplane assembly.
2. Pull the system backplane assembly out of the system using both hands. **ATTENTION:** The system backplane assembly weighs 35 lbs and should not be pulled out using the blue lever. Grasp the backplane assembly firmly with both hands when it is free of the system.



7. Identify the Failing DIMM

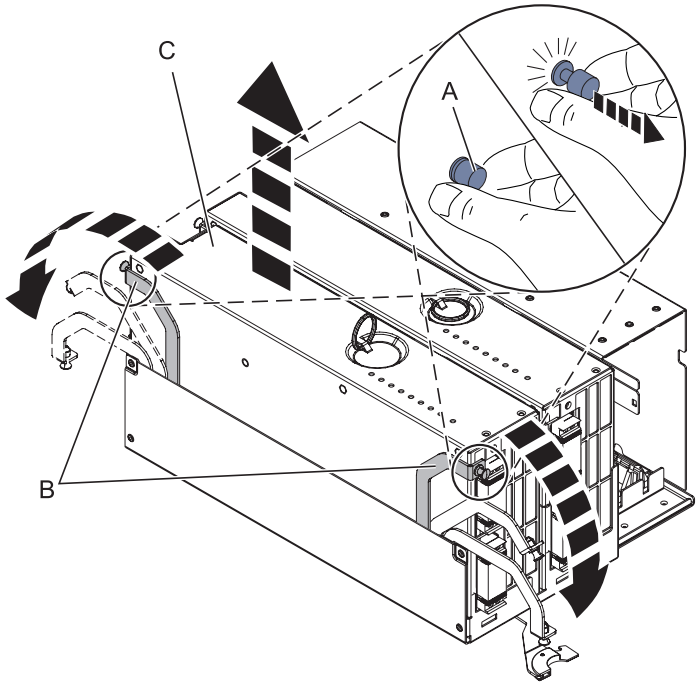
If you are removing the DIMMs because of a system failure, look at the LEDs **(A)** located on top of the system processor assemblies to identify the location of the failing DIMMs. To illuminate the location LED for the failing DIMM, press the LED actuator button **(B)**.

ATTENTION: The actuator button must be used within 20 minutes after the system backplane assembly is removed from the system. The assembly retains the energy to light the LEDs for 40 seconds after the actuator button has been pressed.



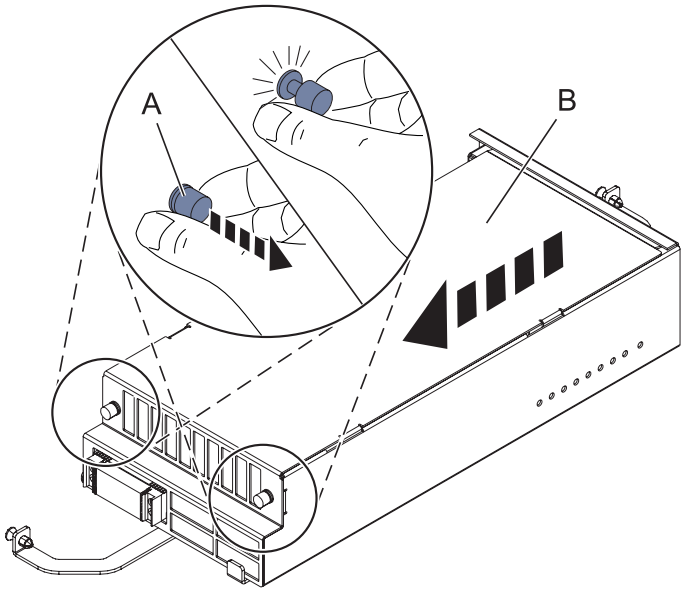
8. Remove the System Processor Assembly

1. Remove the processor alignment face plate.
2. Pull the locking knobs **(A)** out to the unlocked position.
3. Push the locking arms **(B)** down and out to unlock the processor card assembly.
4. Lift the processor card assembly **(C)** out of the system backplane assembly.



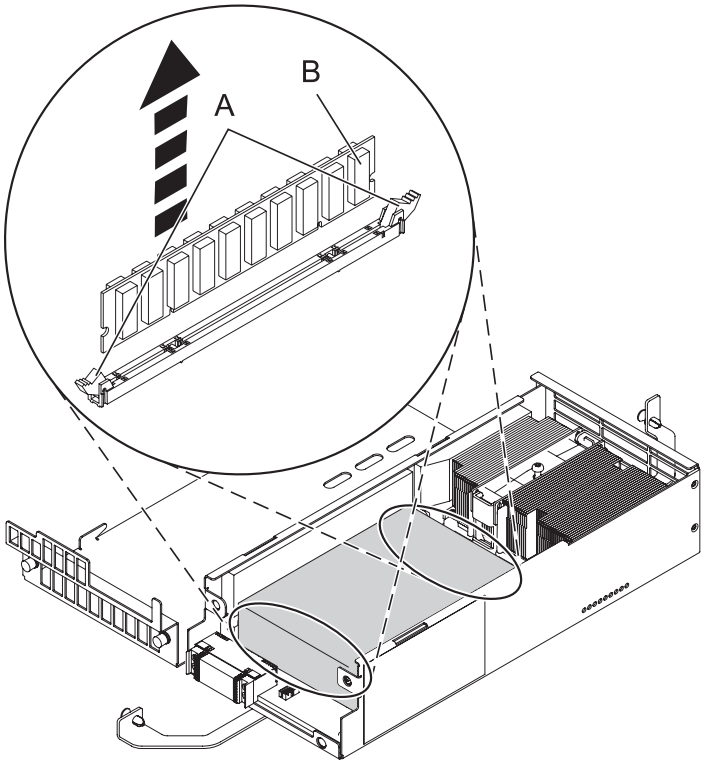
9. Remove the System Processor Assembly Cover

1. Unlock the two retaining knobs **(A)** on the system processor assembly.
2. Slide the cover **(B)** back.
3. Lift the cover off of the assembly.



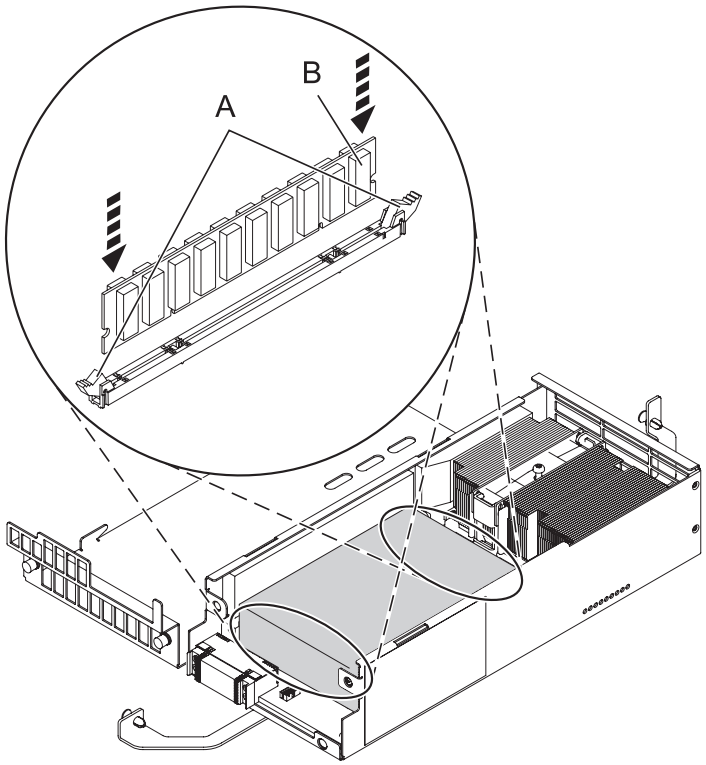
10. Remove the Memory DIMM

1. Remove the mylar cover, if installed, that is covering the memory DIMMs.
2. Locate the memory DIMM you want to remove.
3. Unlock the memory DIMM by pushing the connector tabs **(A)** out and then down. The tabs' lever action forces the memory DIMM **(B)** out of the connector.
4. Lift the memory DIMM out of the connector.



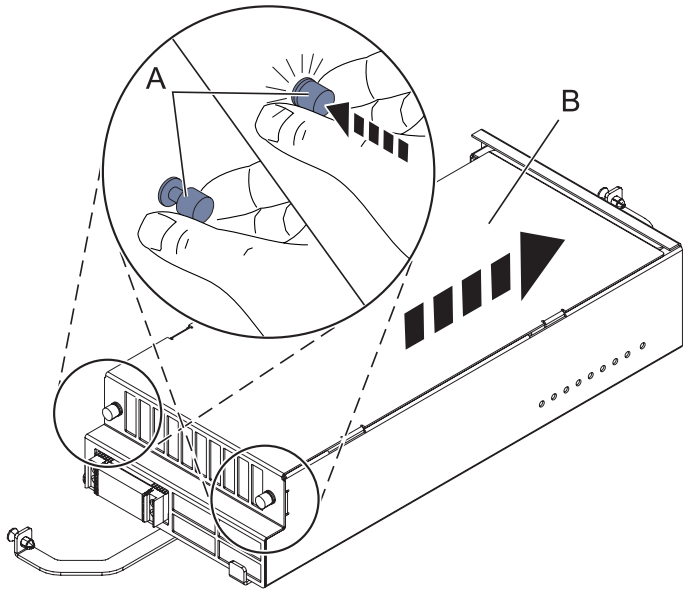
11. Install the Memory DIMM

1. Ensure that the connector locking tabs **(A)** are pushed out into the unlocked position before installing a new memory DIMM.
2. Carefully grasp the memory DIMM **(B)** along two edges and align it with the connector. **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.
3. Push the memory DIMM firmly into the connector until the connector locking tabs engage.
4. If you are installing any Tall DIMMs, place the mylar cover over the DIMMs in the processor card to prevent the DIMMs from contacting the lid. **NOTE:** If you replace Tall DIMMs with regular-sized modules, remove the mylar cover. Failing to remove the mylar cover might restrict airflow in the unit.



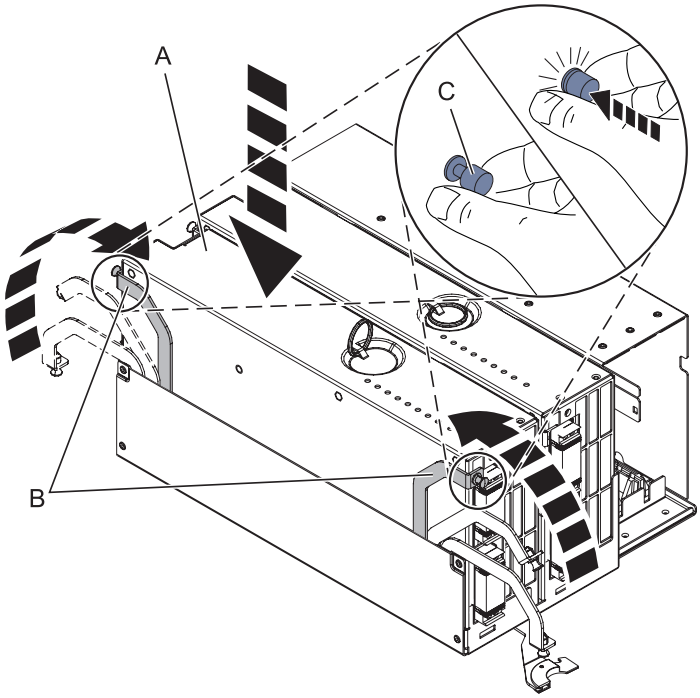
12. Install the System Processor Assembly Cover

1. Place the cover **(B)** on the system processor assembly.
2. Lock the two retention knobs **(A)**.



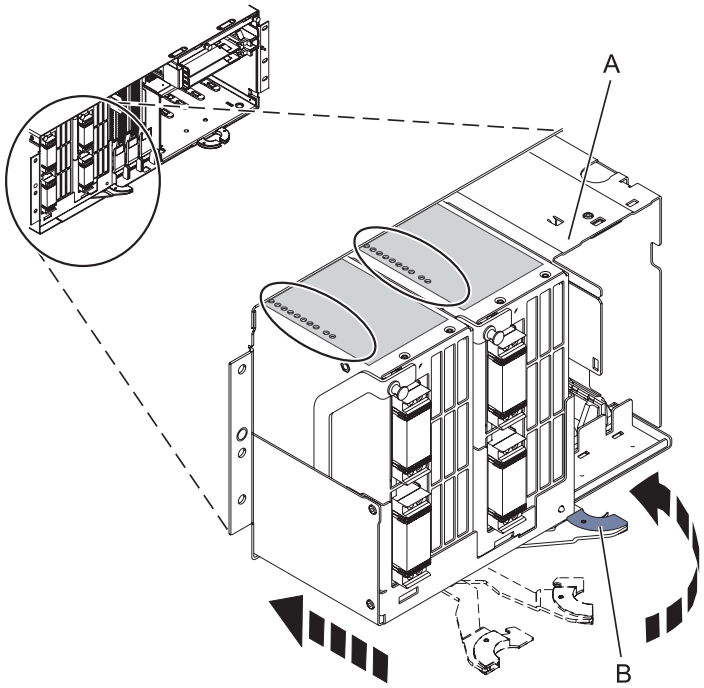
13. Install the System Processor Assembly

1. Place the processor assembly **(A)** into the system backplane assembly, and then lock it into place with the locking arms **(B)**.
2. Press the locking knobs **(C)** in to the locked position.
3. Install the processor alignment face plate.



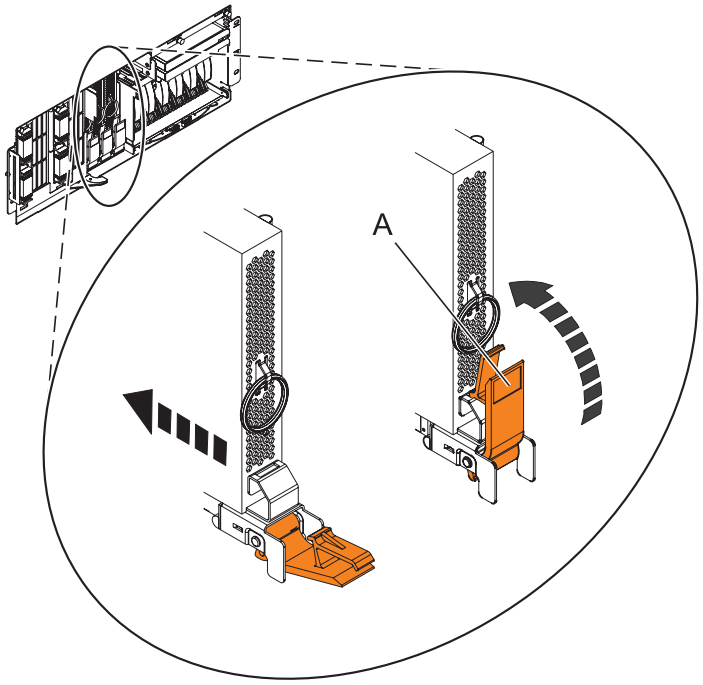
14. Install the System Backplane Assembly

1. Align the system backplane assembly with the slot in the system.
2. Slide the system backplane assembly into the system **(A)**.
3. Push the blue lever **(B)** to the right and in toward the system to lock the system backplane assembly.



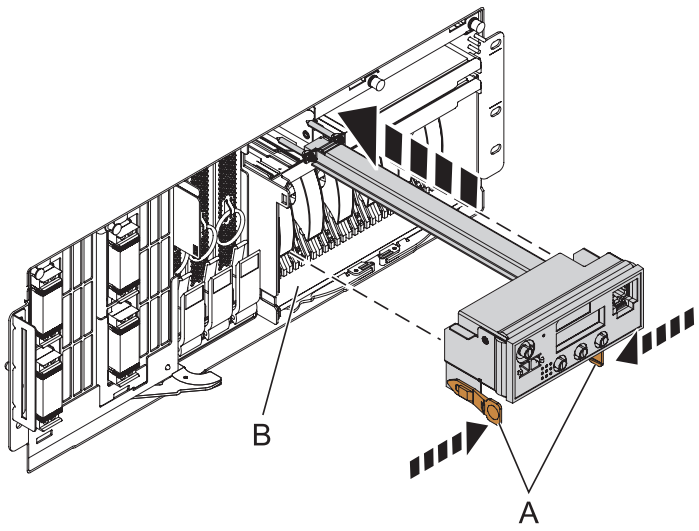
15. Install the Voltage Regulator Assemblies

1. Ensure that the voltage regulator assembly latch **(A)** is rotated out and down into the unlocked position.
2. Carefully grasp the voltage regulator assembly and slide it into the enclosure.
3. When the voltage regulator assembly is all the way into the card enclosure, rotate the latch **(A)** up into the locked position.
4. Repeat these steps until all voltage regulator assemblies have been installed.



16. Install the Control Panel or Control Panel Filler

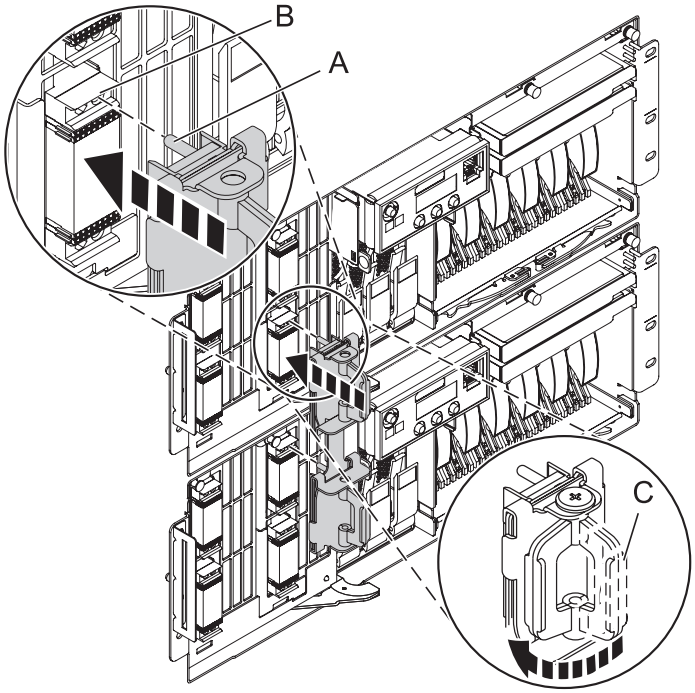
In the enclosure you are servicing, carefully slide the control panel or, if present, the control panel filler, into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



17. Connect SMP Cable

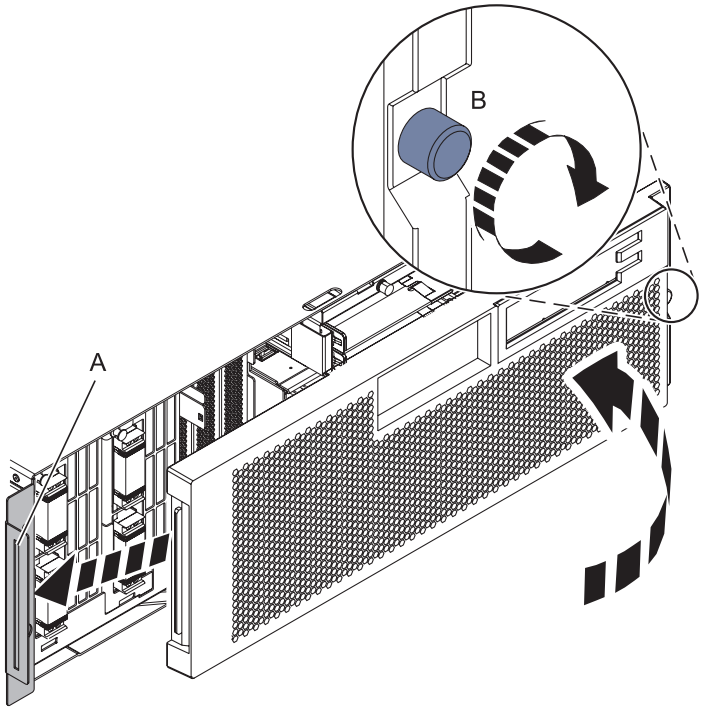
1. Align the guide pins **(A)** with the connectors **(B)** on the system unit.
2. Using the handle **(C)**, carefully push the SMP processor cable into the system unit connector.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



18. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.

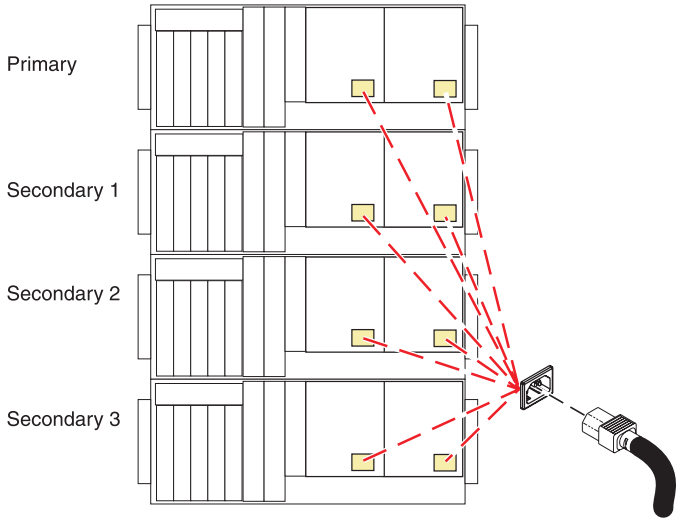


19. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



20. Verify the repair

Go to Verifying a repair.

RIO/HSL adapter and 12X host channel adapter

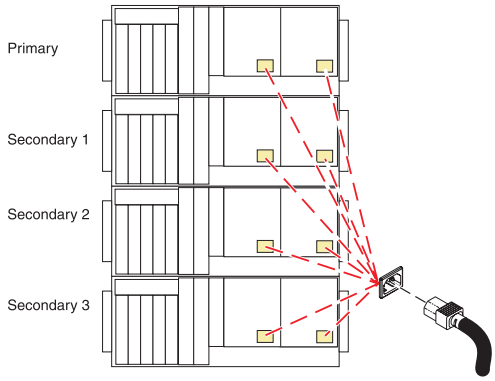
Use this procedure to service the RIO/HSL adapter or the 12X host channel adapter.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the RIO/HSL adapter and 12X host channel adapter from the server. For instructions, see Exchanging a part using the Hardware Management Console.

1. Do not power off the system and remove the power cords:

Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.

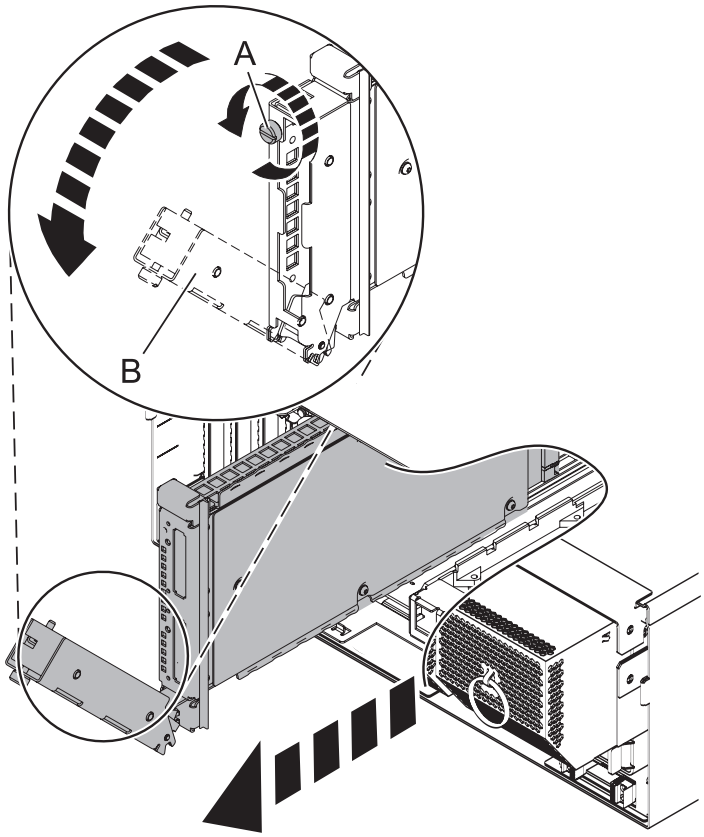


2. Open the back rack door

Open the back rack door.

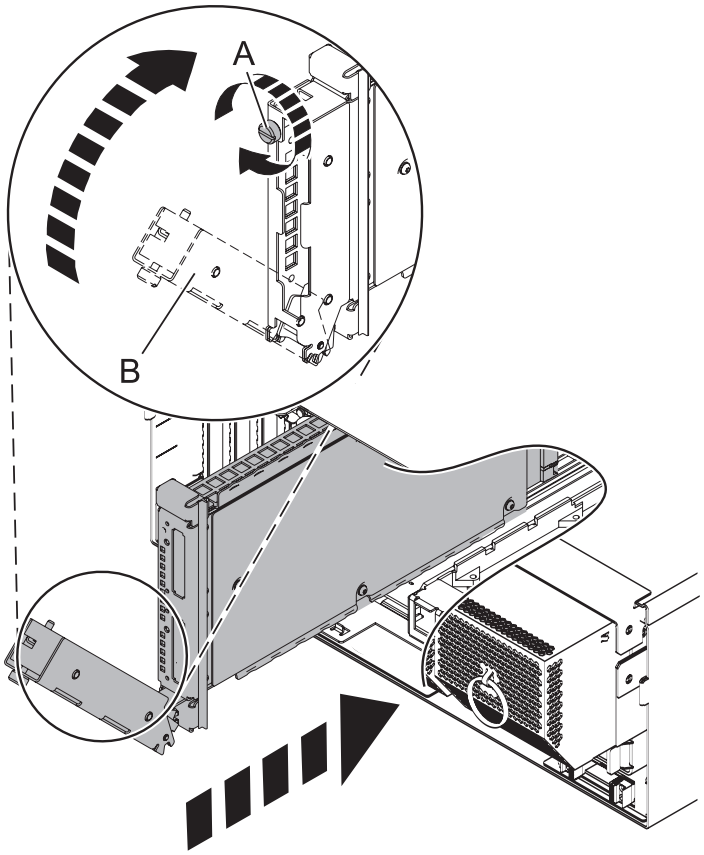
3. Remove the RIO/HSL Adapter Card

1. Label and Remove all RIO/HSL cables from the rear of the system.
2. Rotate the thumbscrew **(A)** counterclockwise to unfasten the card.
3. Pull the handle **(B)** down.
4. Pull the card from its slot.



4. Install the new RIO/HSL adapter

1. Push the card into its slot.
2. Push the handle **(B)** up and toward the system until the handle stops against the adapter card.
3. Rotate the thumbscrew **(A)** clockwise to fasten the card.
4. Connect the RIO/HSL cables to the card.



5. Close the back rack door

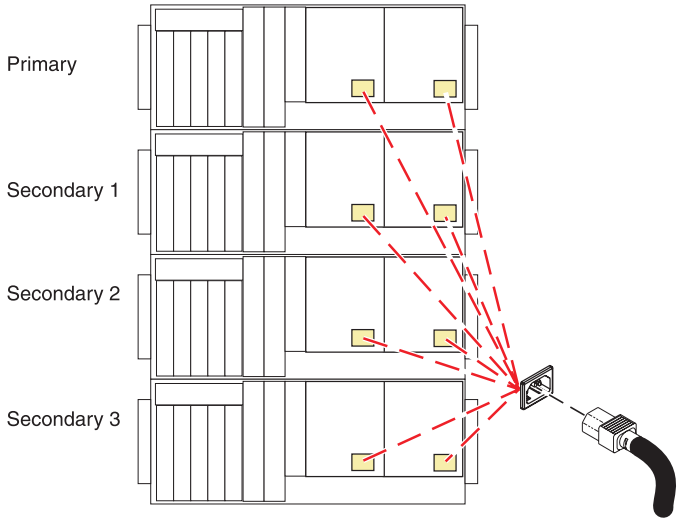
Close the back rack door.

6. **Install the power cords**

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



7. **Verify the repair**

Go to Verifying a repair.

PCI adapter

Use this procedure to service a PCI adapter.

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

1. **Choose concurrent or nonconcurrent repair.**

You may service a PCI adapter concurrently or nonconcurrently.

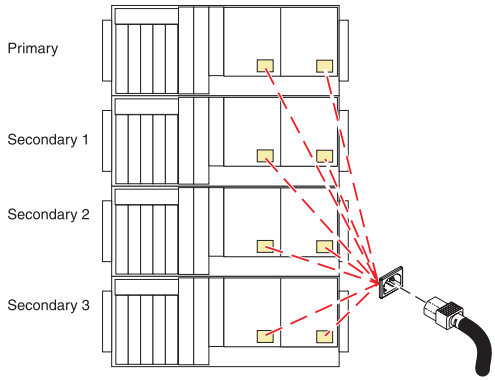
Will you be doing a concurrent repair?

No	**Yes**
↓	Go to Verify a repair.

2. Do not power off the system and remove the power cords:

Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.

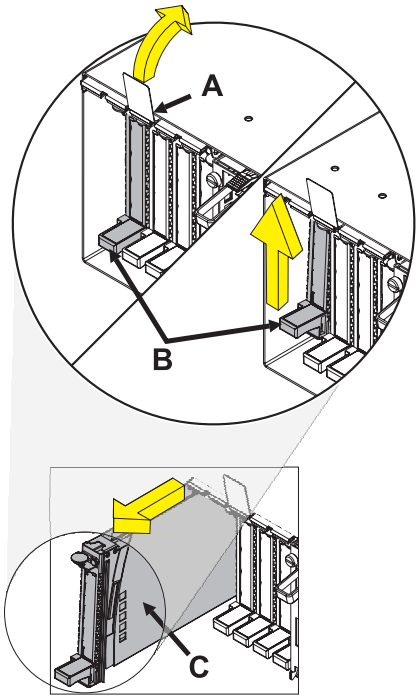


3. Open the back rack door

Open the back rack door.

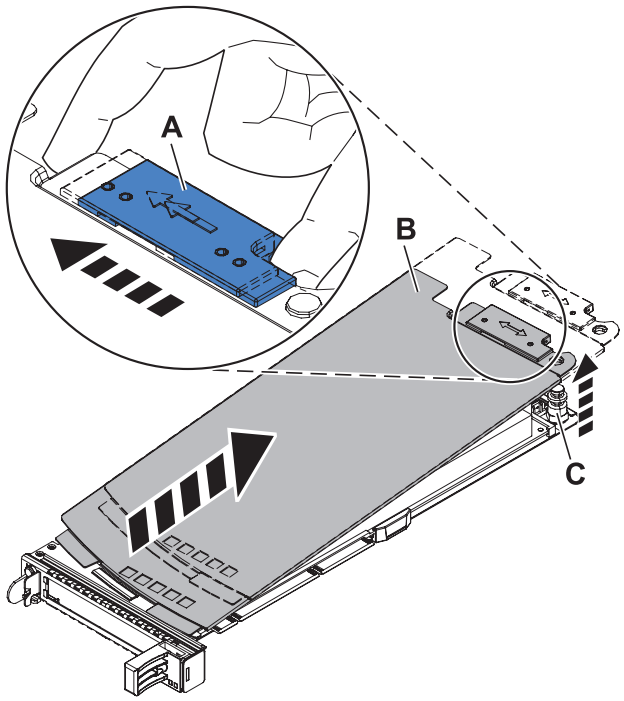
4. Remove the PCI card

1. Lift and hold the PCI adapter EMC shield **(A)** in the open position.
2. Lift the lower cassette handle up **(B)** as shown.
3. Pull the PCI cassette **(C)** out of the system unit.
4. Lower the PCI adapter EMC shield into the closed position.
5. Set the cassette aside with the cover facing up.



5. Remove the PCI card cassette cover

1. Slide the cover latch **(A)** to disengage it from the pivot pin **(C)**.
2. Lift the cover **(B)** off of the pivot pin.
3. Slide the cover off of the cassette.
4. If servicing a double-wide cassette, unscrew pivot pin **(C)** and put it in a safe place.



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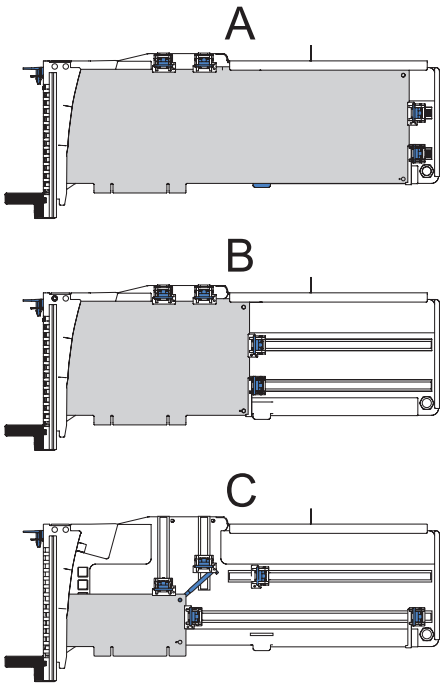
6. Select PCI adapter type

Select PCI Adapter type

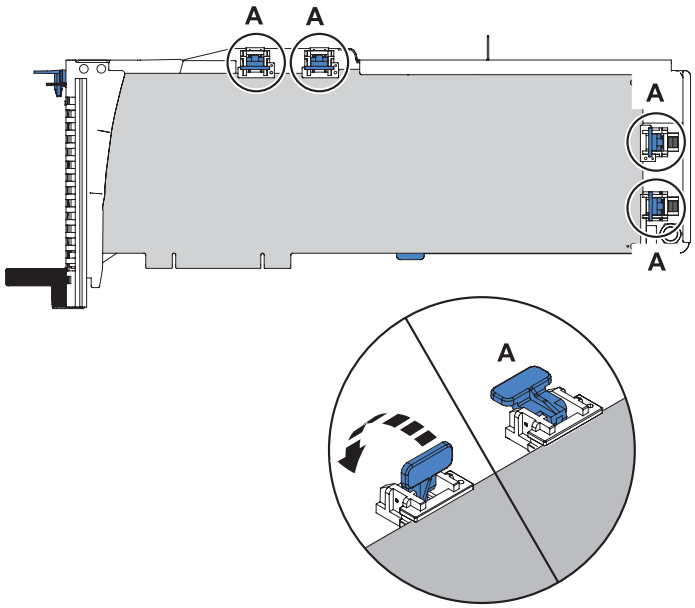


Select the type of PCI adapter being serviced:

Long adapter (A)	Medium adapter (B)	Short adapter (C)
↓	Go to step 8 on page 141.	Go to step 9 on page 142.

7. Remove the long adapter

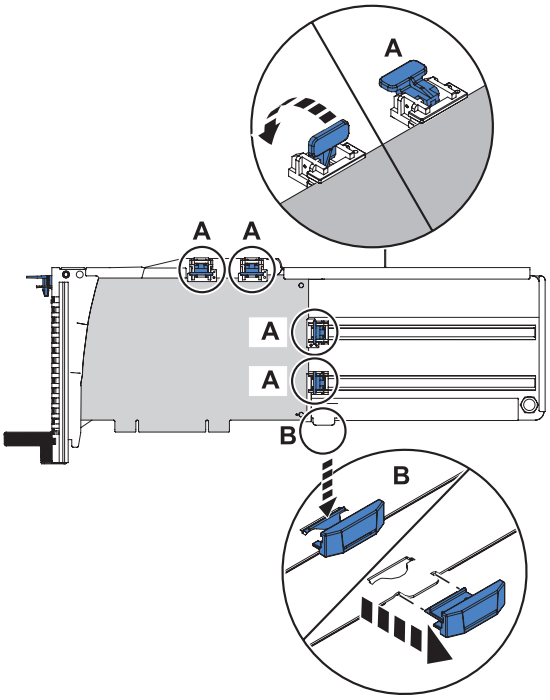
Unlock the retainers **(A)** by rotating them away from the card.



Go to step 10 on page 143.

8. Remove the medium adapter

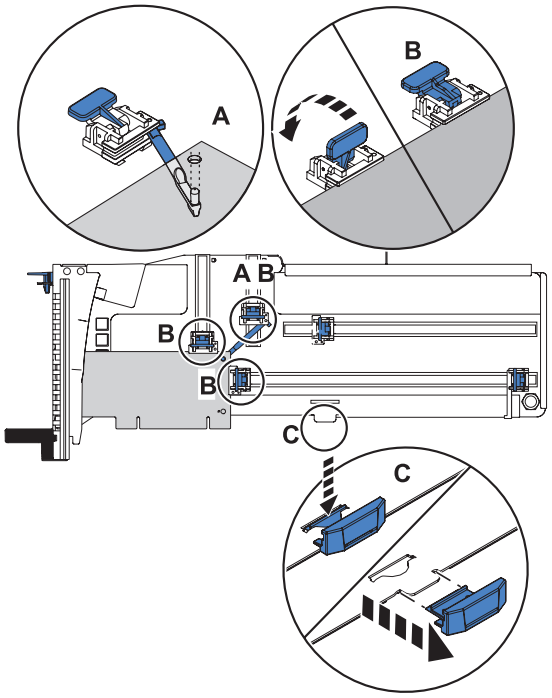
1. Unlock the retainers **(A)** and slide them away from the card.
2. Remove the adapter stabilizer **(B)**.



Go to step 10 on page 143.

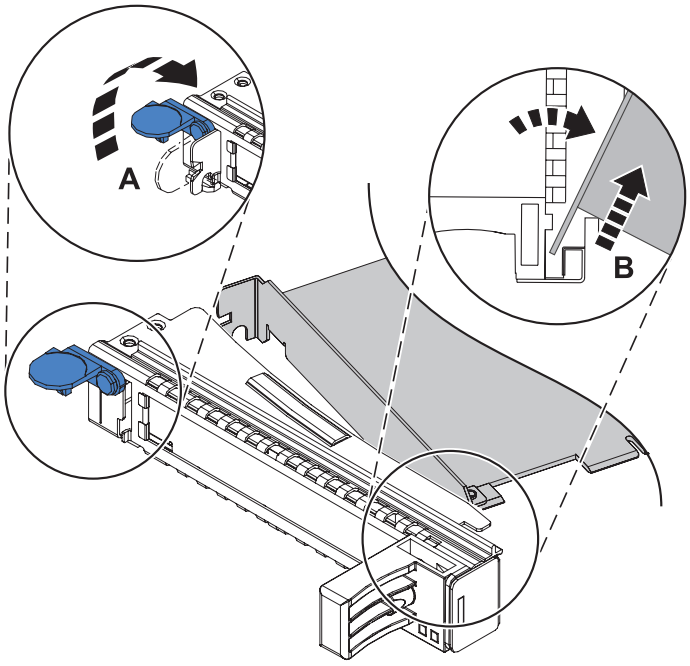
9. Remove the short adapter

1. Remove the hookarm **(A)** from the hole in the corner of the adapter.
2. Unlock the retainers **(B)** and slide them away from the card.
3. Remove the adapter stabilizer **(C)**.



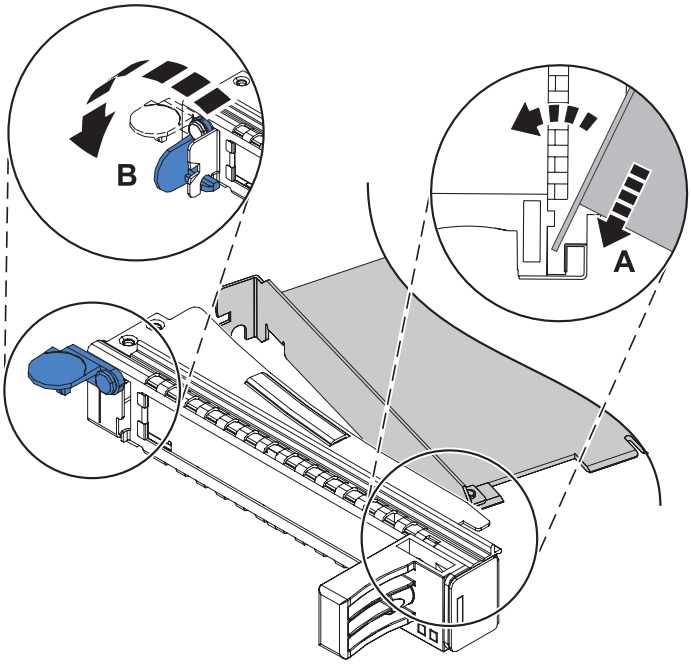
10. Remove the adapter from the cassette

1. Unlock the tailstock clamp **(A)** by rotating it into the open position.
2. Rotate the adapter out of the cassette by grasping the edge of the adapter opposite the tailstock, then firmly rotate the adapter towards the bottom of the cassette.
3. Pull the adapter out of the tailstock retaining channel **(B)**.
4. Put the adapter in a safe place.



11. Install the PCI card

1. With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **(A)**.
2. Rotate the adapter towards the top of the cassette and into place.
3. Position the adapter retainers to support the adapter, then rotate the tailstock clamp **(B)** into the closed position.



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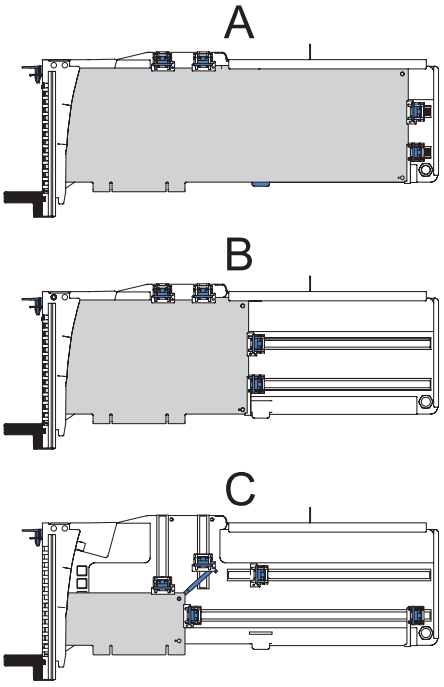
12. Select PCI adapter type

Select PCI Adapter type

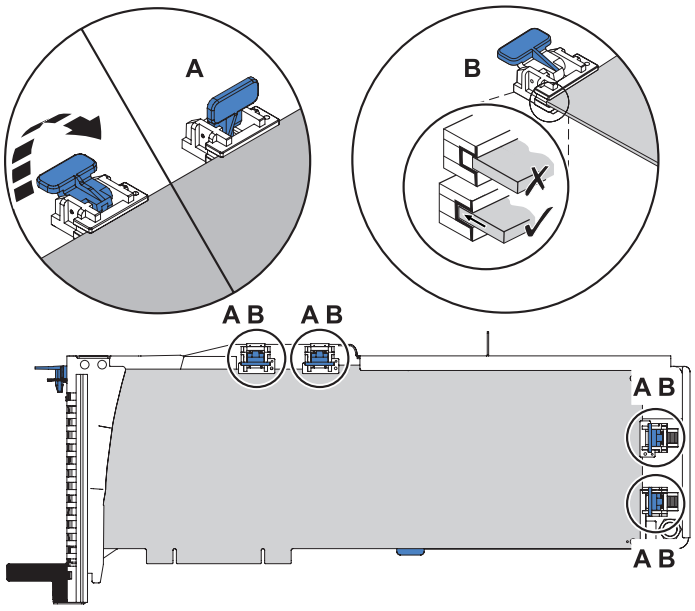


Select the type of PCI adapter being serviced:

Long adapter (A)	Medium adapter (B)	Short adapter (C)
↓	Go to step 14 on page 146.	Go to step 15 on page 147.

13. Install the long adapter

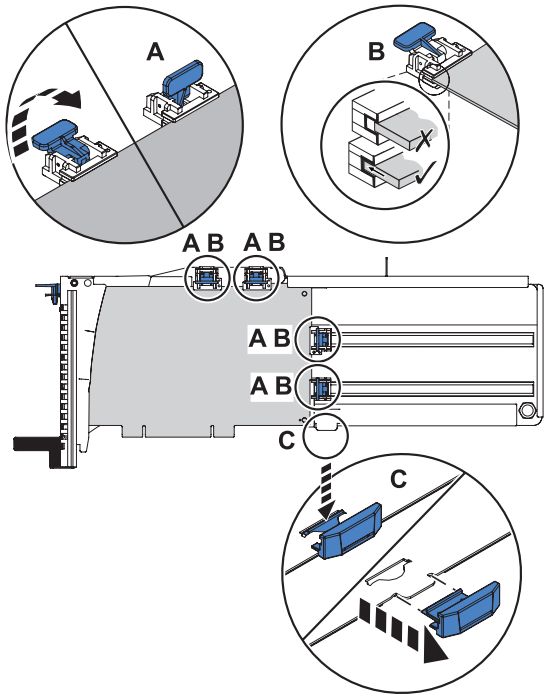
1. Place and lock the retainers **(A)**. **Attention:** Use of the lower corner support retainer may inhibit the docking of the PCI card when positioned within the system unit. Ensure the retainer does not interfere with the adapter connectors on the system backplane.
2. Ensure the adapter edge **(B)** is seated in each retainer groove.



Go to step 16 on page 148.

14. Install the medium adapter

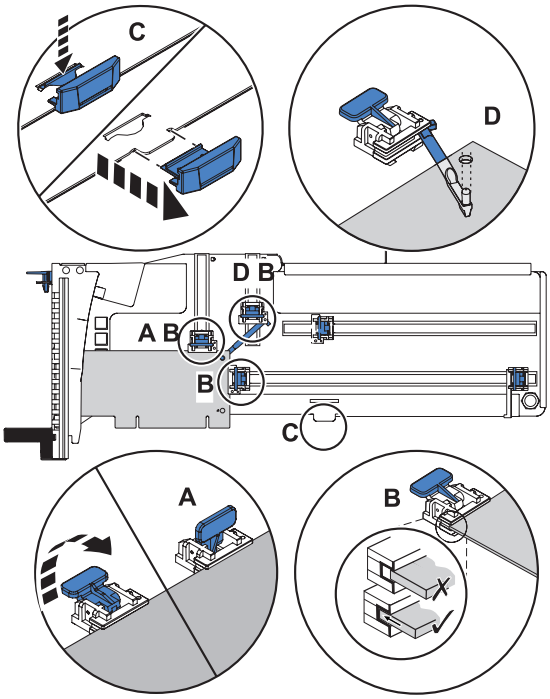
1. Remove the adapter stabilizer **(C)**.
2. Place and lock the retainers **(A)**.
3. Ensure the adapter edge **(B)** is seated in each retainer groove.



Go to step 16 on page 148.

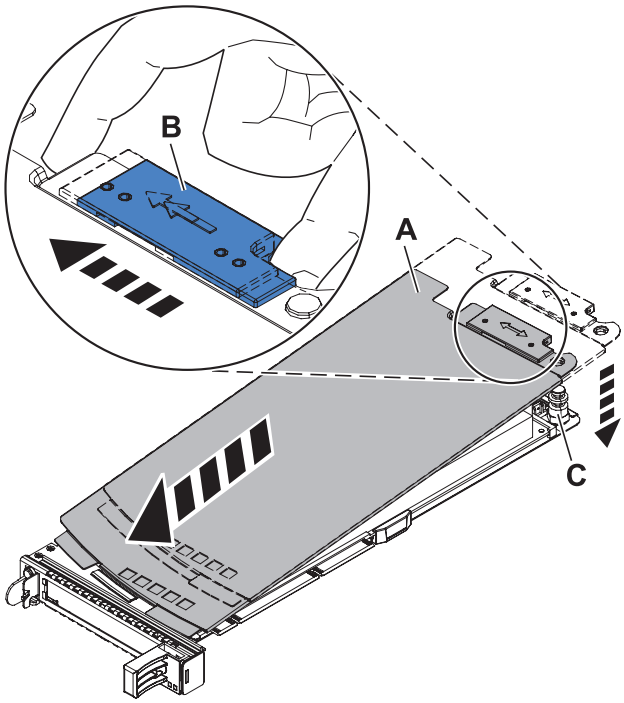
15. Install the short adapter

1. Remove the adapter stabilizer **(C)**.
2. Place the hookarm **(D)** into the hole in the corner of the adapter. This supports the card when it is undocked from the connector on the system backplane.
3. Place and lock the retainers **(A)**.
4. Ensure the adapter edge **(B)** is seated in each retainer groove.



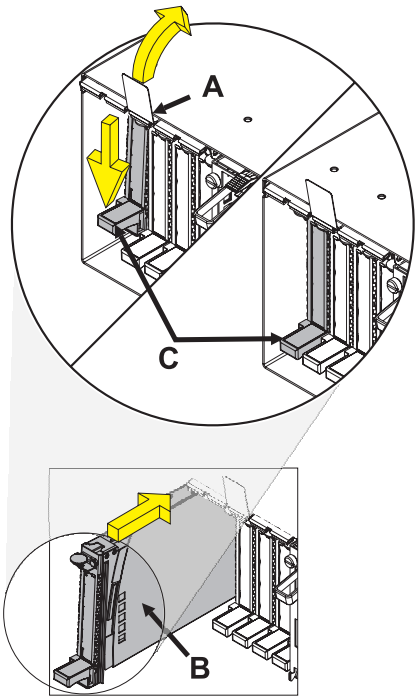
16. Replace the cassette cover

1. If servicing a double-wide cassette, screw pivot pin **(C)** into place.
2. Slide the cover **(A)** into position on the cassette.
3. While holding the cover latch **(B)** in the open position, place the cover over the pivot pin **(C)**.
4. Release the cover latch to lock the cover into place.



17. Install the cassette adapter

1. At the back of the system, identify the cassette slot you want to use.
2. Ensure the cassette handle is in the open position.
3. Lift and hold the PCI adapter EMC shield **(A)** in the open position.
4. Slide the cassette **(B)** into the cassette slot as shown.
5. When the cassette is fully inserted into the system, firmly press downward on the lower cassette handle **(C)**.
6. Lower the PCI adapter EMC shield into the closed position.



18. Close the back rack door

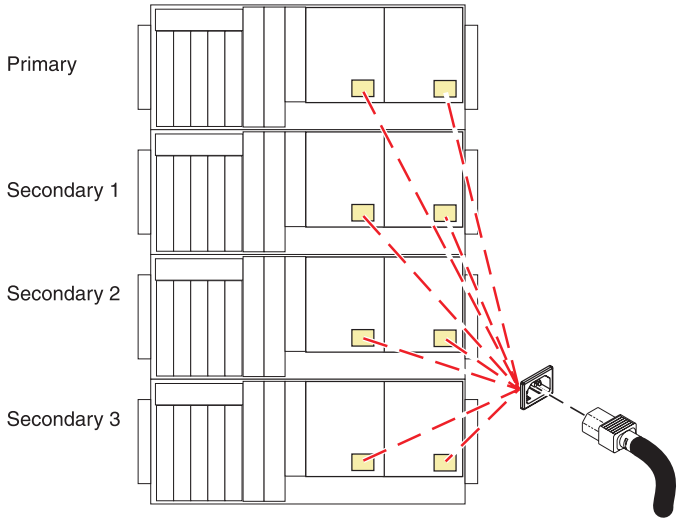
Close the back rack door.

19. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



20. Verify the repair

Go to Verifying a repair.

If you are doing a concurrent repair using AIX, go to Remove and replace a PCI adapter contained in a cassette in the system with the power on in AIX.

If you are doing a concurrent repair using Linux, go to Remove and replace a PCI adapter contained in a cassette in the system with the power on in Linux.

If you are doing a concurrent repair using IBM i, go to Remove and replace a PCI adapter contained in a cassette in the system with the power on in IBM i.

Removing and replacing a PCI adapter contained in a cassette in an AIX partition that is powered on

Use this procedure to remove and replace a PCI adapter contained in a cassette with the power on.

Procedures performed on a PCI adapter in an AIX partition that is powered on, also known as hot-plug procedures, require the system administrator to take the PCI adapter offline prior to performing the

operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

To remove and replace an adapter, do the following steps:

1. Determine the location of the PCI adapter in the system.
2. Record the slot number and location of each adapter being removed. Adapter slots are numbered on the rear of the system unit.
3. Ensure that any processes or applications that might use the adapter are stopped.
4. Enter the system diagnostics by logging in as root user or as the CE login user, type `diag` at AIX command line.
5. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu is displayed, press Enter.
6. At the FUNCTION SELECTION menu, select **Task Selection**, and then press enter.
7. At the Task Selection list, select **Hot Plug Manager**, and then select **PCI Hot Plug Manager**.
8. Select **Unconfigure a Device**, and then press Enter.
9. Press F4 (or Esc+4) to display the **Device Names** menu.
10. Select the adapter you are removing in the **Device Names** menu.
11. Use the Tab key to answer `YES` to **Keep Definition**. Use the Tab key again to answer `YES` to **Unconfigure Child Devices**, then press Enter.
12. The **ARE YOU SURE** screen is displayed. Press Enter to verify the information. Successful unconfiguration is indicated by the `OK` message displayed next to the Command field at the top of the screen.
13. Press F3 (or Esc +3) twice to return to the **Hot Plug Manager** menu.
14. Select **replace/remove PCI Hot Plug adapter**.
15. Select the slot that has the device to be removed from the system.
16. Select **Replace**. Or, if you need to remove an adapter without replacing it, select **Remove**. A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
17. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
18. Label, and then disconnect all cables attached to the adapter you plan to remove.
19. Lift up on the PCI adapter EMC shield **(A)** as shown in Figure 12 on page 152 and then rotate it up and away from the cassette as shown in Figure 13 on page 153.

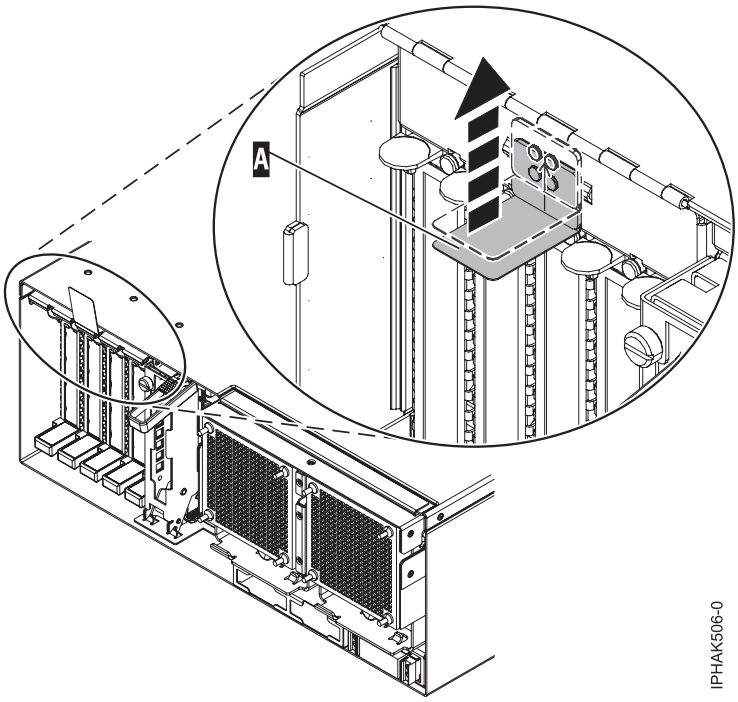


Figure 12. Lift up on the EMC shield

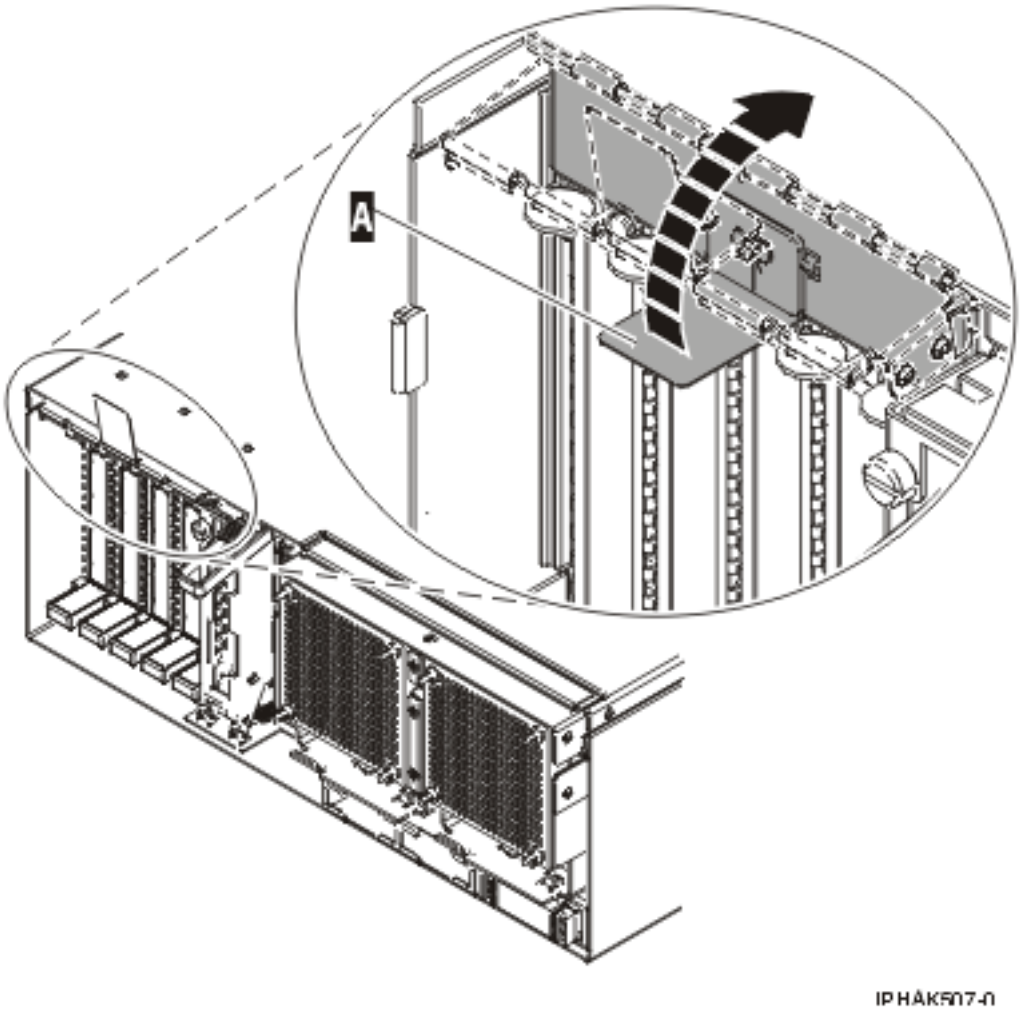


Figure 13. Rotate the EMC shield into the open position

20. Remove the cassette. Lift up the lower cassette handle **(B)** as shown in the following figure. Pull the PCI cassette **(C)** out of the system.

    Attention: A cassette containing either a PCI adapter or filler panel must be placed in the PCI adapter slot of the system unit for proper air flow and cooling.

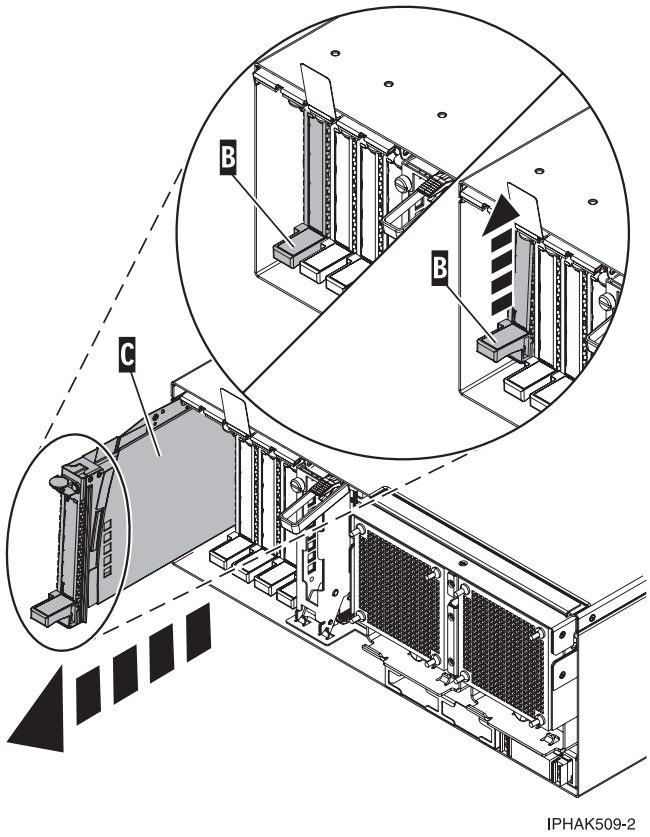


Figure 14. PCI adapter cassette removed from the system unit

21. Place the cassette with the cover facing up on an approved ESD surface. The cover will have a label on it.
22. Install the replacement adapter into the PCI adapter cassette using the following instructions. If the cassette is not going to contain a replacement adapter, use this same procedure to place an adapter filler panel in the cassette. Follow these steps:
    a. Remove the cassette cover by doing the following steps:
        1) Slide the cover latch **(A)** to disengage it from the pivot pin **(C)** as shown in the following figure.
        2) Lift the cover **(B)** off of the pivot pin.
        3) Slide the cover off of the cassette.

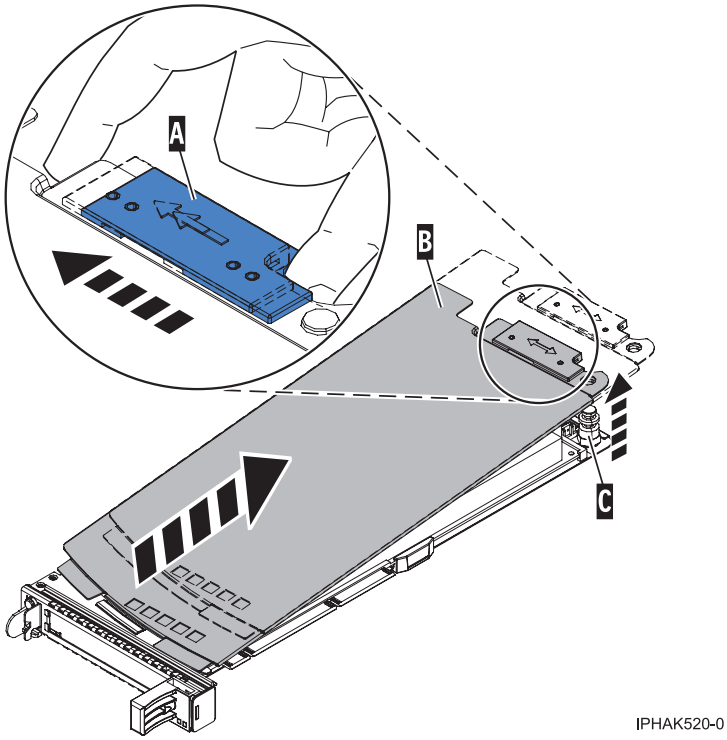


Figure 15. PCI adapter cassette cover removed

b. Remove the adapter from the cassette by doing the following steps:
   1) Unlock the adapter retainers by rotating the retainer clip **(A)** into the horizontal position. See Figure 16 on page 156.

      Notes:
      - The edge of the adapter located at the end of the cassette that contains the cassette handles is called the adapter **tailstock**.
      - Two retainers are located at the top of the cassette, along the top edge of the adapter. Two more retainers are located at the edge of the cassette opposite of the adapter tailstock.
      - When the retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide away from the card.
      - If the corner support retainer is used, unlock it, and then slide the corner support retainer away from the card.
   2) Push the adapter retainers **(B)** away from the adapter.
   3) Unlock the adapter tailstock clamp **(C)**.
   4) Rotate the adapter out of the cassette by grasping the edge of the adapter opposite the tailstock, and then firmly rotate the adapter toward the bottom of the cassette.
   5) Lift the adapter out of the tailstock retaining channel.

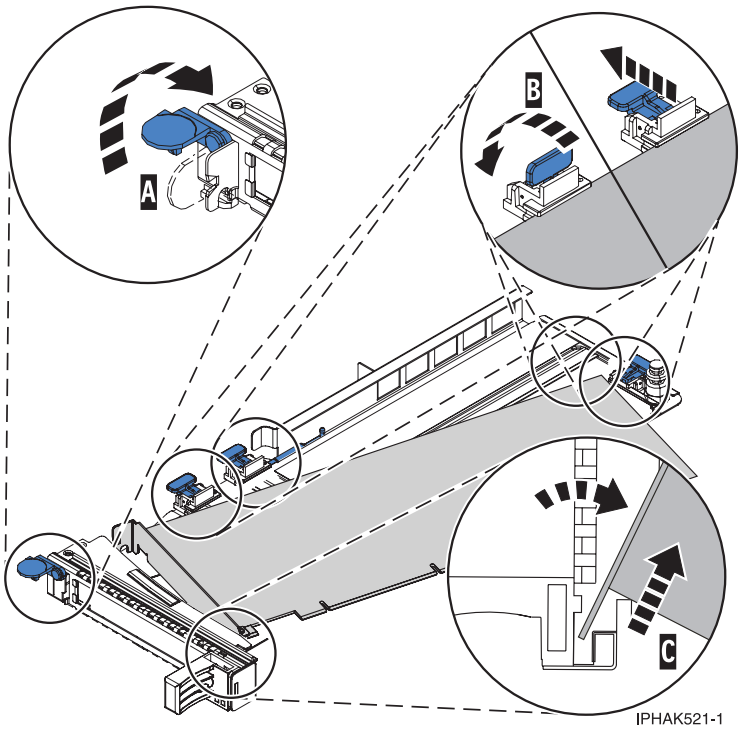


Figure 16. Adapter removed from the PCI adapter cassette

c. Place the new adapter in the cassette.

   Attention: A cassette containing either a PCI adapter or filler panel must be placed in the PCI adapter slot of the system unit for proper air flow and cooling. If the cassette is not going to contain a PCI adapter, use this same procedure to place an adapter filler panel in the cassette.

   1) Remove any shipping handles or brackets attached to the adapter.
   2) With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **(A)**. See Figure 17 on page 157.
   3) Rotate the adapter toward the top of the cassette and into place.
   4) Close the tailstock clamp.

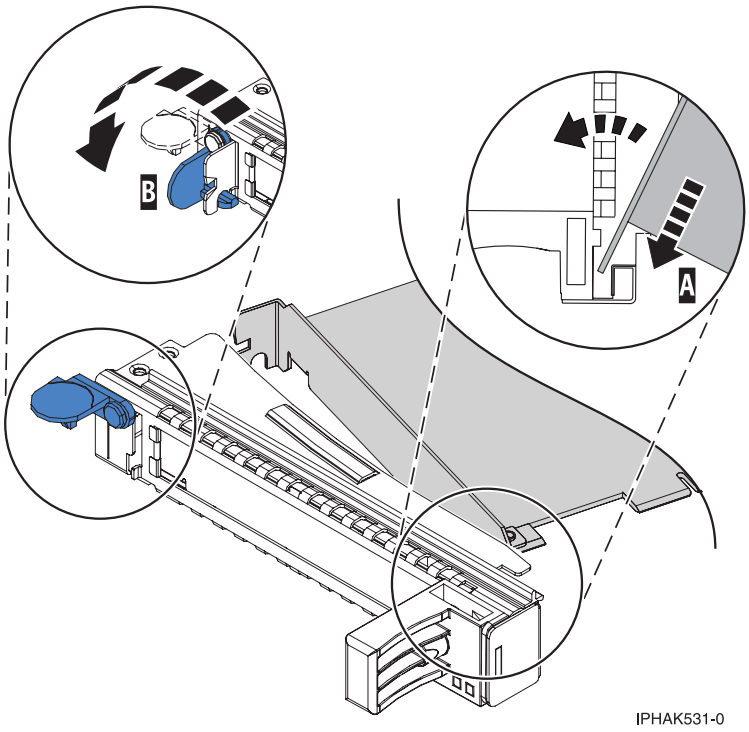


Figure 17. Adapter removed from the PCI adapter single-width cassette

5) Position the adapter retainers to support the adapter, and then rotate the retainer clip **(B)** into the closed position. See Figure 17.

   Note: Two retainers are located at the top of the cassette, along the top edge of the adapter. Two more retainers are located at the edge of the cassette opposite of the adapter tailstock. When the adapter retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide toward the adapter. Place the retainers on the adapter according to the length of the adapter being used. Select the appropriate instructions:

   - Adapter-cassette retainer placement for large adapters
   - Adapter-cassette retainer placement for mid-sized adapters
   - Adapter-cassette retainer placement for small adapters

   Adapter-cassette retainer placement for long adapters

   - Place and lock the retainers **(B)**. See Figure 18 on page 158.

     Attention: Use of the lower corner support retainer might interfere with the docking of the PCI card when positioned within the system. Ensure the retainer does not interfere with the adapter connectors on the system backplane.
   - Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

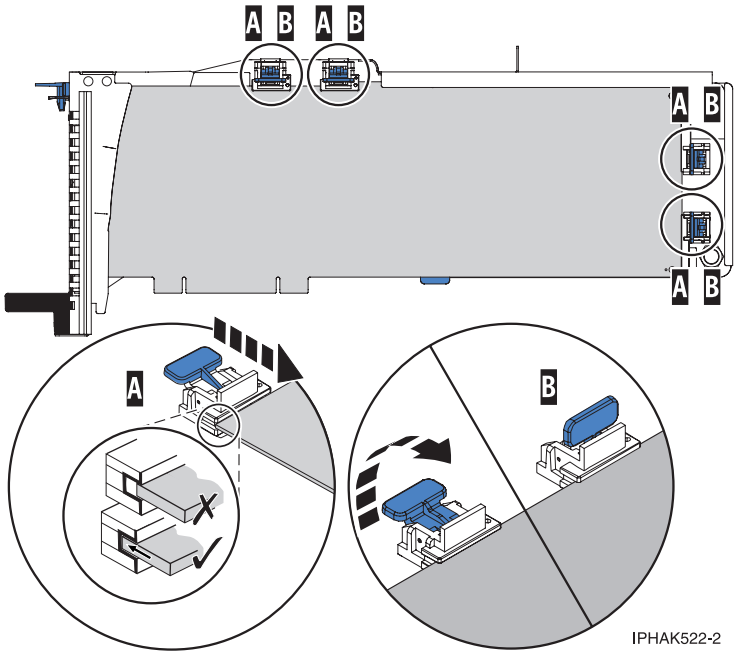


Figure 18. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for medium-length adapters

- Remove the adapter stabilizer **(C)**. See Figure 19 on page 159.
- Place and lock the retainers **(B)**.
- Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

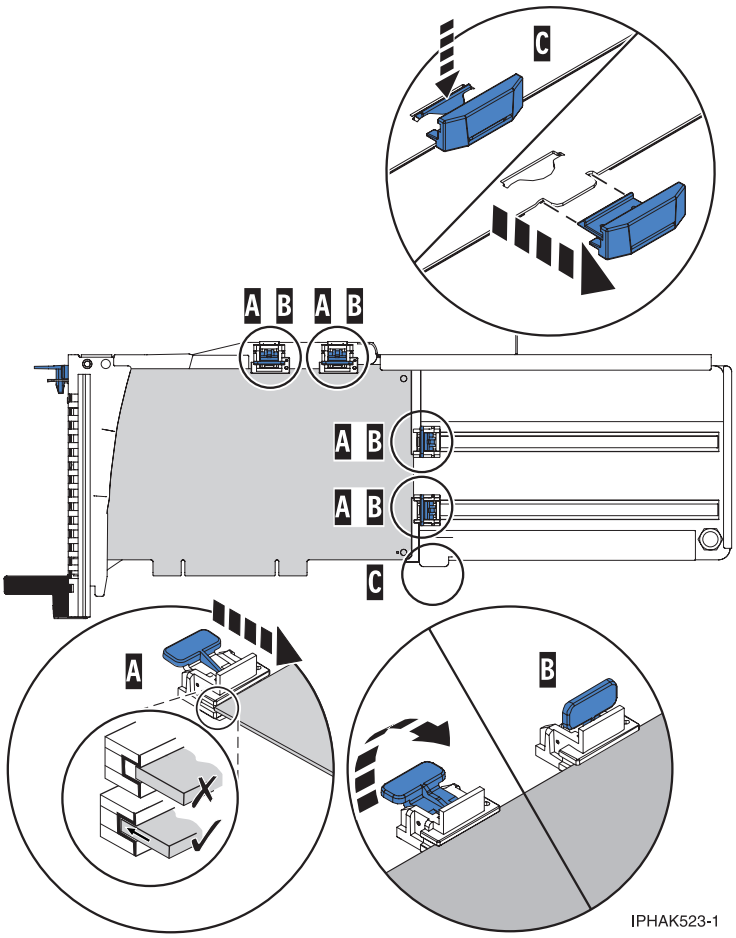


Figure 19. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for short adapters

- Remove the adapter stabilizer **(C)**. See Figure 20 on page 160.
- Place the hookarm **(D)** into the hole in the corner of the adapter. This supports the card when it is undocked from the connector on the system backplane.
- Place and lock the retainers **(B)**.
- Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

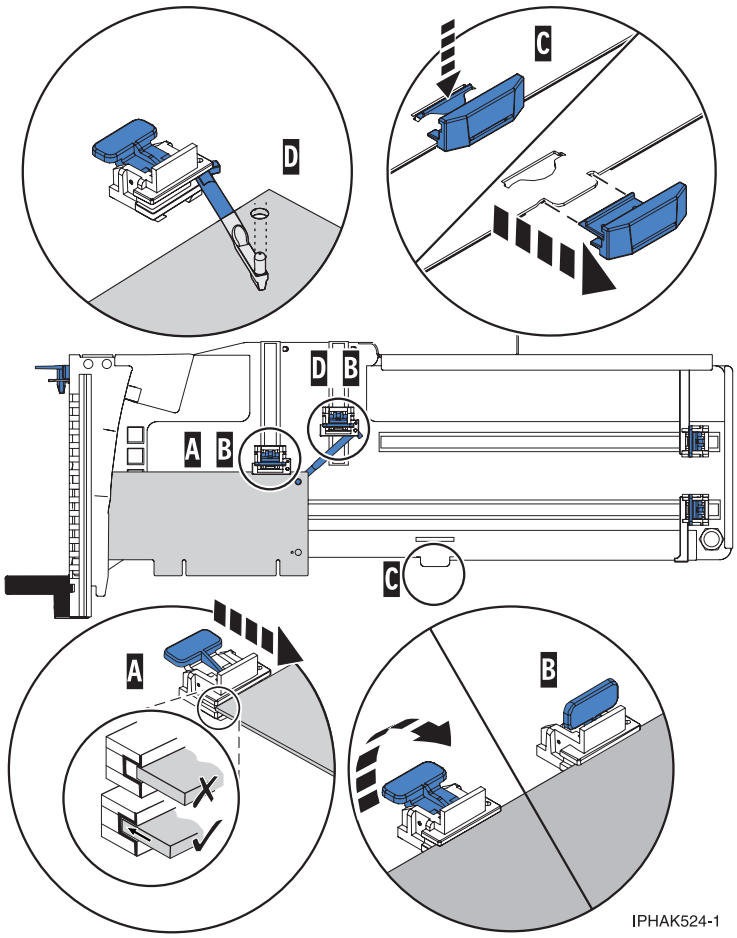


Figure 20. Short adapter in the PCI adapter cassette with the supports and the hookarm in place

d. Replace the cassette cover by doing the following steps:
   1) Slide the cover **(B)** into position on the cassette.
   2) While holding the cover latch **(A)** in the open position, place the cover over the pivot pin **(C)**.
   3) Release the cover latch to lock the cover into place.

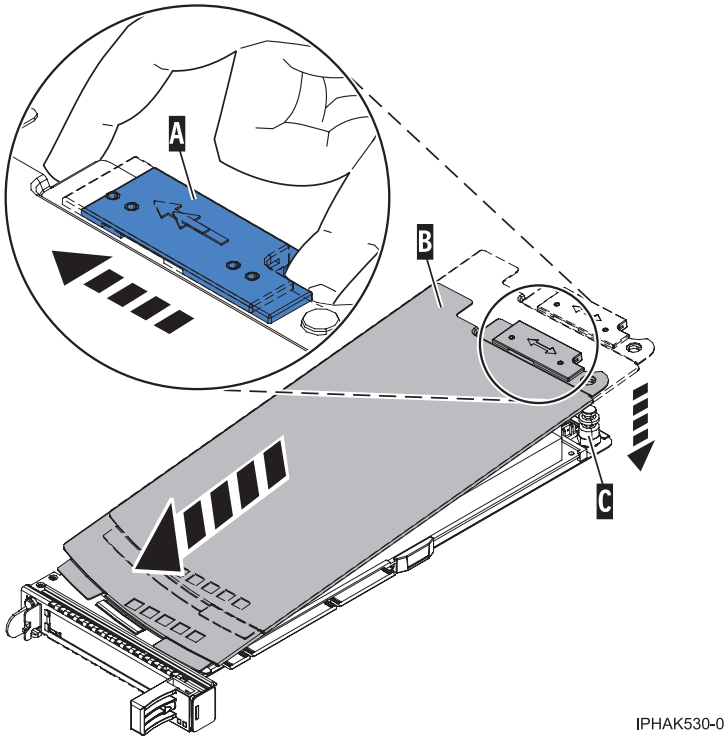


Figure 21. PCI adapter cassette cover replaced

23. At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
24. Ensure the lower cassette handle is pressed up toward the retainer clip. This places the adapter in the correct position to be docked in the system.
25. Lift and hold the PCI adapter EMC shield in the open position. See Figure 12 on page 152 and Figure 13 on page 153.
26. Slide the cassette **(C)** into the cassette slot as shown in the following figure.
27. When the cassette is fully inserted into the system, firmly press downward on the lower cassette handle **(B)** to lock the adapter in its connector.

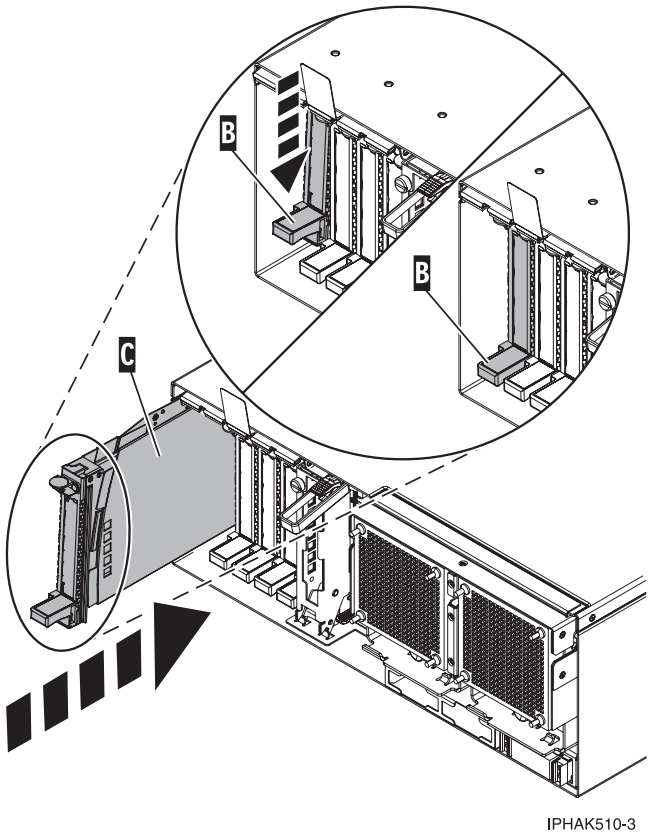


Figure 22. PCI adapter cassette removed from the system unit

28. Connect the adapter cables.
29. Lower the PCI adapter EMC shield **(A)** into the closed position, close the shield latch, and then close the rear rack door.

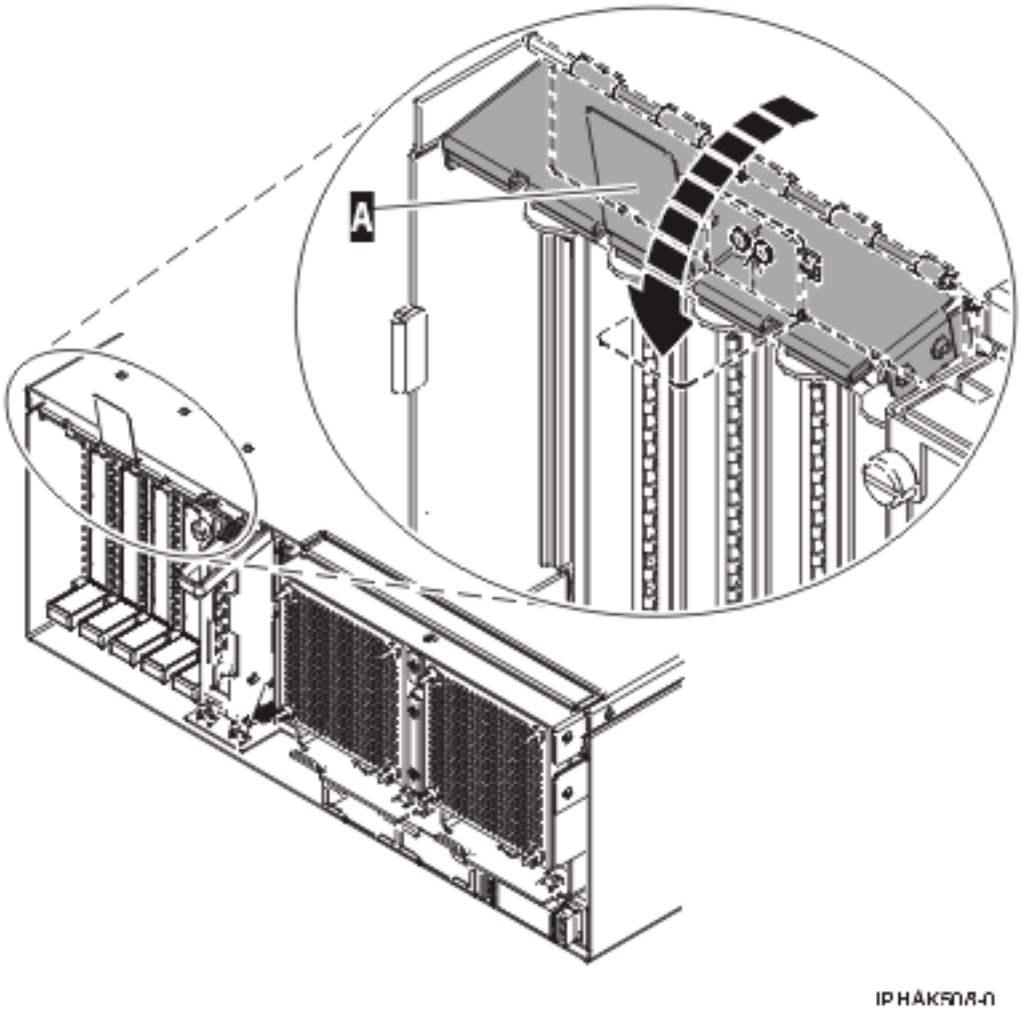


Figure 23. PCI adapter EMC shield in the closed position

30. Return to the AIX screen. Choose one of the following options:.
    - If you are replacing an adapter, go to step 31.
    - If you removing an adapter without replacing it, follow these steps:
      a. Press enter and continue to follow the screen instructions until you receive a message that the removal is successful. Successful removal is indicated by the OK message displayed next to the **Command** field at the top of the screen.
      b. Press F10 to exit the Hot-Plug Manager.
      c. Run the **diag -a** command. If the system responds with a menu or prompt, follow the instructions to complete the configuration.
      d. Continue at step 41 on page 164.
31. Press enter and continue to follow the screen instructions until you receive a message that the replacement is successful. Successful replacement is indicated by the OK message displayed next to the **Command** field at the top of the screen.
32. Press the F3 or Esc+3 key to return to the **PCI Hot-Plug Manager** menu.
33. Press the F3 or Esc+3 key to return to the **Hot-Plug Manager** menu.
34. Press the F3 or Esc+3 key to return to the **TASK** selection list.
35. Select **Log Repair Action**.
36. Select the resource just replaced, press Enter, press Commit (F7 or ESC 7), and then press Enter.

37. Press F3 or Esc+3 to return to **TASK Selection List**.
38. Select **Hot Plug Task**, and then press enter.
39. Select **PCI Hot Plug Manager**, then select **Configure a defined device**, and then press Enter.
40. Select the device just replaced from the list, and then press Enter. The device is now configured.
41. Press the F10 key to exit the diagnostic program.

Removing and replacing a PCI adapter contained in a cassette in a Linux partition that is powered on

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

Before performing this procedure, do the following steps:

- Ensure that the system meets the "Prerequisites for hot-plugging PCI adapters in a Linux partition" on page 176
- "Verifying that the hot-plug PCI tools are installed on the Linux partition" on page 177.

To remove and replace an adapter, do the following steps:

1. Determine the location of the PCI adapter in the system.
2. Record the slot number and location of each adapter being removed. Adapter slots are numbered on the rear of the system unit.
3. Ensure that any processes or applications that might use the adapter are stopped.
4. Run the drslot_chrp_pci command to enable an adapter to be replaced:

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

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

   Follow the instructions on the display to complete the task.
5. Label, and then disconnect all cables attached to the adapter you plan to remove.
6. Lift up on the PCI adapter EMC shield **(A)** as shown in Figure 24 on page 165 and then rotate it up and away from the cassette as shown in Figure 25 on page 166.

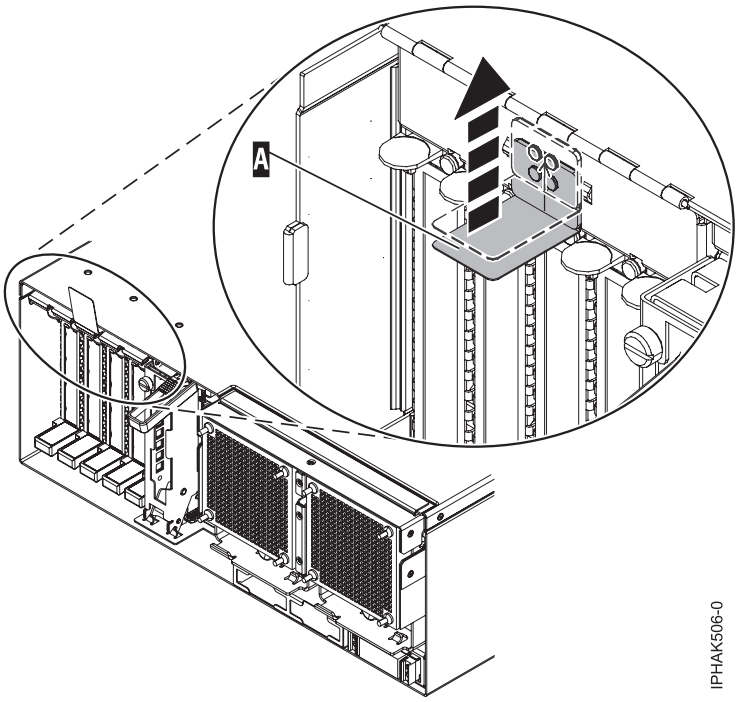


Figure 24. Lift up on the EMC shield

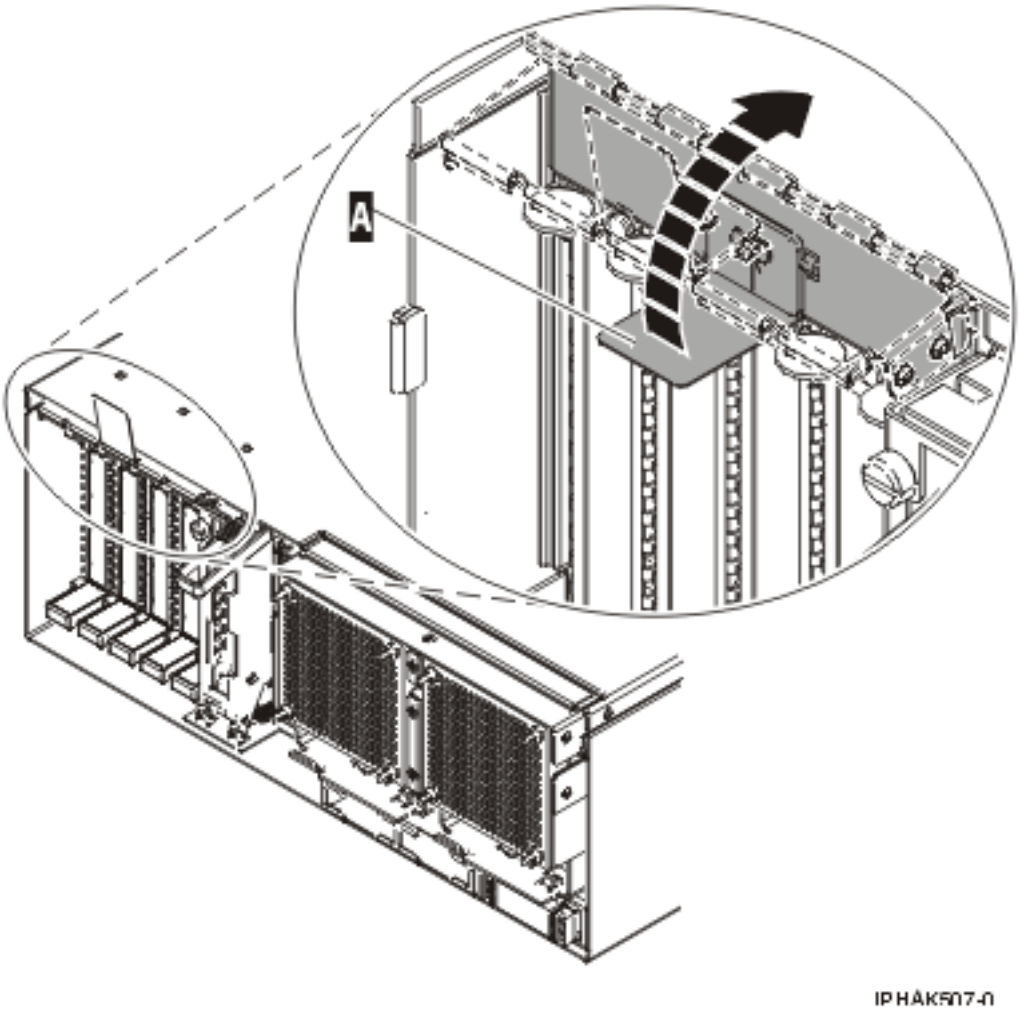


Figure 25. Rotate the EMC shield into the open position

7. Remove the cassette. Lift up the lower cassette handle **(B)** as shown in the following figure. Pull the PCI cassette **(C)** out of the system.

   Attention: A cassette containing either a PCI adapter or filler panel must be placed in the PCI adapter slot of the system unit for proper air flow and cooling.

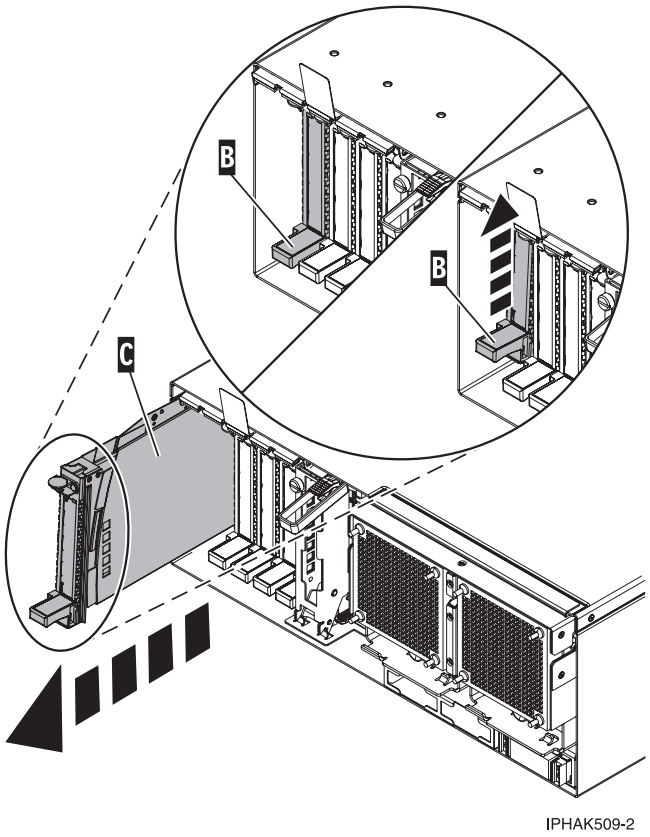


Figure 26. PCI adapter cassette removed from the system unit

8. Place the cassette with the cover facing up on an approved ESD surface. The cover will have a label on it.
9. Install the replacement adapter into the PCI adapter cassette using the following instructions. If the cassette is not going to contain a replacement adapter, use this same procedure to place an adapter filler panel in the cassette. Follow these steps:
   a. Remove the cassette cover by doing the following steps:
      1) Slide the cover latch **(A)** to disengage it from the pivot pin **(C)** as shown in the following figure.
      2) Lift the cover **(B)** off of the pivot pin.
      3) Slide the cover off of the cassette.

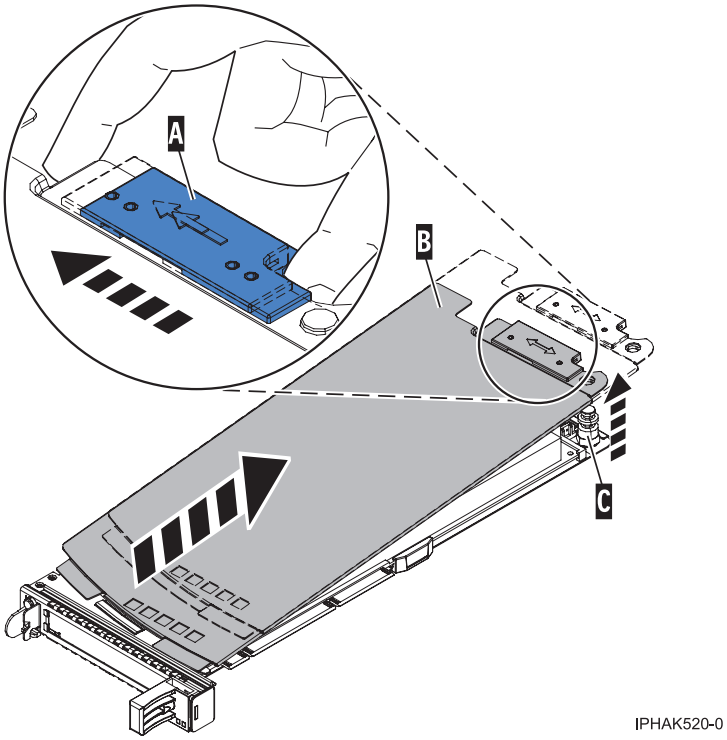


Figure 27. PCI adapter cassette cover removed

b. Remove the adapter from the cassette by doing the following steps:
   1) Unlock the adapter retainers by rotating the retainer clip **(A)** into the horizontal position. See Figure 28 on page 169.

      Notes:
      - The edge of the adapter located at the end of the cassette that contains the cassette handles is called the adapter **tailstock**.
      - Two retainers are located at the top of the cassette, along the top edge of the adapter. Two more retainers are located at the edge of the cassette opposite of the adapter tailstock.
      - When the retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide away from the card.
      - If the corner support retainer is used, unlock it, and then slide the corner support retainer away from the card.
   2) Push the adapter retainers **(B)** away from the adapter.
   3) Unlock the adapter tailstock clamp **(C)**.
   4) Rotate the adapter out of the cassette by grasping the edge of the adapter opposite the tailstock, and then firmly rotate the adapter toward the bottom of the cassette.
   5) Lift the adapter out of the tailstock retaining channel.

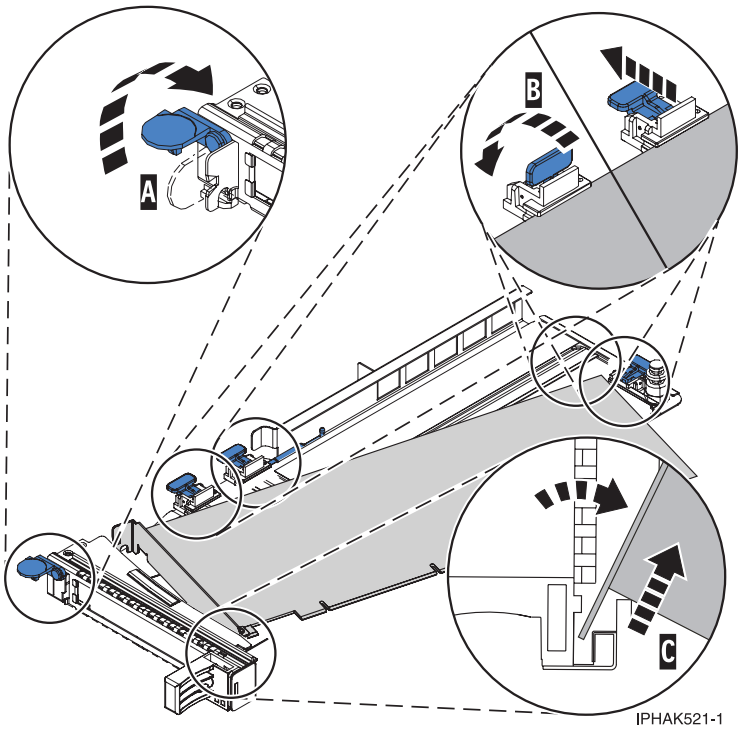


Figure 28. Adapter removed from the PCI adapter cassette

c. Place the new adapter in the cassette.

   Attention: A cassette containing either a PCI adapter or filler panel must be placed in the PCI adapter slot of the system unit for proper air flow and cooling. If the cassette is not going to contain a PCI adapter, use this same procedure to place an adapter filler panel in the cassette.

   1) Remove any shipping handles or brackets attached to the adapter.
   2) With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **(A)**. See Figure 29 on page 170.
   3) Rotate the adapter toward the top of the cassette and into place.
   4) Close the tailstock clamp.

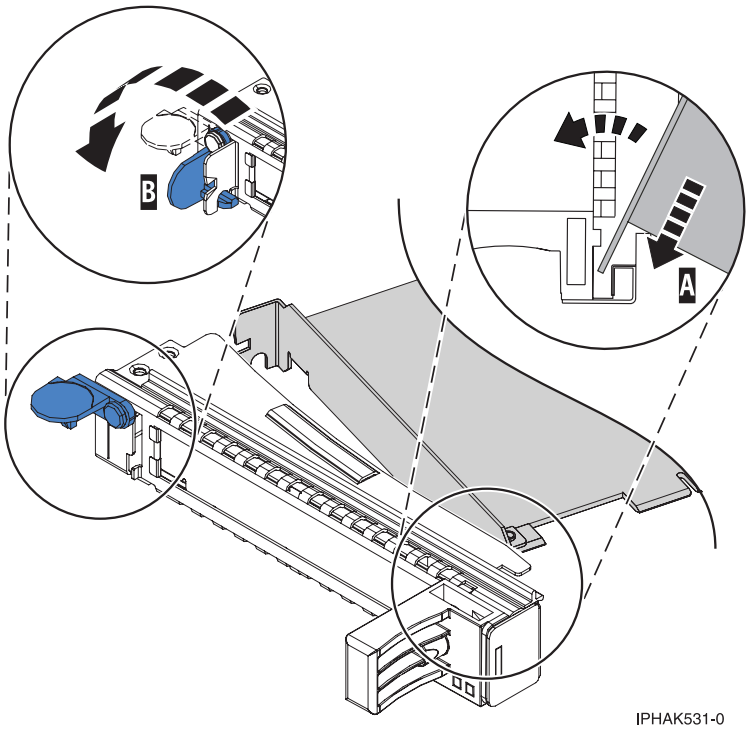


Figure 29. Adapter removed from the PCI adapter single-width cassette

5) Position the adapter retainers to support the adapter, and then rotate the retainer clip **(B)** into the closed position. See Figure 29.

   Note: Two retainers are located at the top of the cassette, along the top edge of the adapter. Two more retainers are located at the edge of the cassette opposite of the adapter tailstock. When the adapter retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide toward the adapter. Place the retainers on the adapter according to the length of the adapter being used. Select the appropriate instructions:

   - Adapter-cassette retainer placement for large adapters
   - Adapter-cassette retainer placement for mid-sized adapters
   - Adapter-cassette retainer placement for small adapters

   Adapter-cassette retainer placement for long adapters

   - Place and lock the retainers **(B)**. See Figure 30 on page 171.

     Attention: Use of the lower corner support retainer might interfere with the docking of the PCI card when positioned within the system. Ensure the retainer does not interfere with the adapter connectors on the system backplane.
   - Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

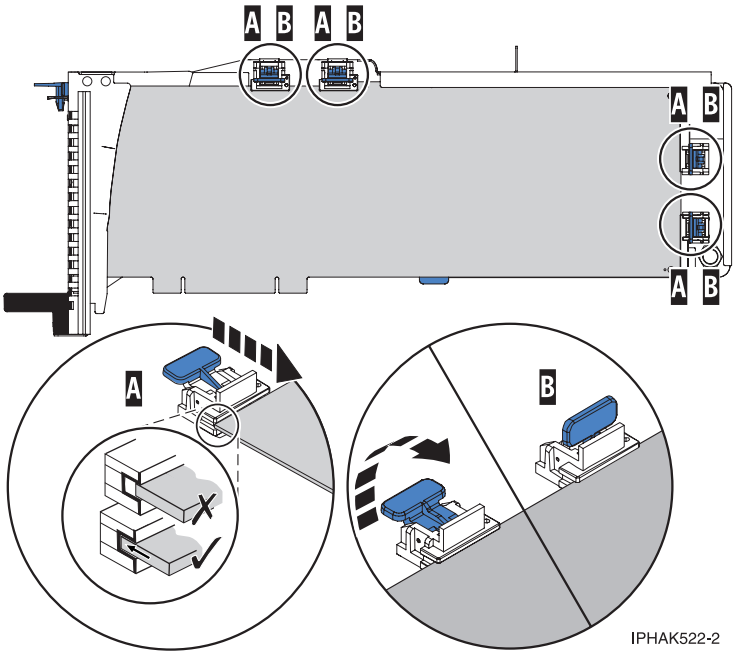


Figure 30. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for medium-length adapters

- Remove the adapter stabilizer **(C)**. See Figure 31 on page 172.
- Place and lock the retainers **(B)**.
- Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

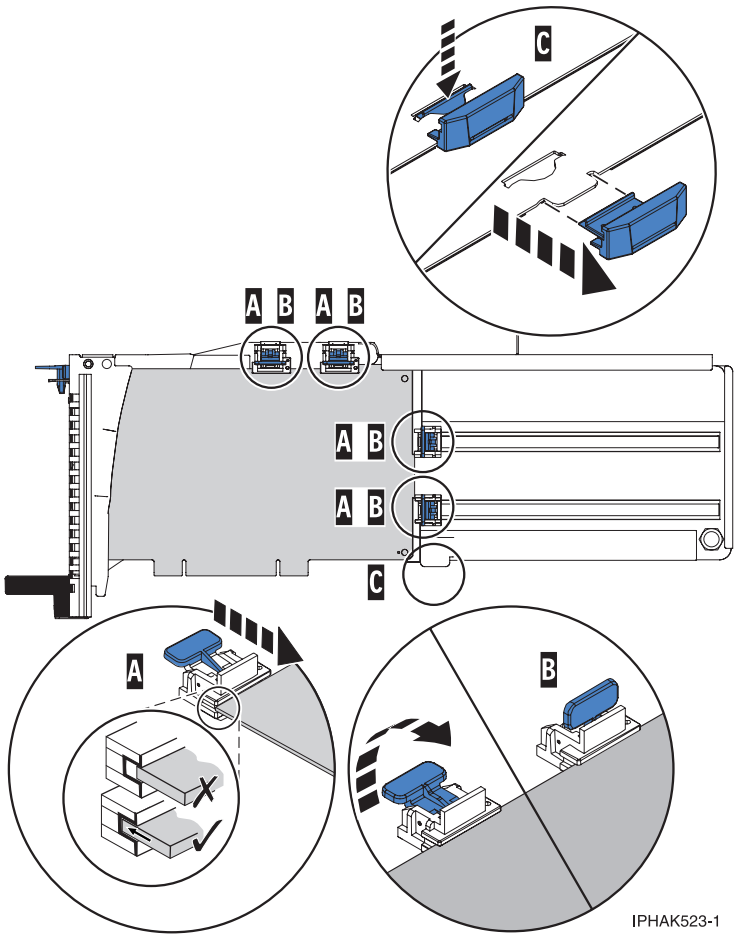


Figure 31. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for short adapters

- Remove the adapter stabilizer **(C)**. See Figure 32 on page 173.
- Place the hookarm **(D)** into the hole in the corner of the adapter. This supports the card when it is undocked from the connector on the system backplane.
- Place and lock the retainers **(B)**.
- Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

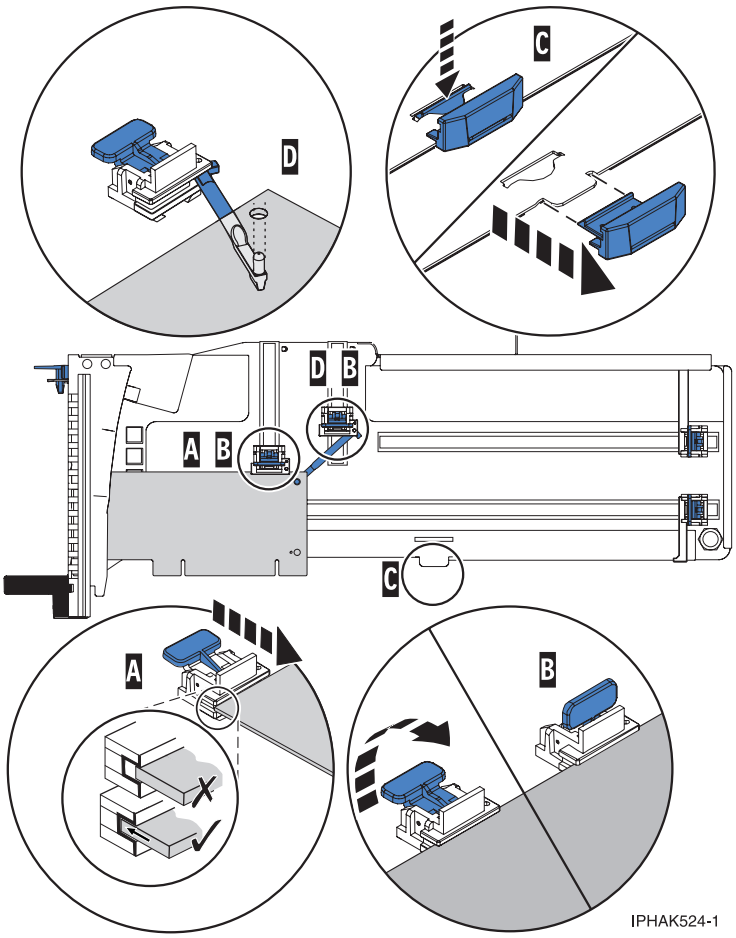


Figure 32. Short adapter in the PCI adapter cassette with the supports and the hookarm in place

d. Replace the cassette cover by doing the following steps:
   1) Slide the cover **(B)** into position on the cassette.
   2) While holding the cover latch **(A)** in the open position, place the cover over the pivot pin **(C)**.
   3) Release the cover latch to lock the cover into place.

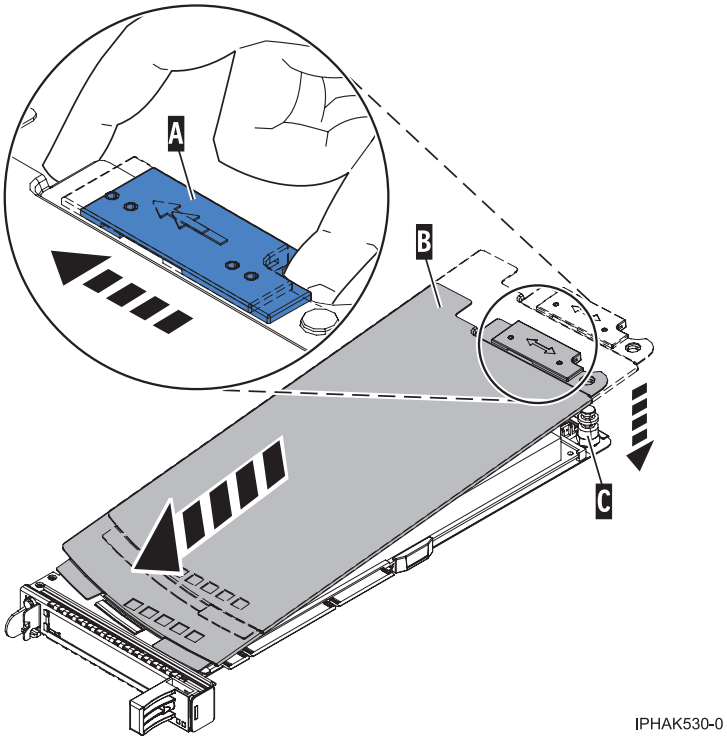


Figure 33. PCI adapter cassette cover replaced

10. At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
11. Ensure the lower cassette handle is pressed up toward the retainer clip. This places the adapter in the correct position to be docked in the system.
12. Lift and hold the PCI adapter EMC shield in the open position. See Figure 24 on page 165 and Figure 25 on page 166.
13. Slide the cassette **(C)** into the cassette slot as shown in the following figure.
14. When the cassette is fully inserted into the system, firmly press downward on the lower cassette handle **(B)** to lock the adapter in its connector.

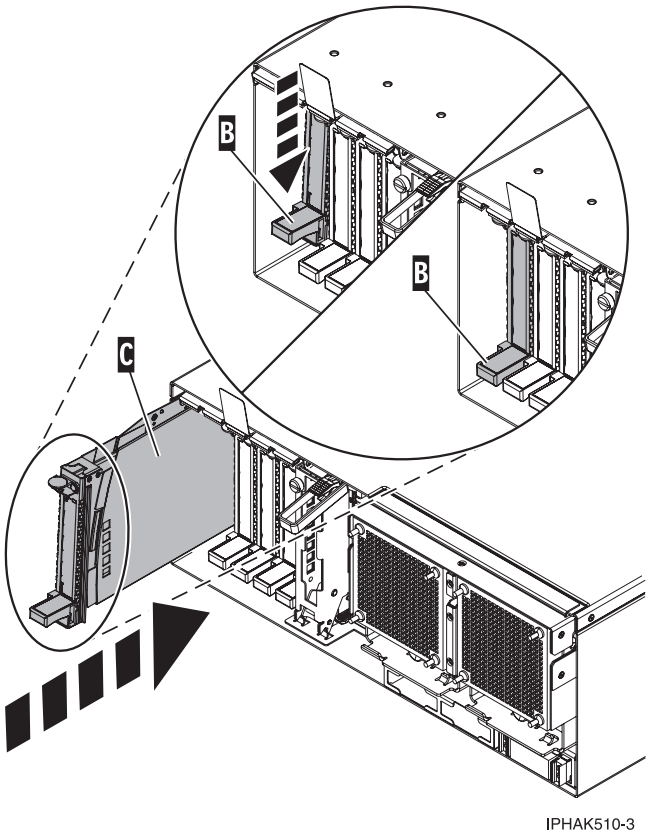


Figure 34. PCI adapter cassette removed from the system unit

15. Connect the adapter cables.
16. Lower the PCI adapter EMC shield **(A)** into the closed position, close the shield latch, then close the rear rack door.

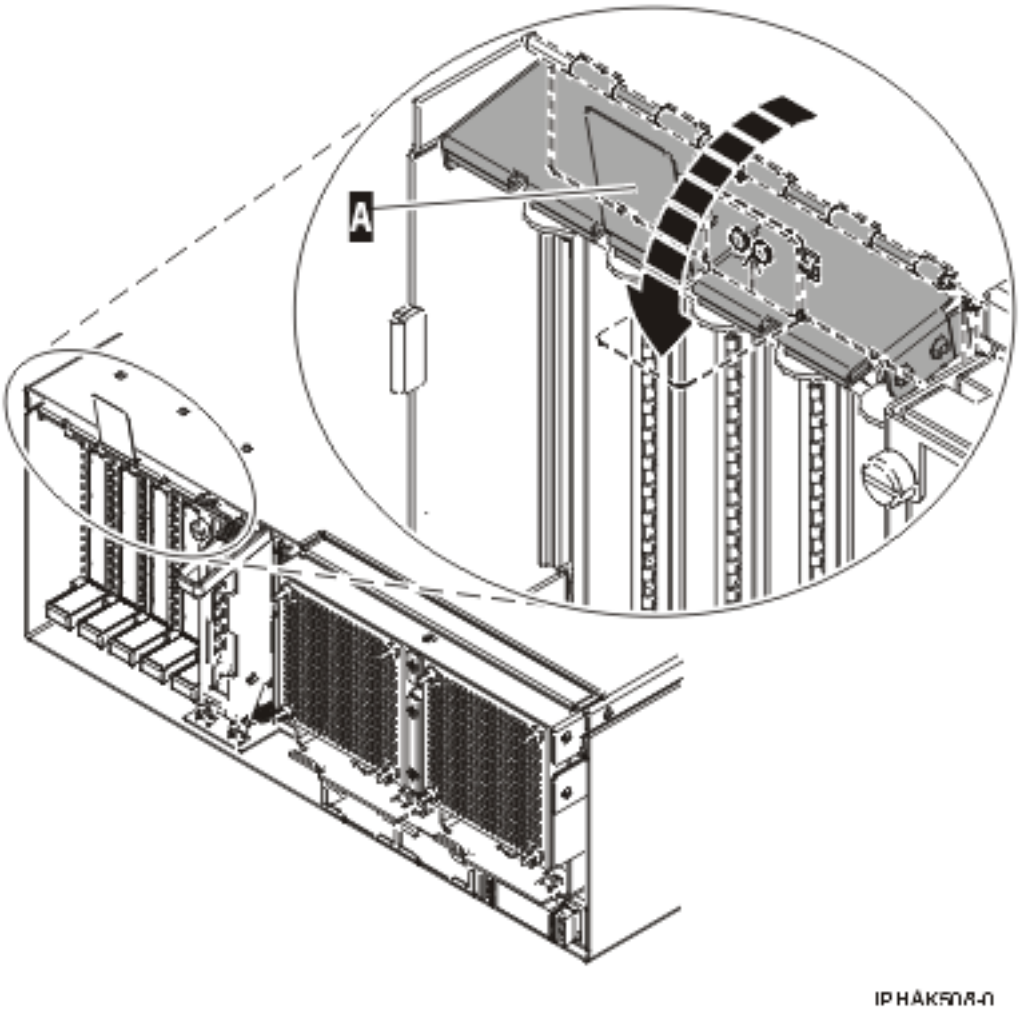


Figure 35. PCI adapter EMC shield in the closed position

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

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

Prerequisites for hot-plugging PCI adapters in a Linux partition

When you install, remove, or replace a PCI adapter in a Linux partition that is powered on, you might need to complete some prerequisite tasks.

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

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

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

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

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

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

Verifying that the hot-plug PCI tools are installed on the Linux partition

When you install, remove, or replace a PCI adapter in a Linux partition that is powered on, you might need to use the hot-plug PCI tools. Use this procedure to verify that you have the hot-plug PCI tools installed.

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

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

   If the command does not list any rpa-pci-hotplug packages, the PCI Hot Plug tools are not installed.
2. Enter the following command to ensure that the rpaphp driver is loaded:

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

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

   ```
   drwxr-xr-x 15 root root 0 Feb 16 23:31 .
   drwxr-xr-x  5 root root 0 Feb 16 23:31 ..
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0000:00:02.0
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0000:00:02.2
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0000:00:02.4
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0001:00:02.0
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0001:00:02.2
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0001:00:02.4
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0001:00:02.6
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0002:00:02.0
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0002:00:02.2
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0002:00:02.4
   drwxr-xr-x  2 root root 0 Feb 16 23:31 0002:00:02.6
   ```

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

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

Removing and replacing a PCI adapter contained in a cassette in an IBM i partition that is powered on

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

To remove and replace an adapter, do the following steps:

1. Determine the location of the PCI adapter in the system.

2. Record the slot number and location of each adapter being removed. Adapter slots are numbered either below or along the side of each adapter slot.
3. Ensure that any processes or applications that might use the adapter are stopped.
4. Go to your terminal and type **strsst** on the command line of the Main Menu and press Enter.
5. Type your service tools user ID and service tools password on the System Service Tools (SST) Sign On display. Press Enter.
6. Select **Start a service tool** from the System Service Tools (SST) display. Press Enter.
7. Select **Hardware service manager** from the Start a Service Tool display and press Enter.
8. Select **Packaging hardware resources (system, frames, cards)** from the Hardware Service Manager display. Press Enter.
9. Type `9` (Hardware contained within package) in the System Unit or Expansion Unit field of the unit where you are removing the card, then press Enter.
10. Select the option to **Include empty positions**.
11. Select **Concurrent Maintenance** on the card position where you want to remove the card and then press Enter.
12. Select the option to **Toggle LED blink off/on**. A light-emitting diode (LED) located on your system or I/O enclosure blinks identifying the PCI adapter position you chose. Physically verify that this is the slot where you want to remove the adapter.
13. Select the option to **Toggle LED blink off/on** to stop the blinking LED.
14. Select the option to **Power off domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
15. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: `Power off complete`
16. Label, and then disconnect all cables attached to the adapter you plan to remove.
17. Record the slot number and location of each adapter being removed.

    Note: Adapter slots are numbered below or along side of each PCI adapter slot.
18. Lift up on the PCI adapter EMC shield **(A)** as shown in Figure 36 on page 179, and then rotate it up and away from the cassette as shown in Figure 37 on page 180.

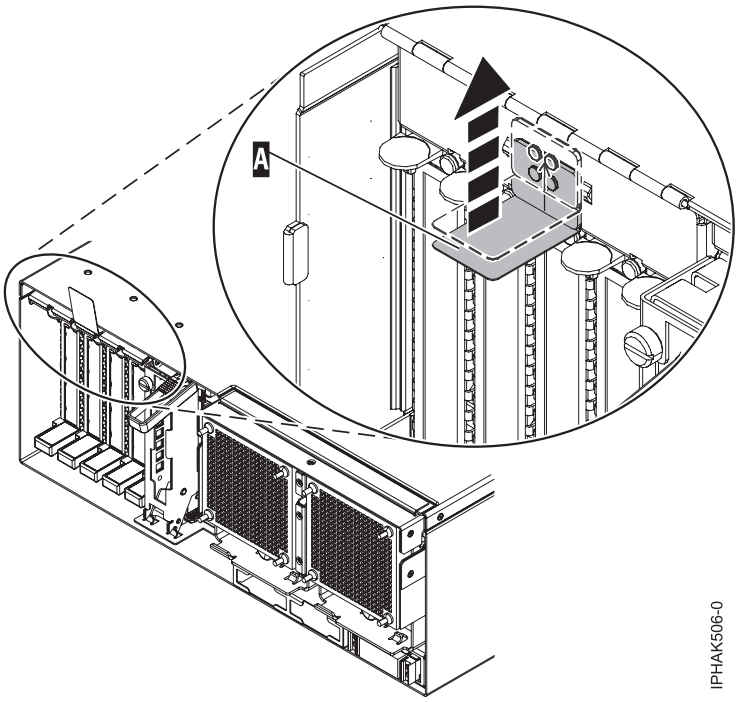


Figure 36. Lift up on the EMC shield

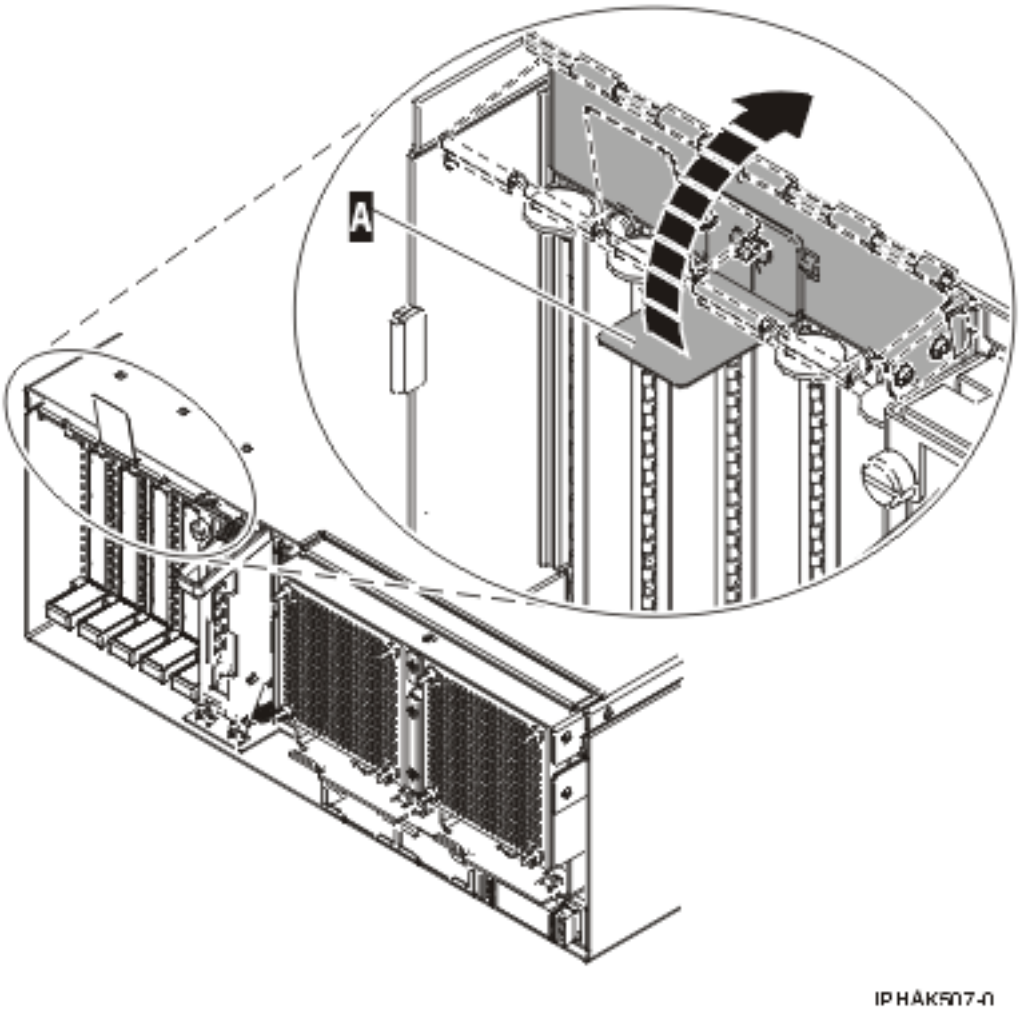


Figure 37. Rotate the EMC shield into the open position

19. Remove the cassette. Lift up the lower cassette handle **(B)** as shown in the following figure. Pull the PCI cassette **(C)** out of the system.

    Attention: A cassette containing either a PCI adapter or filler panel must be placed in the PCI adapter slot of the system unit for proper air flow and cooling.

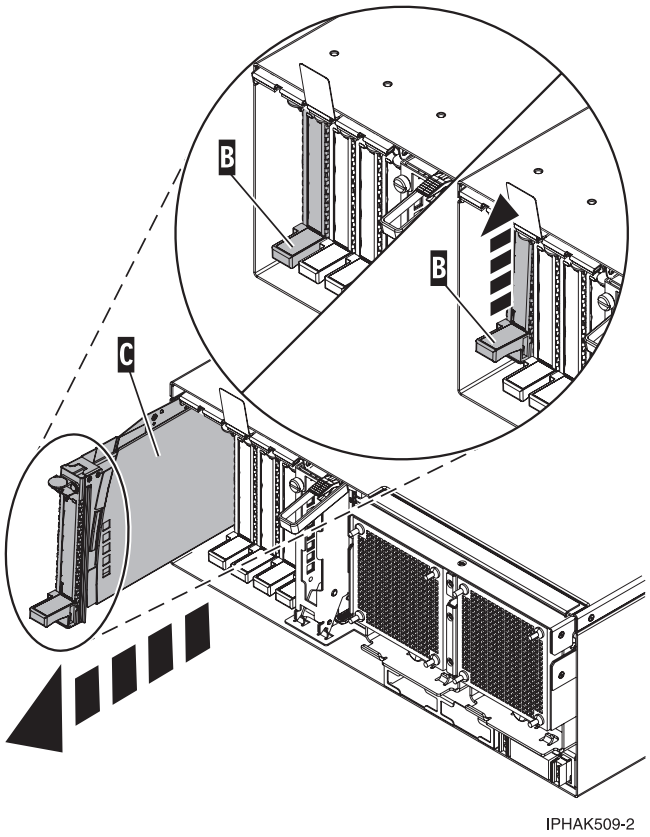


Figure 38. PCI adapter cassette removed from the system unit

20. Place the cassette with the cover facing up on an approved ESD surface. The cover will have a label on it.
21. Install the replacement adapter into the PCI adapter cassette using the following instructions. If the cassette is not going to contain a replacement adapter, use this same procedure to place an adapter filler panel in the cassette. Follow these steps:
    a. Remove the cassette cover by doing the following steps:
        1) Slide the cover latch **(A)** to disengage it from the pivot pin **(C)** as shown in the following figure.
        2) Lift the cover **(B)** off of the pivot pin.
        3) Slide the cover off of the cassette.

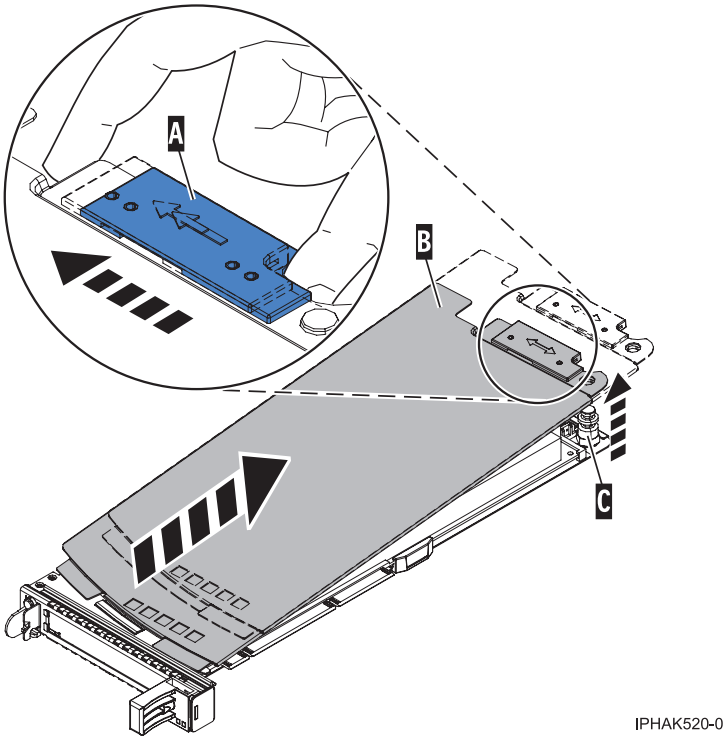


Figure 39. PCI adapter cassette cover removed

b. Remove the adapter from the cassette by doing the following steps:
   1) Unlock the adapter retainers by rotating the retainer clip **(A)** into the horizontal position. See Figure 40 on page 183.

      Notes:
      - The edge of the adapter located at the end of the cassette that contains the cassette handles is called the adapter **tailstock**.
      - Two retainers are located at the top of the cassette, along the top edge of the adapter. Two more retainers are located at the edge of the cassette opposite of the adapter tailstock.
      - When the retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide away from the card.
      - If the corner support retainer is used, unlock it, and then slide the corner support retainer away from the card.
   2) Push the adapter retainers **(B)** away from the adapter.
   3) Unlock the adapter tailstock clamp **(C)**.
   4) Rotate the adapter out of the cassette by grasping the edge of the adapter opposite the tailstock, and then firmly rotate the adapter toward the bottom of the cassette.
   5) Lift the adapter out of the tailstock retaining channel.

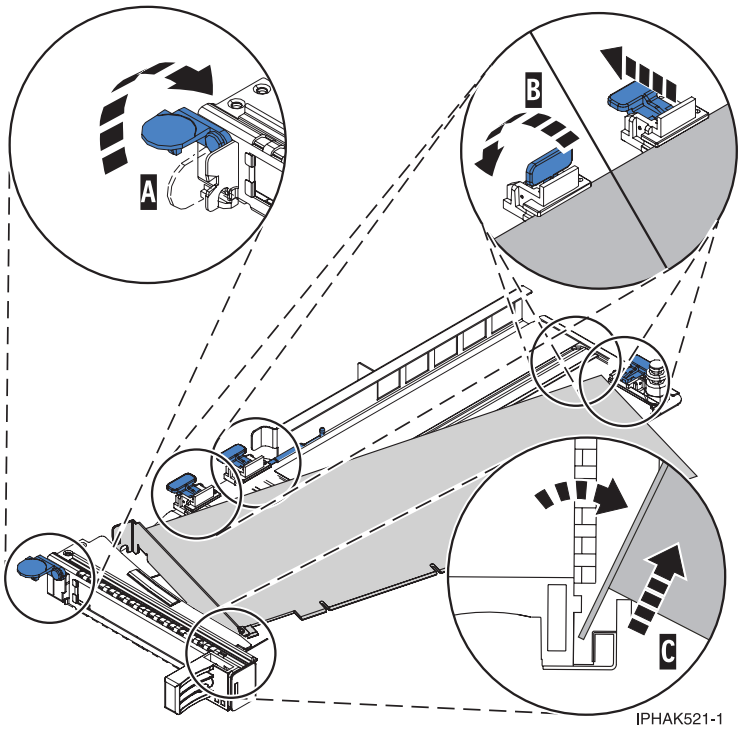


Figure 40. Adapter removed from the PCI adapter cassette

c. Place the new adapter in the cassette.

   Attention: A cassette containing either a PCI adapter or filler panel must be placed in the PCI adapter slot of the system unit for proper air flow and cooling. If the cassette is not going to contain a PCI adapter, use this same procedure to place an adapter filler panel in the cassette.

   1) Remove any shipping handles or brackets attached to the adapter.
   2) With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **(A)**. See Figure 41 on page 184.
   3) Rotate the adapter toward the top of the cassette and into place.
   4) Close the tailstock clamp.

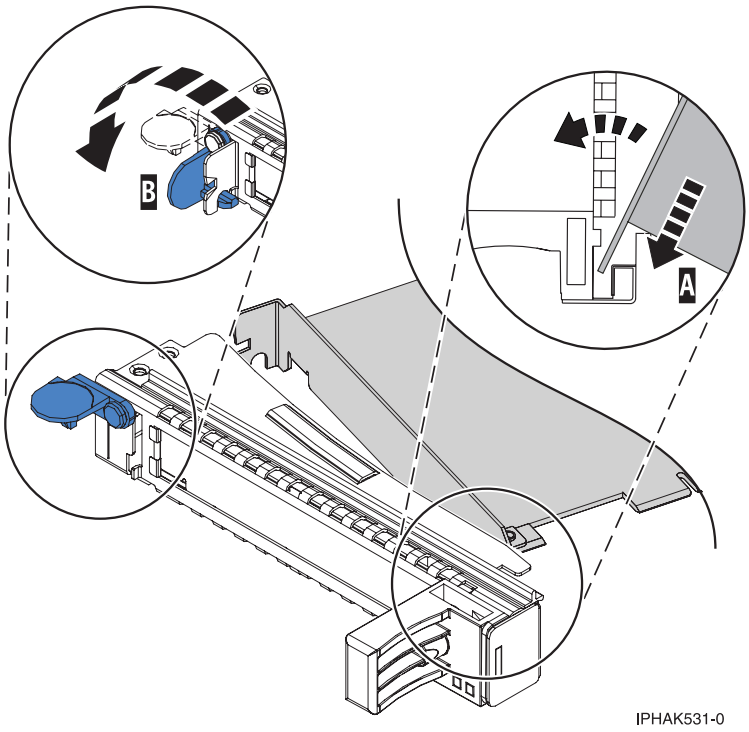


Figure 41. Adapter removed from the PCI adapter single-width cassette

5) Position the adapter retainers to support the adapter, and then rotate the retainer clip **(B)** into the closed position. See Figure 41

Note: Two retainers are located at the top of the cassette, along the top edge of the adapter. Two more retainers are located at the edge of the cassette opposite of the adapter tailstock. When the adapter retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide toward the adapter. Place the retainers on the adapter according to the length of the adapter being used. Select the appropriate instructions:

- Adapter-cassette retainer placement for large adapters
- Adapter-cassette retainer placement for mid-sized adapters
- Adapter-cassette retainer placement for small adapters

Adapter-cassette retainer placement for long adapters

- Place and lock the retainers **(B)**. See Figure 42 on page 185.

  Attention: Use of the lower corner support retainer might interfere with the docking of the PCI card when positioned within the system. Ensure the retainer does not interfere with the adapter connectors on the system backplane.
- Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

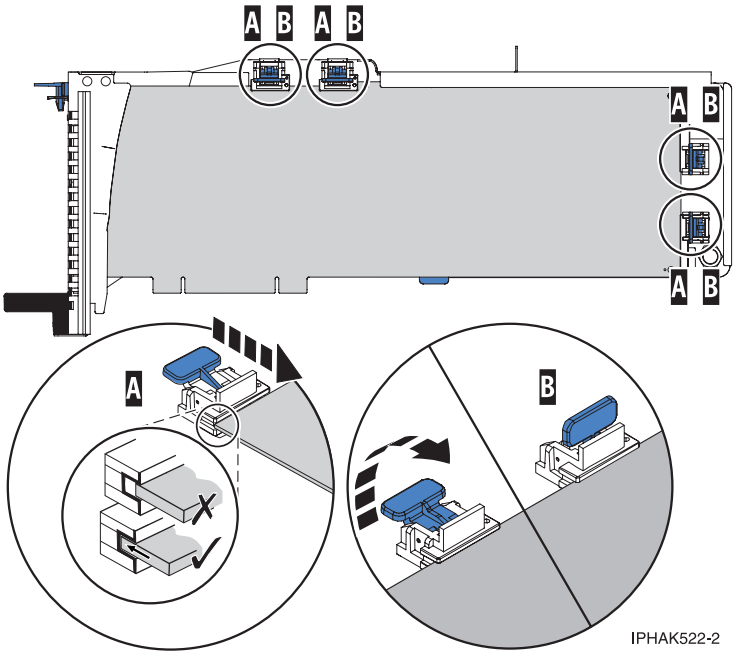


Figure 42. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for medium-length adapters

- Remove the adapter stabilizer **(C)**. See Figure 43 on page 186.
- Place and lock the retainers **(B)**.
- Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

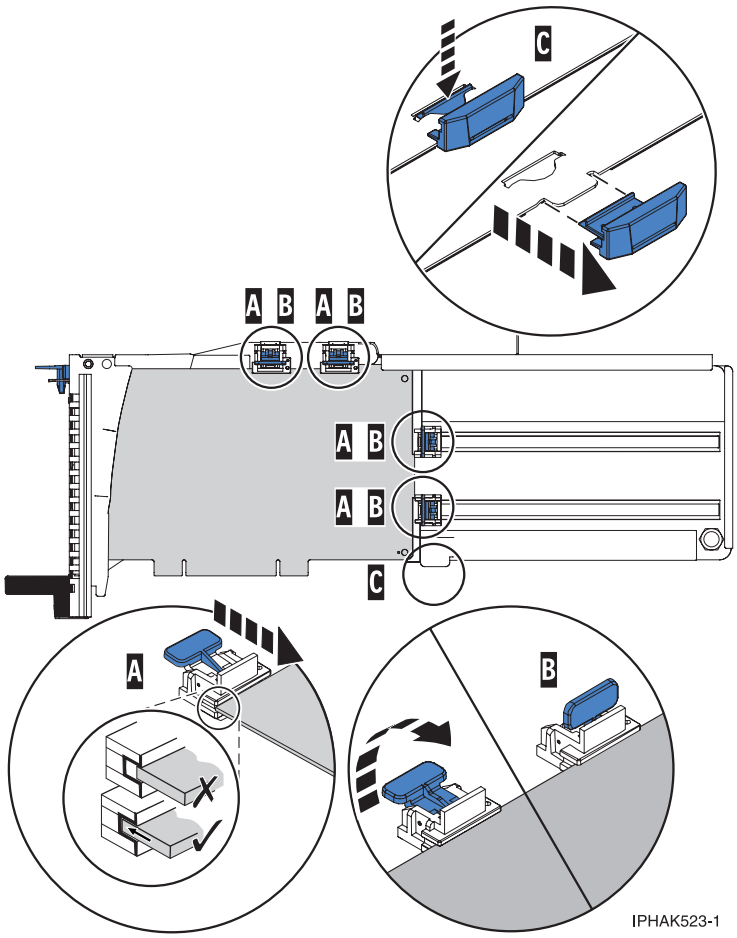


Figure 43. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for short adapters

- Remove the adapter stabilizer **(C)**. See Figure 44 on page 187.
- Place the hook arm **(D)** into the hole in the corner of the adapter. This supports the card when it is undocked from the connector on the system backplane.
- Place and lock the retainers **(B)**.
- Ensure the adapter edge is seated in each retainer groove **(A)**. If the shape of the adapter or the presence of a connector will not allow the adapter edge to be seated into the retainer groove, ensure the retainer is still locked firmly against that edge or connector.

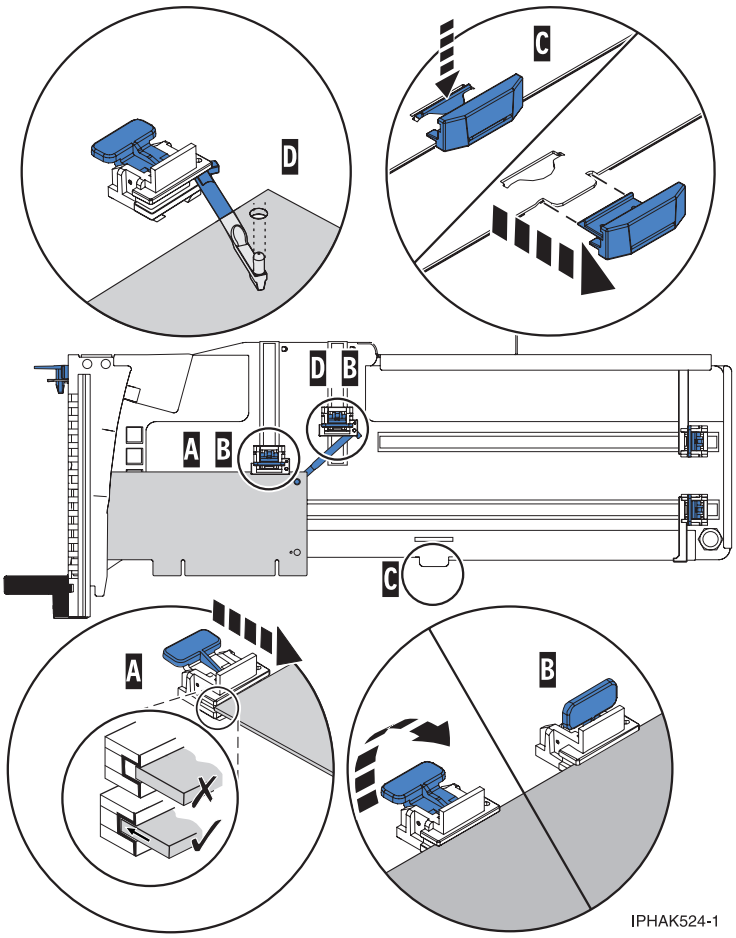


Figure 44. Short adapter in the PCI adapter cassette with the supports and the hook arm in place

d. Replace the cassette cover by doing the following steps:
   1) Slide the cover **(B)** into position on the cassette.
   2) While holding the cover latch **(A)** in the open position, place the cover over the pivot pin **(C)**.
   3) Release the cover latch to lock the cover into place.

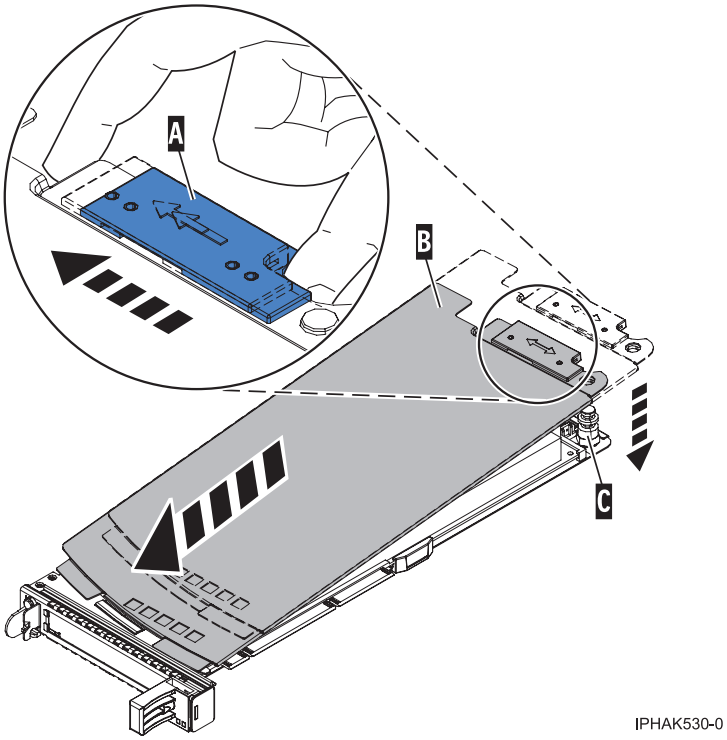


Figure 45. PCI adapter cassette cover replaced

22. At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
23. Ensure the lower cassette handle is pressed up toward the retainer clip. This places the adapter in the correct position to be docked in the system.
24. Lift and hold the PCI adapter EMC shield in the open position. See Figure 36 on page 179 and Figure 37 on page 180.
25. Slide the cassette **(C)** into the cassette slot as shown in the following figure.
26. When the cassette is fully inserted into the system, firmly press downward on the lower cassette handle **(B)** to lock the adapter in its connector.

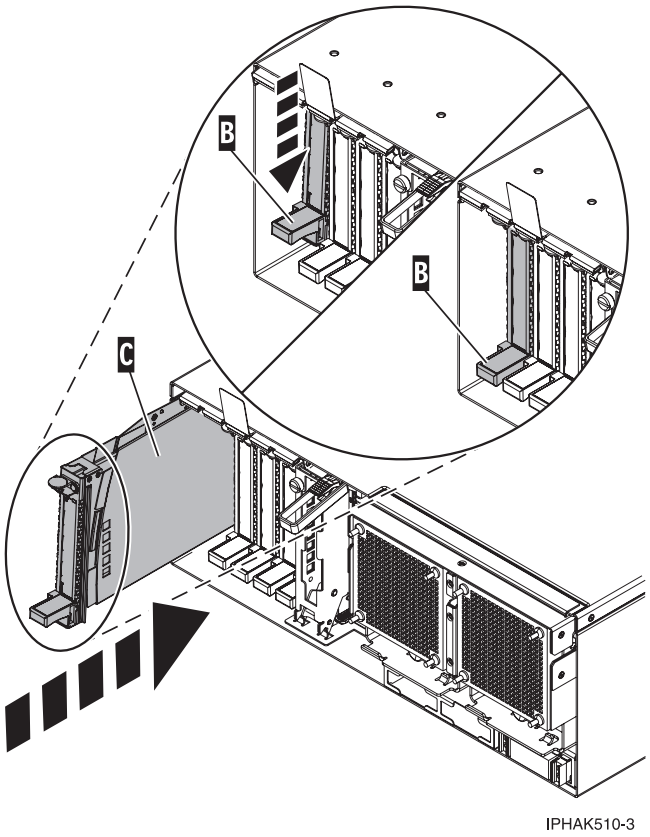


Figure 46. PCI adapter cassette removed from the system unit

27. Connect the adapter cables.
28. Lower the PCI adapter EMC shield **(A)** into the closed position, close the shield latch, then close the rear rack door.

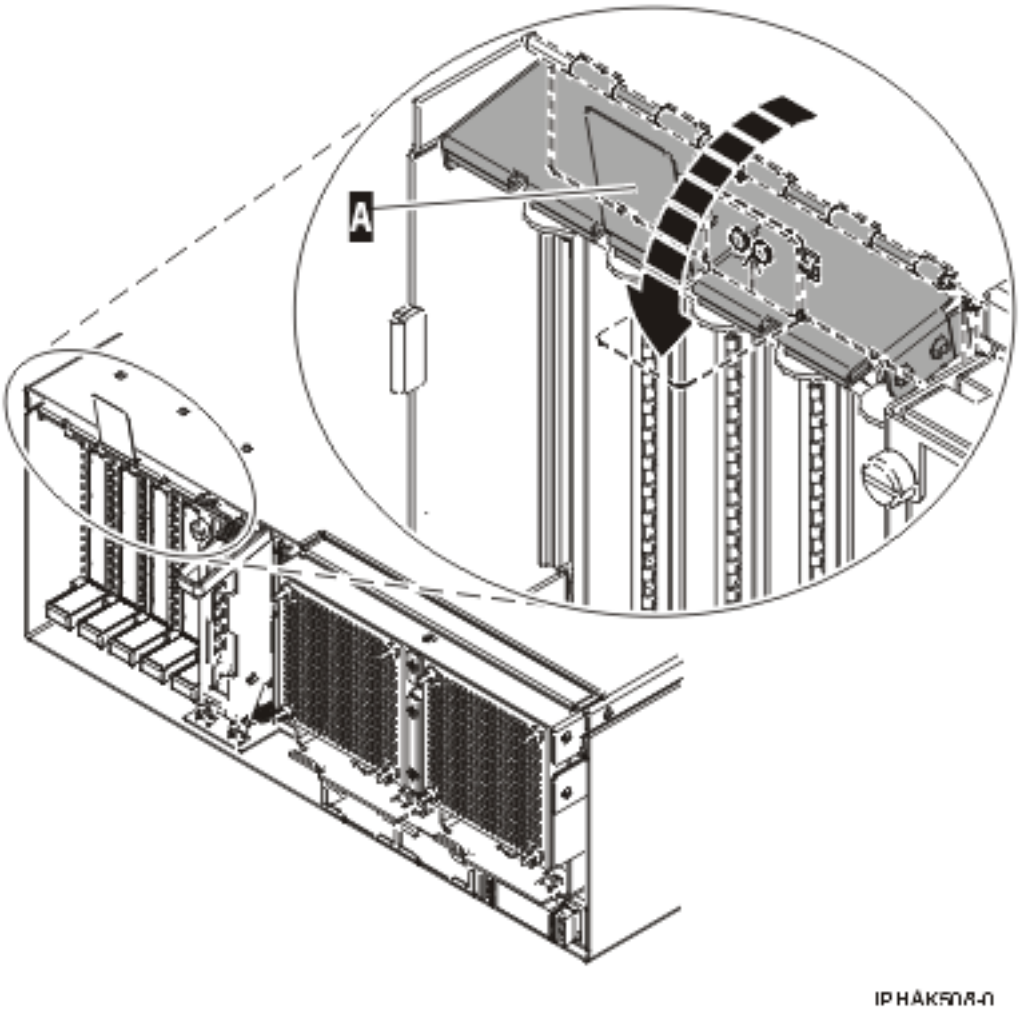


Figure 47. PCI adapter EMC shield in the closed position

29. Return to your terminal and the IBM i sign on screen.
30. Select **Power on domain** on the Hardware Resource Concurrent Maintenance display and press Enter.
31. Select **Assign** to on the resource that has an asterisk (*) on the Work with Controlling Resource display. Press Enter.
32. Wait for the Hardware Resource Concurrent Maintenance display to appear with this message: `Power on complete`

    The device is now configured. **This ends this procedure.**

C6 PCI adapter

Use this procedure to service a PCI adapter in location P1-C6.

1. **Choose concurrent or nonconcurrent repair.**

You may service a PCI adapter concurrently or nonconcurrently.

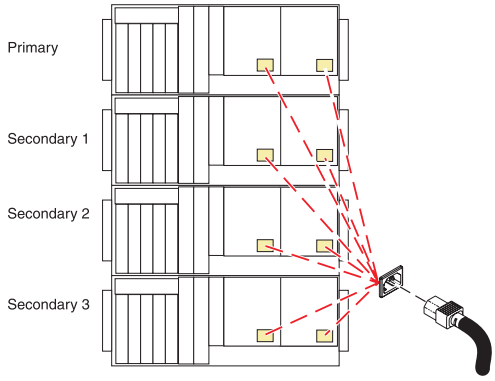
Will you be doing a concurrent repair?

No	Yes
↓	Go to Verify a repair.

2. Do not power off the system and remove the power cords:

Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.

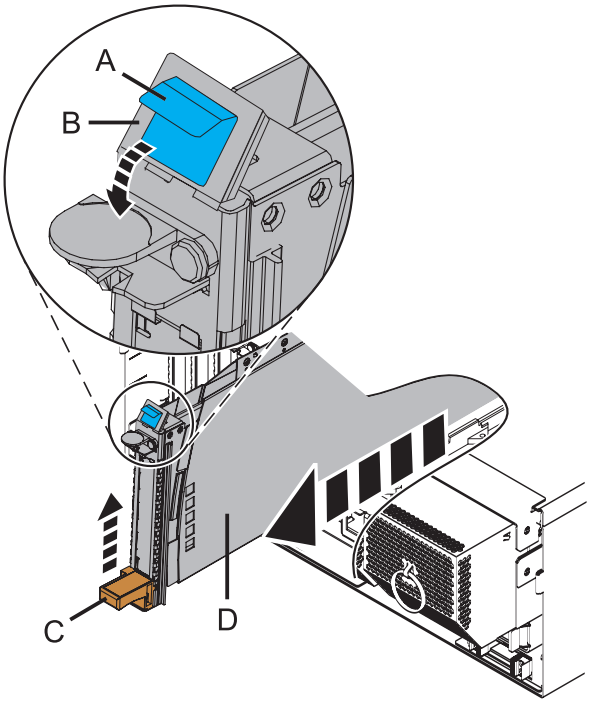


3. Open the back rack door

Open the back rack door.

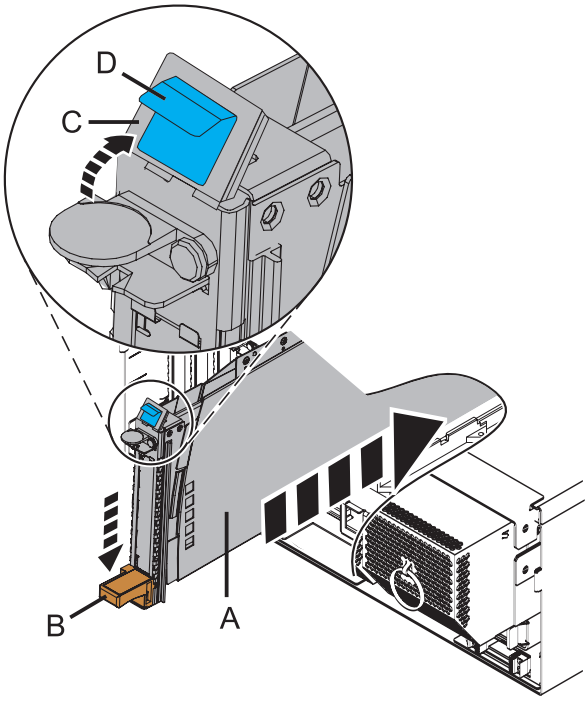
4. Remove the PCI Adapter in slot C6

1. Lift up the blue tab **(A)**, then pull it towards you to let the flap **(B)** drop down.
2. With the flap down, lift up the lower cassette handle **(C)**.
3. Pull the PCI cassette **(D)** out of the system unit.



5. Install the PCI Adapter in slot C6

1. With the flap down, slide the adapter **(A)** into the adapter slot.
2. When the adapter is fully inserted into the slot, firmly press downward on the lower adapter handle **(B)**.
3. Rotate the flap **(C)** up as far as it will go, then slide the blue tab **(D)** down to lock the flap in place.



6. Close the back rack door

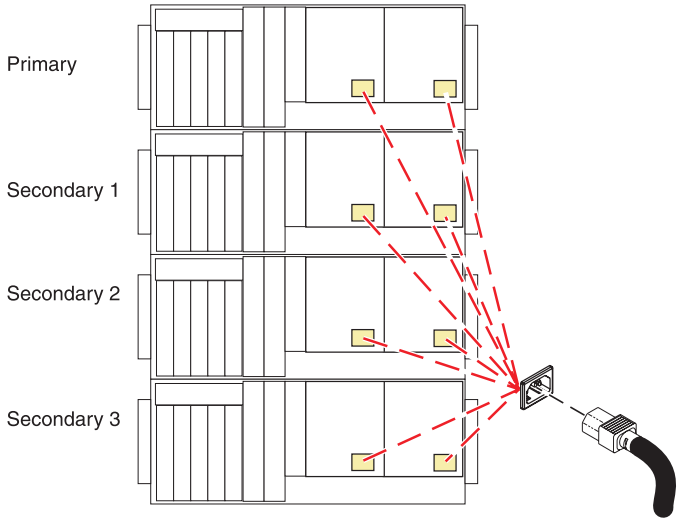
Close the back rack door.

7. **Install the power cords**

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



8. **Verify the repair**

Go to Verifying a repair.

If you are doing a concurrent repair using AIX, go to Remove and replace a PCI adapter contained in a cassette in the system with the power on in AIX

Power supply

Use this procedure to service the power supply.

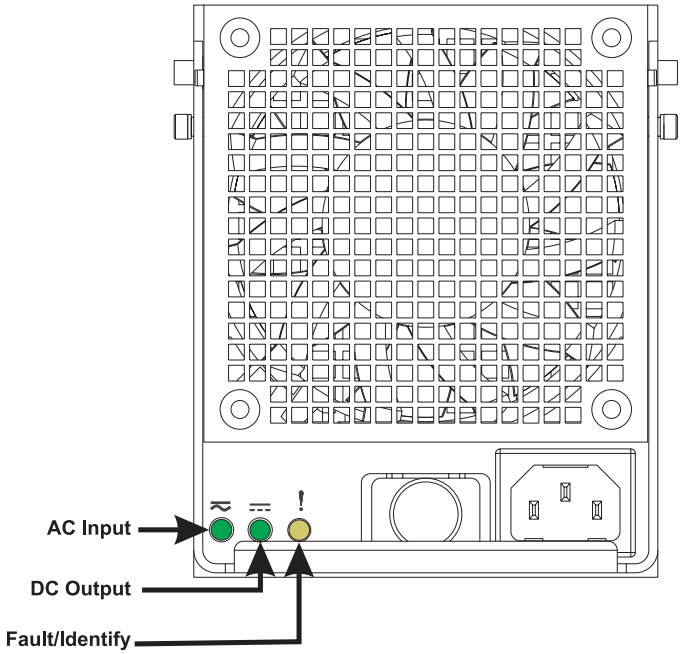
If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the power supply from the server. For instructions, see Exchanging a part using the Hardware Management Console.

1.

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 these conditions are not met, 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 non-concurrent repair.



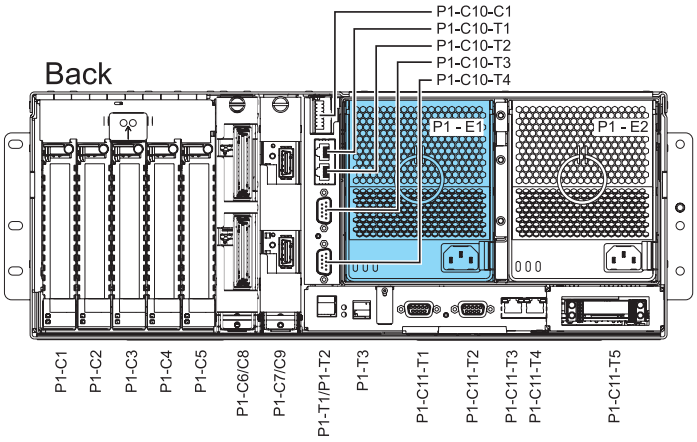
2.

Continue the repair concurrently or nonconcurrently.

Concurrent repair. Continue the repair with unit power on.	Non-concurrent repair. Power off the unit and continue the repair.
↓	Go to step 6 on page 197.

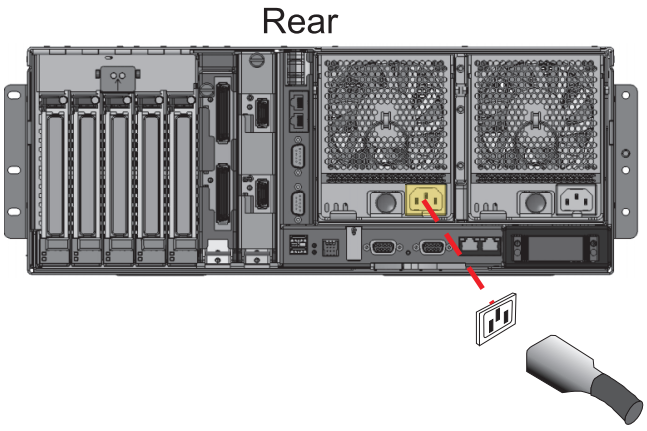
3. **Use this procedure to service the Power Supply.**

The component will be serviced concurrently. Power should not be removed from the unit containing the FRU in the location field above during this procedure.



4. **Disconnect the power cord**

Disconnect the power cord from the power supply being serviced.



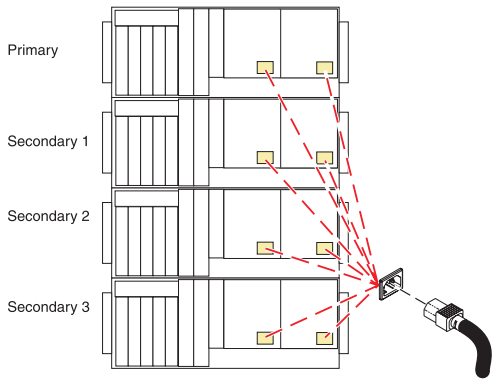
5.

Continue with step 7 on page 198.

6. **Do not power off the system and remove the power cords:**

Do not power off the system and remove the power cords:

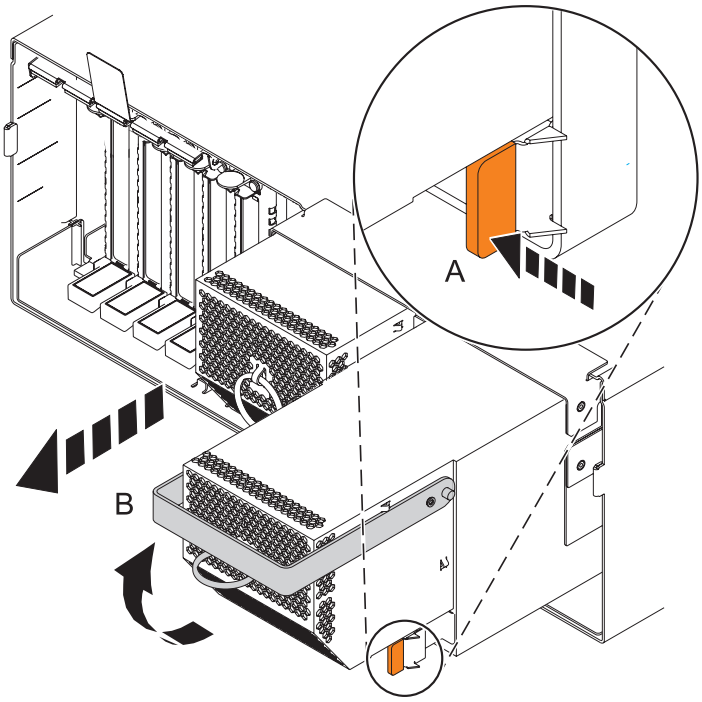
1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



7. Remove the power supply

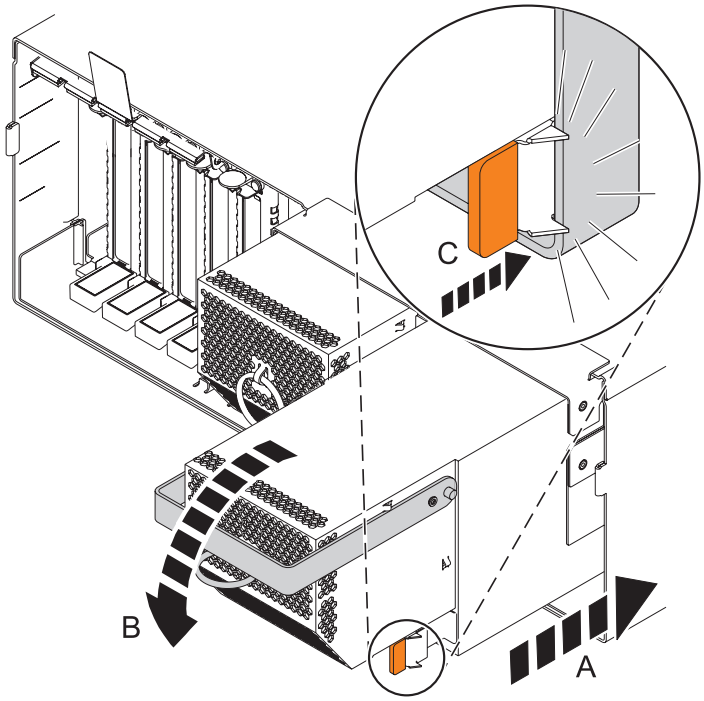
NOTE: If this is a concurrent repair, two power supplies must be present in the system in order to power on the system unit. If one power supply fails, or you have a system failure that does not stop the fans, the system will continue to operate. You can remove and replace the power supply with the system power on if it is done in LESS THAN FIVE MINUTES. After five minutes, the system will power down to prevent the system from over heating.

1. Push the handle latch **(A)** to release the handle.
2. Lift the handle **(B)** up and into the open position.
3. Using the handle, pull the power supply out of the power supply bay. **CAUTION: This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). Use care when lifting, removing, or installing this part or unit. (C008)**



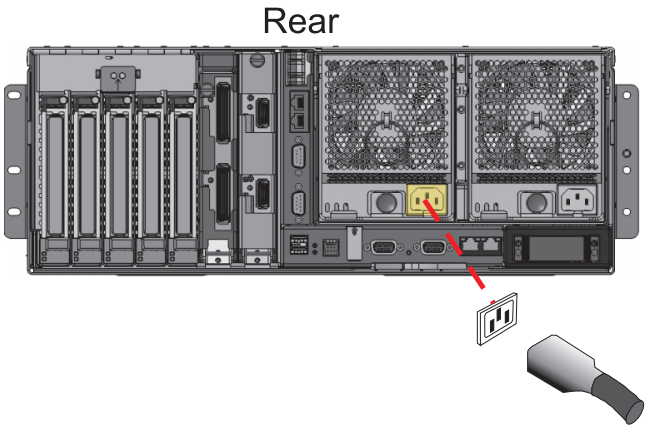
8. Install the new power supply

1. With the handle and latch in the open position, place the power supply in the power supply bay **(A)**.
2. Push the power supply completely into the power supply bay.
3. Close the handle **(B)**, and then push the handle latch into the closed position **(C)**.



9. Connect the power cord

Connect the power cord to the newly installed power supply.



10.

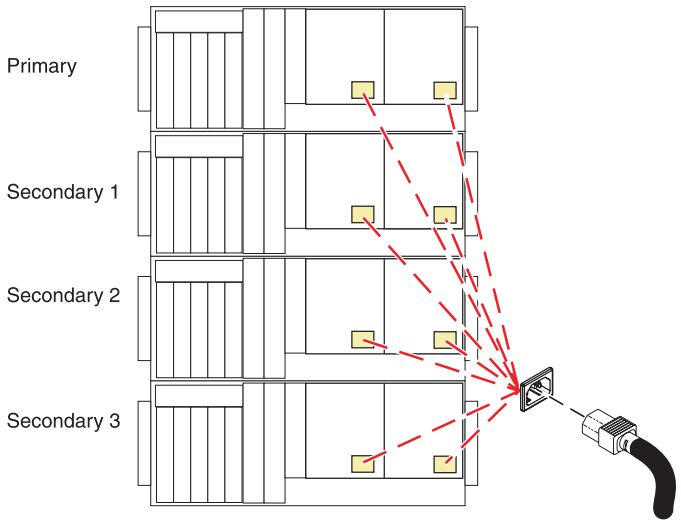
If you are performing a concurrent repair, go to step 13 on page 201.

11. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



12. Power On the System

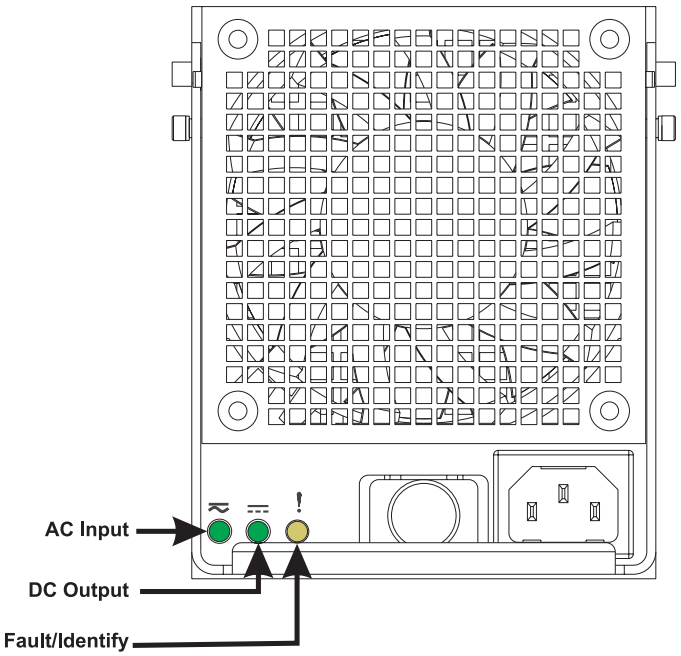
Power on the system. For instructions, refer to Powering on and powering off.

13.

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.



14. **Verify the repair**

Go to Verifying a repair.

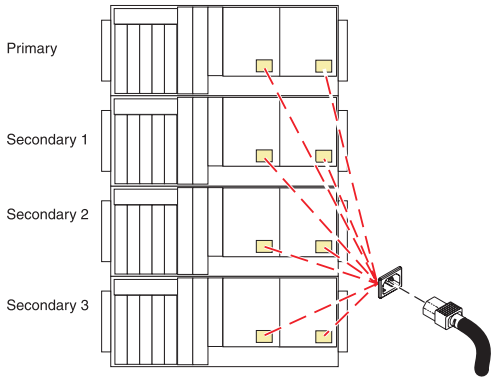
Removable media

Use this procedure to replace the removable media device.

1. Do not power off the system and remove the power cords:

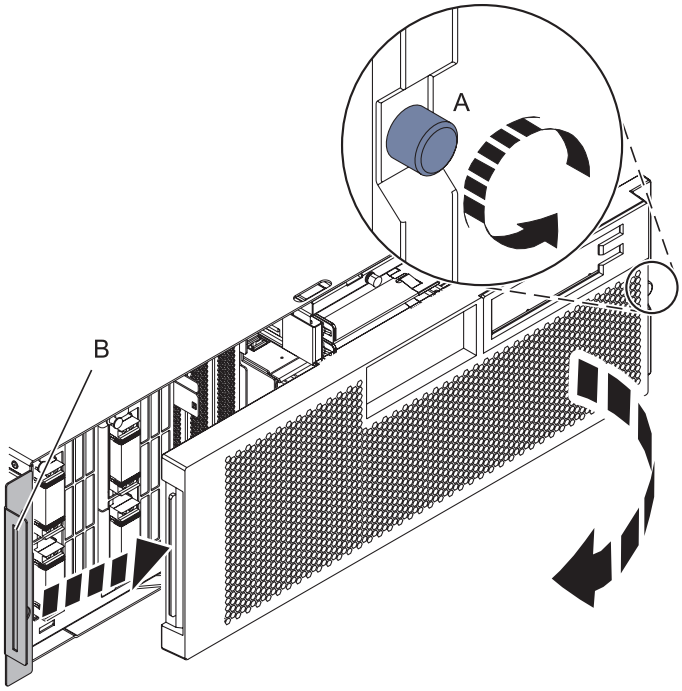
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



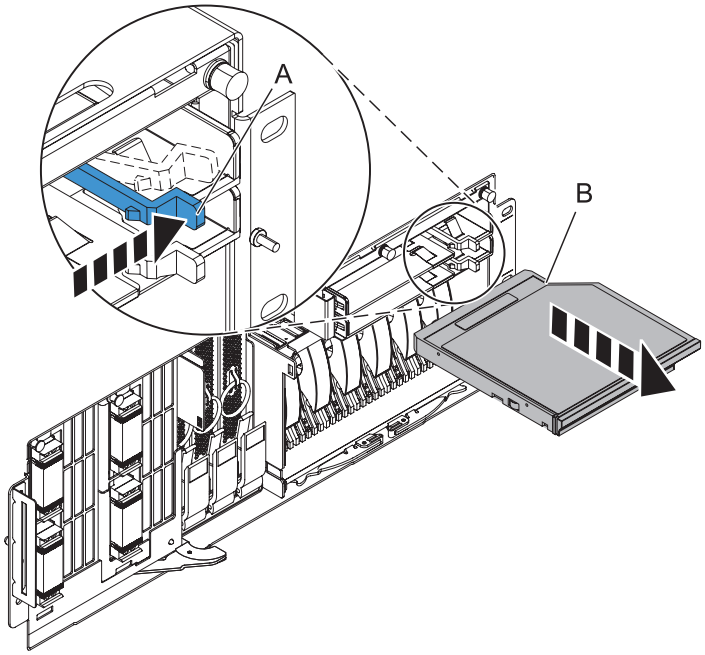
2. Remove the Front Cover

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)**.



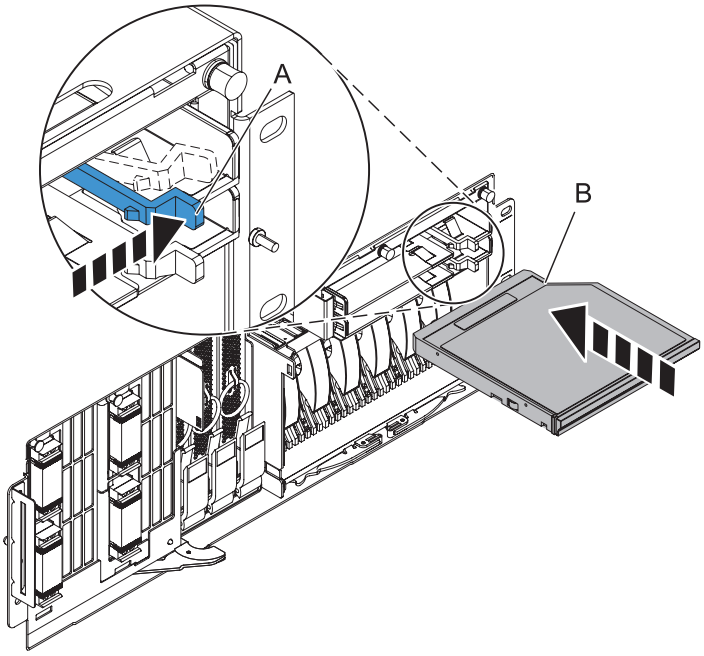
3. Remove the removable media device

While pushing out on the blue plastic retaining tab **(A)**, grasp the device **(B)** and pull it out of the system unit.



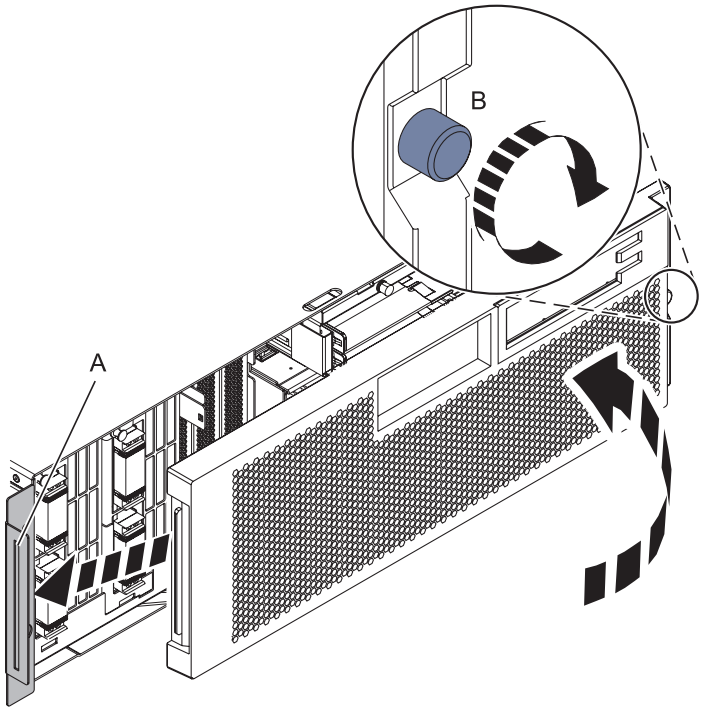
4. Install the removable media device

1. Align the device with the Slimline media bay.
2. While pushing out on the blue plastic retaining tab **(A)**, push the device **(B)** fully into the system.



5. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.



6. **Verify the repair**

Go to Verifying a repair.

Service processor assembly and time-of-day battery

Use this procedure to service the service processor assembly and time-of-day battery.

1. **Note:**

The following maintenance procedure will take 30 minutes or longer to complete. The system will be unavailable until the maintenance procedure is completed. If the system can not remain unavailable for this time period, then the procedure must be delayed.

Select option	
Proceed with the service action	Delay the service action
↓	**This ends the procedure.**

2. **Choose the type of service for the service processor assembly.**

Select an option:

- To repair a single service processor, go to "Repair a single service processor assembly" on page 212.
- To repair a redundant service processor, go to "Repair a redundant service processor assembly" on page 227.

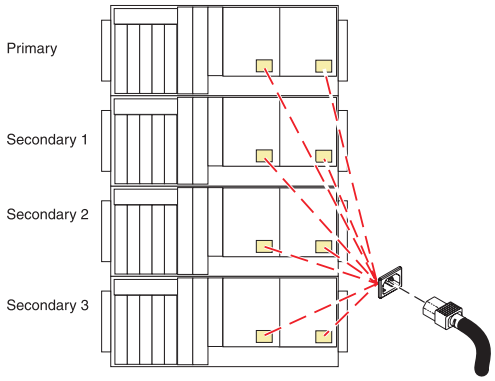
Add a redundant service processor assembly

Use this procedure to add redundant service processor assembly.

1. **Do not power off the system and remove the power cords:**

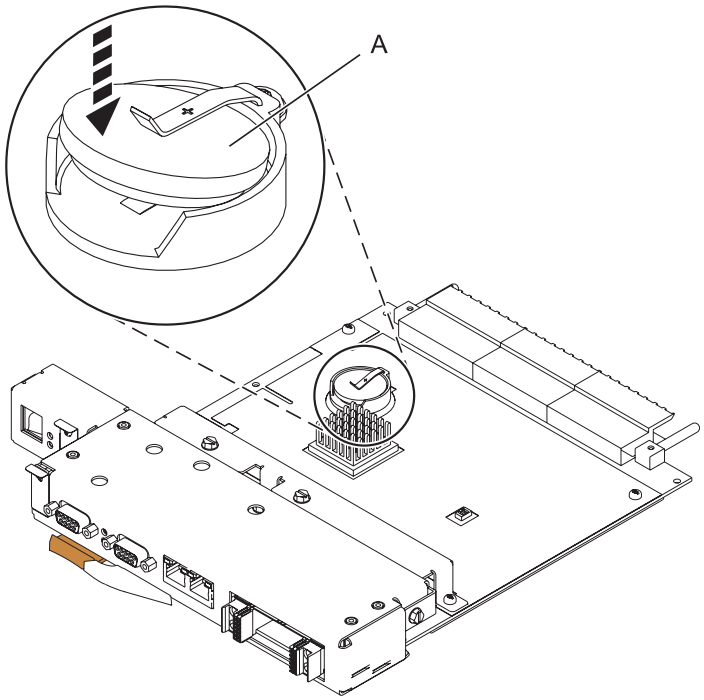
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



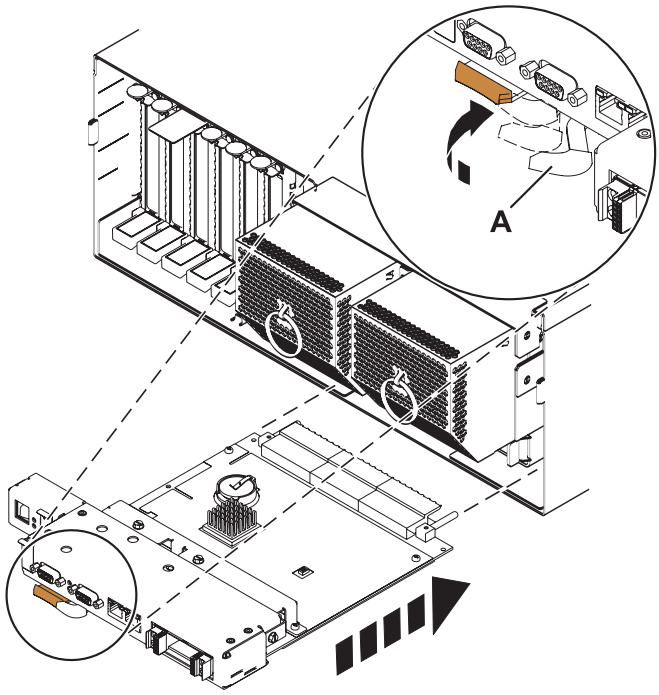
2. **Install the Time-Of-Day Battery**

If a time-of-day battery **(A)** is not present, install one in the new service processor assembly.



3. Install the Service Processor Assembly

1. Align the service processor assembly with the card slot.
2. Slide the service processor assembly all the way into the card slot in the card enclosure.
3. Push the handle **(A)** toward the service processor assembly until the release tab locks the handle in place. This will secure the service processor assembly into the card slot.
4. Reconnect all service processor assembly cables.



---

4. Restore Network Connectivity

The installed Service Processor must connect to the network to be accessible from the HMC.

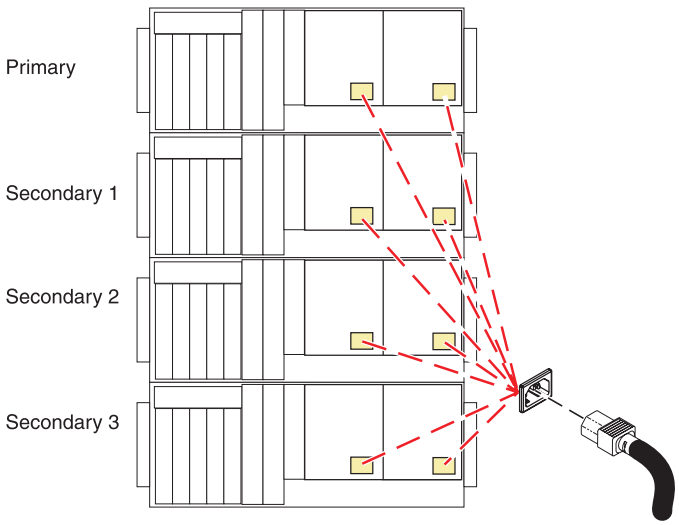
How will the IP Address of the Service Processor be managed?	
Configure a static IP Address	Obtain an IP Address automatically from a DHCP server
↓	Go to step 10 on page 212

Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



5. Power On the System

Power on the system. For instructions, refer to Powering on and powering off.

6. To configure the PC or mobile computer to access ASMI:

The Advanced System Management Interface (ASMI) will be used to configure the new Service Processor. A PC or mobile computer must be connected to the Service Processor to access ASMI.

To configure the PC or mobile computer to access ASMI

1. Connect an Ethernet cable from the PC or mobile computer to the Ethernet port labeled HMC1, or the Ethernet port labeled HMC2 on the Service Processor being serviced.
2. Configure the Ethernet interface on the PC or mobile computer to an IP address and subnet mask within the same subnet as the server, so that your PC or mobile computer can communicate with the Service Processor.

   Use the following table to help determine these values:

   ```
   Service
   Processor
   connector  IP address   Subnet mask     Gateway address

   HMC1       169.254.2.147  255.255.255.0   169.254.2.1
   HMC2       169.254.3.147  255.255.255.0   169.254.3.1
   ```

   For example, if you connected your PC or mobile computer to HMC1, the IP address for your PC or mobile computer could be 169.254.2.1 and the subnet mask would be 255.255.255.0. Set the gateway IP address to the same IP address as the PC or mobile computer.

7. **To connect to the ASMI:**

To configure the Service Processor you must connect to the Advanced System Management Interface (ASMI).

To connect to the ASMI

1. Type the ASMI address in the Address field of your PC's or mobile computer's Web browser.
2. When the login display appears, enter one of the following default user IDs and passwords:

   ```
   User ID       Password
   admin         admin
   ```

3. Change the default password when prompted

8. To configure the Service Processor's static IP Address:

Configure the Service Processor's static IP Address.

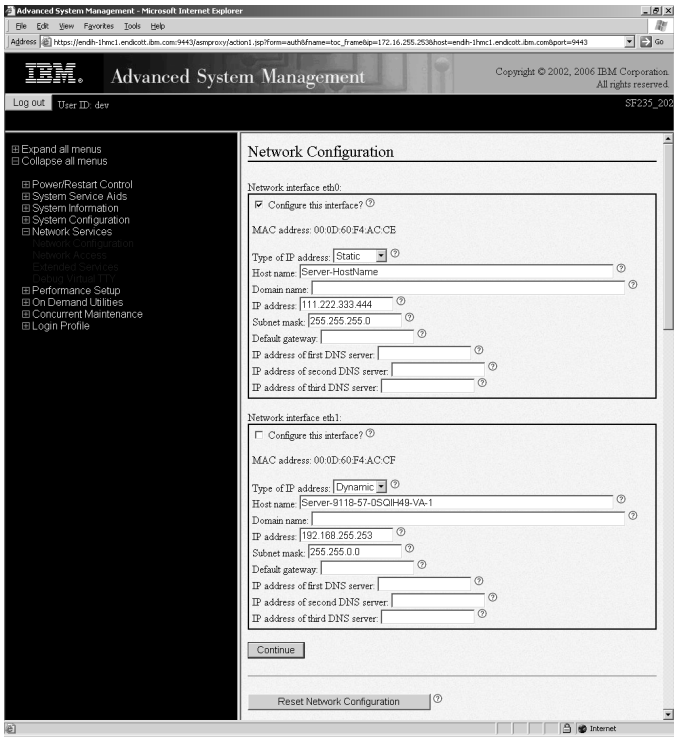
To configure the Service Processor's static IP Address

1. From the navigation area, expand Network Services.
2. Click Network Configuration.
3. If your service processor connects to the network using a static IP address on Ethernet port HMC1, fill in the section labeled Network interface eth0.

   If your service processor connects to the network using a static IP address on Ethernet port HMC2 , fill in the section labeled Network interface eth1.
4. Ensure that the following fields are filled in correctly:

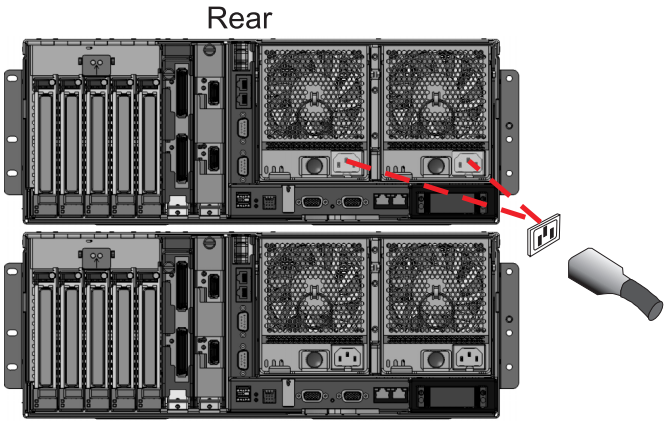
Field	Value
Configure this interface?	Yes
Type of IP address	Static
IP address	The service Processor's static IP address
Subnet mask	255.255.255.0

5. Click **Continue** and verify your settings on the Network Configuration panel.
6. Click **Save Settings** to complete the static IP Address configuration.



9. **Unplug service processor enclosure**

Disconnect the AC power source from the enclosure.



10.

Note: If you can not access the ASMI, or if the system will not power-on, after exchanging a service processor assembly, you might have a server firmware level problem. If the new service processor assembly contains an earlier release of server firmware than you were using, it might not support your current hardware configuration. You will need to update your server firmware using the USB port on the service processor assembly. Refer to Hardware Management Console models 7042-CR4, 7042-C06, and 7042-C07 service.

11.

Verify the repair.

Go to Verifying a repair.

Repair a single service processor assembly

Use this procedure to repair a single service processor assembly.

1. Check and record the server firmware and service processor settings

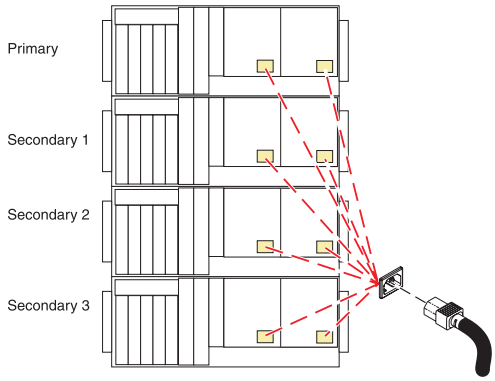
1. Check and record the server firmware level prior to replacing this FRU. You may need to update the system to the latest server firmware code level after you replace this FRU.
2. Check and record the service processor settings you previously set using the Advanced System Management Interface (ASMI). This can be done using a Hardware Management Console (HMC) or PC to access ASMI. You will need to reset these service processor settings after you replace this FRU or the default settings will be used. Settings to check 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.
3. Record the processing unit power control network identifier using the ASMI.
4. Also record any service processor settings you may have set using operating system commands.

---

2. Do not power off the system and remove the power cords:

Do not power off the system and remove the power cords:

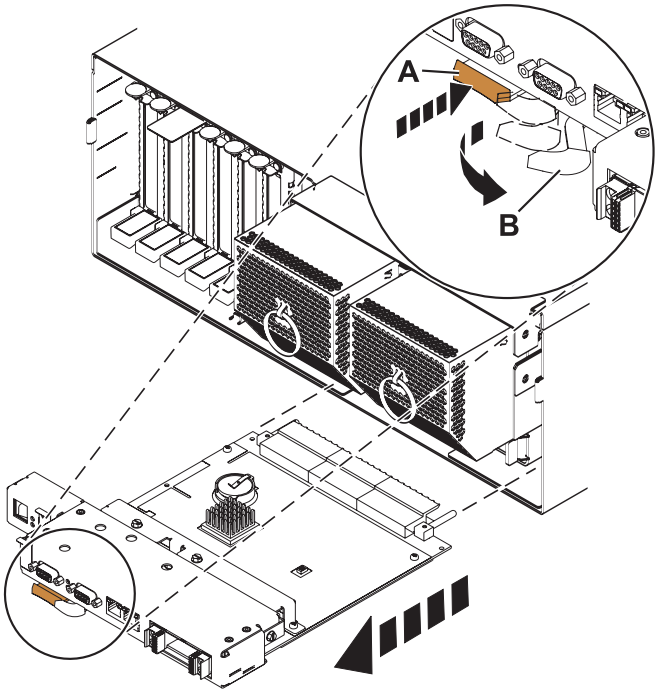
1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



---

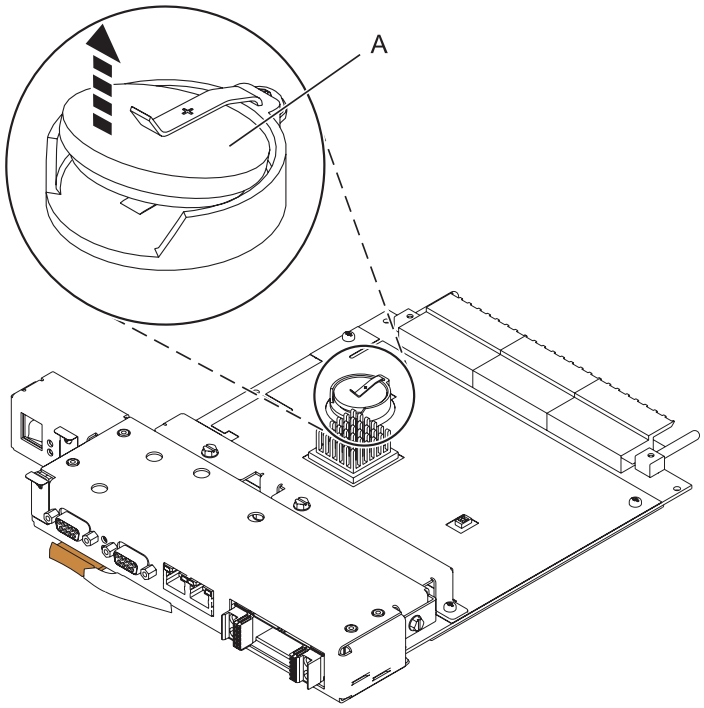
3. Remove the Service Processor Assembly

1. Label and disconnect all cables connected to the service processor assembly.
2. Press the thumb release **(A)** on the service processor assembly to unlock the handle.
3. Pull the handle to the right to unseat the service processor assembly.
4. Pull the service processor assembly from the card enclosure using the handle and supporting the bottom of the card.



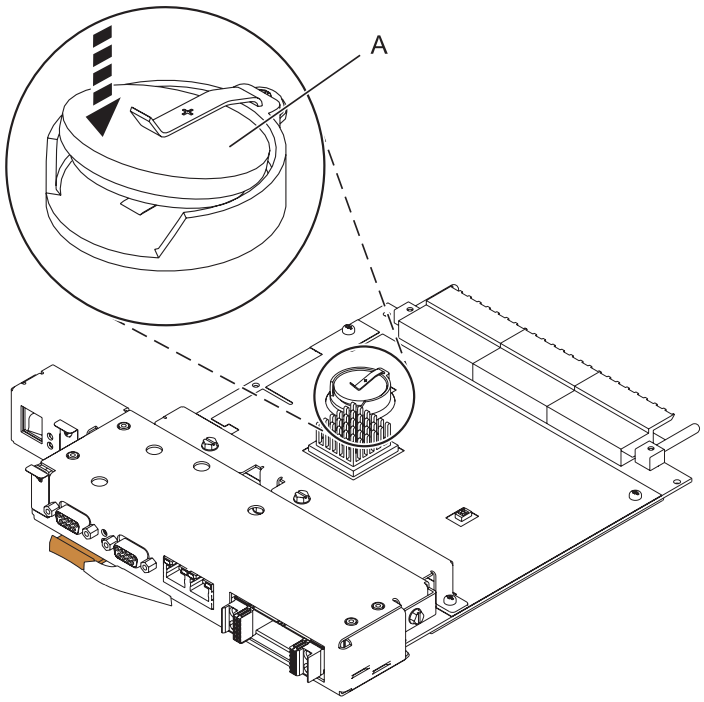
4. **Remove the Time-Of-Day Battery**

Remove the time-of-day battery **(A)** from its slot as shown.



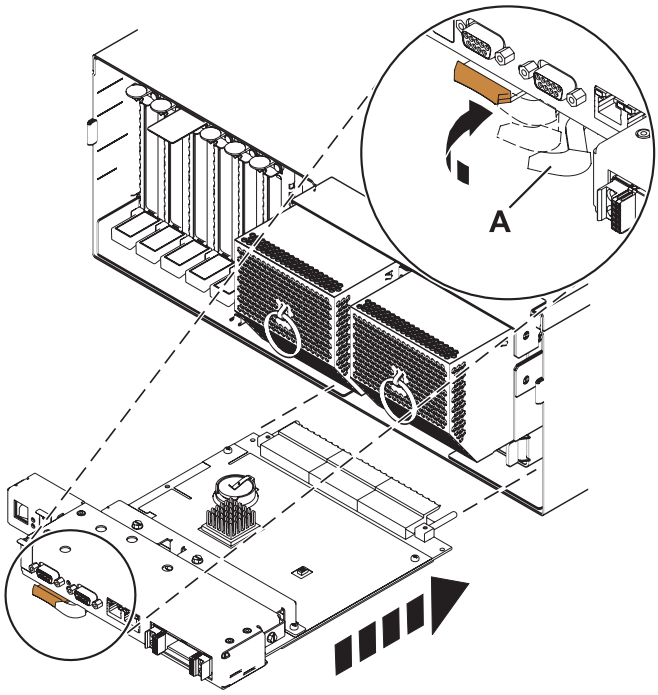
5. **Install the Time-Of-Day Battery**

If a time-of-day battery **(A)** is not present, install one in the new service processor assembly.



6. Install the Service Processor Assembly

1. Align the service processor assembly with the card slot.
2. Slide the service processor assembly all the way into the card slot in the card enclosure.
3. Push the handle **(A)** toward the service processor assembly until the release tab locks the handle in place. This will secure the service processor assembly into the card slot.
4. Reconnect all service processor assembly cables.

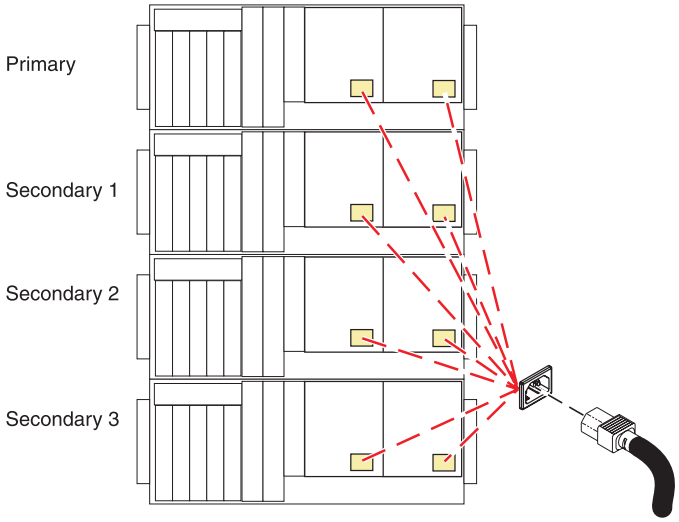


7. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



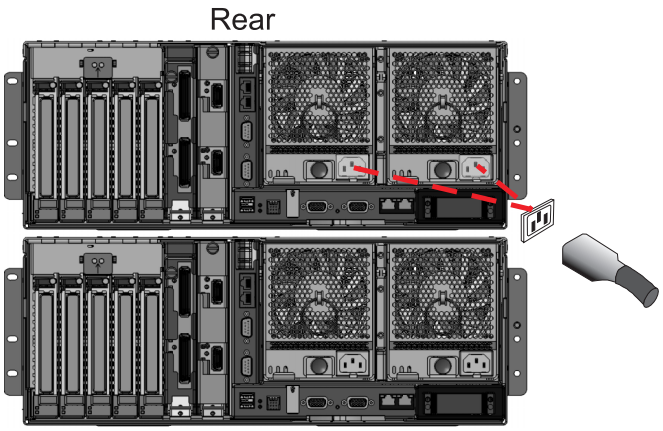
8. Restore Network Connectivity

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?	
Configure a static IP Address	Obtain an IP Address automatically from a DHCP server
↓	Go to step 16 on page 222

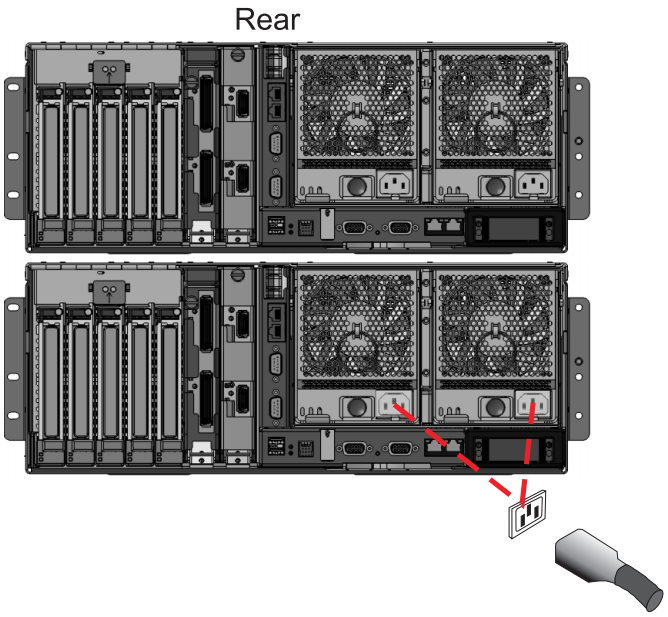
9. **Plug In Top Enclosure**

Connect the AC power source to the top enclosure.



10. **Plug In Second Enclosure**

Connect the AC power source to the second enclosure.



11. To configure the PC or mobile computer to access ASMI:

The Advanced System Management Interface (ASMI) will be used to configure the new Service Processor. A PC or mobile computer must be connected to the Service Processor to access ASMI.

To configure the PC or mobile computer to access ASMI

1. Connect an Ethernet cable from the PC or mobile computer to the Ethernet port labeled HMC1, or the Ethernet port labeled HMC2 on the Service Processor being serviced.
2. Configure the Ethernet interface on the PC or mobile computer to an IP address and subnet mask within the same subnet as the server, so that your PC or mobile computer can communicate with the Service Processor.

   Use the following table to help determine these values:

   ```
   Service
   Processor
   connector  IP address   Subnet mask     Gateway address

   HMC1       169.254.2.147  255.255.255.0   169.254.2.1
   HMC2       169.254.3.147  255.255.255.0   169.254.3.1
   ```

   For example, if you connected your PC or mobile computer to HMC1, the IP address for your PC or mobile computer could be 169.254.2.1 and the subnet mask would be 255.255.255.0. Set the gateway IP address to the same IP address as the PC or mobile computer.

---

12. To connect to the ASMI:

To configure the Service Processor you must connect to the Advanced System Management Interface (ASMI).

To connect to the ASMI

1. Type the ASMI address in the Address field of your PC's or mobile computer's Web browser.
2. When the login display appears, enter one of the following default user IDs and passwords:

   ```
   User ID       Password
   admin         admin
   ```

3. Change the default password when prompted

---

13. To configure the Service Processor's static IP Address:

Configure the Service Processor's static IP Address.

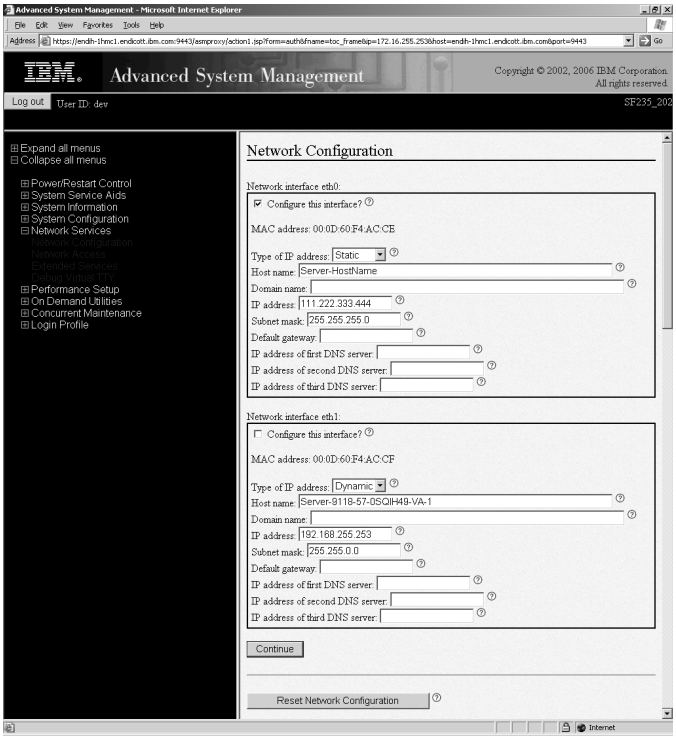
To configure the Service Processor's static IP Address

1. From the navigation area, expand Network Services.
2. Click Network Configuration.
3. If your service processor connects to the network using a static IP address on Ethernet port HMC1, fill in the section labeled Network interface eth0.

   If your service processor connects to the network using a static IP address on Ethernet port HMC2 , fill in the section labeled Network interface eth1.
4. Ensure that the following fields are filled in correctly:

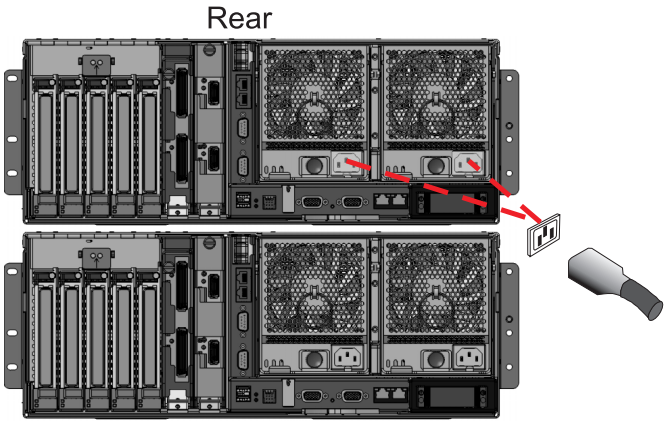
Field	Value
Configure this interface?	Yes
Type of IP address	Static
IP address	The service Processor's static IP address
Subnet mask	255.255.255.0

5. Click **Continue** and verify your settings on the Network Configuration panel.
6. Click **Save Settings** to complete the static IP Address configuration.



14. Unplug service processor enclosure

Disconnect the AC power source from the enclosure.

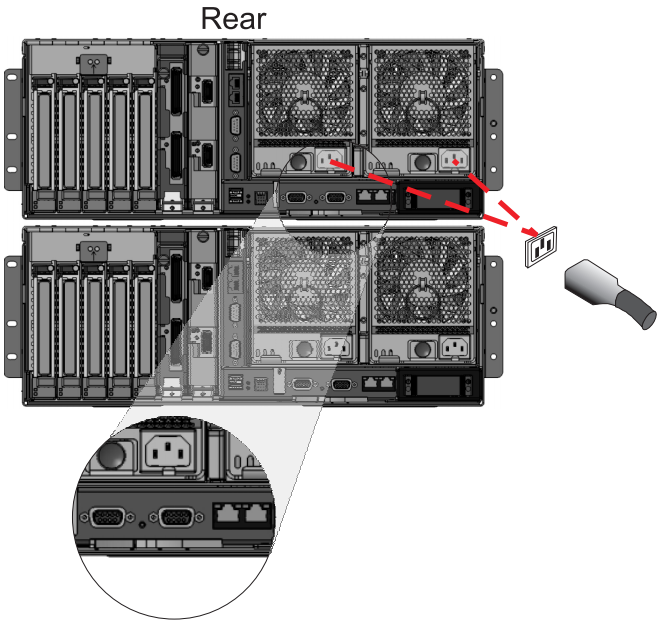


---

15. Connect the top drawer to the managed system

1. Reconnect the ethernet and any other cables that were disconnected during the Service Processor removal.
2. Reconnect the AC power source.

Click **Next** to complete the service procedure.



---

16. 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
arrow down	link button 2

---

17. 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?

No	Yes
↓	Go to step 22 on page 224.

---

18. 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 22 on page 224.

---

19. Restore Service Processor Settings

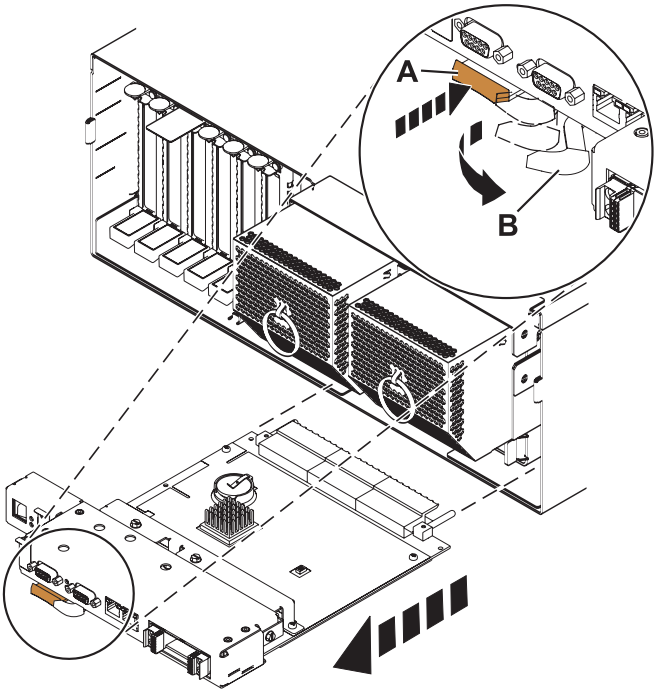
You have indicated that you are still not able to access the service network.

You will need to reset the service processor network interfaces (and passwords) as instructed on the following set of panels. Before proceeding, to reset the service processor, disconnect the power cords from the enclosure being serviced.

---

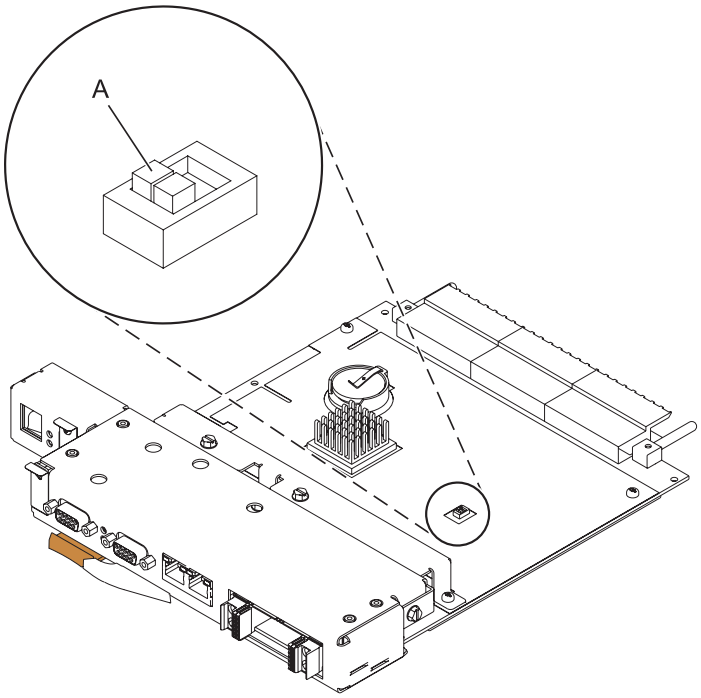
20. Remove the Service Processor Assembly

1. Label and disconnect all cables connected to the service processor assembly.
2. Press the thumb release **(A)** on the service processor assembly to unlock the handle.
3. Pull the handle to the right to unseat the service processor assembly.
4. Pull the service processor assembly from the card enclosure using the handle and supporting the bottom of the card.



21. Restore Service Processor Settings

Move both service processor reset jumpers **(A)** from their current position to the opposite position.



Go to step 5 on page 215.

22. Restore Service Processor Settings

1. Log on to the ASMI with the user ID admin and the default password admin.
2. Change the admin user ID's password and the general user ID's password when prompted by following these steps:
   a. On the ASMI Welcome pane, specify your user ID and password, and click Log In.
   b. In the navigation area, expand Login Profile.
   c. Select Change Password.
   d. Specify the required information, and click Continue.
3. **NOTE:** Passwords can be any combination of up to 64 alphanumeric characters. The default password for the general user ID is general, and the default password for the administrator ID is admin. After your initial login to the ASMI and after the reset toggle jumpers are moved, the general user and 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. This password is not the password for the user ID you want to change.

23. 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, 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.

---

24. Restore Service Processor Settings

Set the time of day.

1. On the ASMI Welcome pane, specify your user ID and password, and click Log In.
2. In the navigation area, expand System Configuration.
3. 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).
4. Change either the date value or the time value or both, and click Update Time Of Day.

If this server does not use an HMC, set the time of day using the appropriate operating system command.

---

25. Restore Service Processor Settings

Reenter any of the following settings that you previously changed through the ASMI, 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.

---

26. 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.
   a. To reset the HMC access password from the HMC GUI (preferred method):
   b.
      - 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. To reset the HMC access password from the HMC command line, type:
      chsyspwd -m managed system -t access --passwd --newpasswd newpassword
      where:
      - The value for managed system is the new service processor's managed system name.
      - No value for --passwd is entered thereby allowing authentication.
      - The value for newpassword is the new password value.

---

27. Recover Partition Data

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

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

1. Click on **Systems Management**.
2. Click on **Servers**.
3. Use the checkbox to select the managed system and click on the **Tasks** drop-down menu that appears on the table toolbar.
4.
   - From the menu, select **Recover Partition Data**.

---

28. Restore Service Processor Settings

If necessary, update to the latest server firmware level. If you are ONLY replacing the battery in a model 570 FSP card, skip this panel.

To upgrade to a new server firmware (Licensed Internal Code) release WITH an HMC, follow these steps:

1. For all models except 59x model servers, it is recommended that you install HMC fixes before you upgrade to a new server firmware release. For 59x model servers, you MUST install HMC fixes before you upgrade to a new server or power subsystem firmware release.
2. From the main WebSM screen, expand the Licensed Internal Code Maintenance folder.
3. Click the Licensed Internal Code Updates icon.
4. In the Contents area, click Upgrade Licensed Internal Code to a new release.
5. In the Target Object Selection window, click the target system, and click OK. The target is the managed system for which you want to upgrade the firmware to a new release.
6. In the Hardware Management Console License Agreement window, read the agreement and click Accept.
7. Follow the on-screen directions to upgrade the system firmware.
   The following message might be displayed on the HMC interface: Quiesce any applications currently running on your operating systems for the systems listed below. In this situation, you need to manually shut down all of the applications and logical partitions to prevent the system from shutting them down abnormally. Use the normal procedures for your particular operating system to shut down the logical partitions

---

29.

Note: If you can not access the ASMI. or if the system will not power-on, after exchanging a service processor assembly, you might have a server firmware level problem. If the new service processor assembly contains an earlier release of server firmware than you were using, it might not support your current hardware configuration. You will need to update your server firmware using the USB port on the service processor assembly. Refer to Hardware Management Console models 7042-CR4, 7042-C06, and 7042-C07 service.

30.

Verify the repair.

Go to Verifying a repair.

Repair a redundant service processor assembly

Use this procedure to repair a service processor assembly and time-of-day battery.

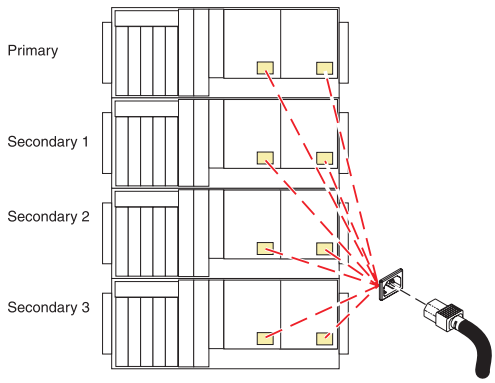
1.

Note whether the operator panel needs to be moved. The operator panel needs to be moved if it is on the same side as the service processor assembly that is being repaired.

2. **Do not power off the system and remove the power cords:**

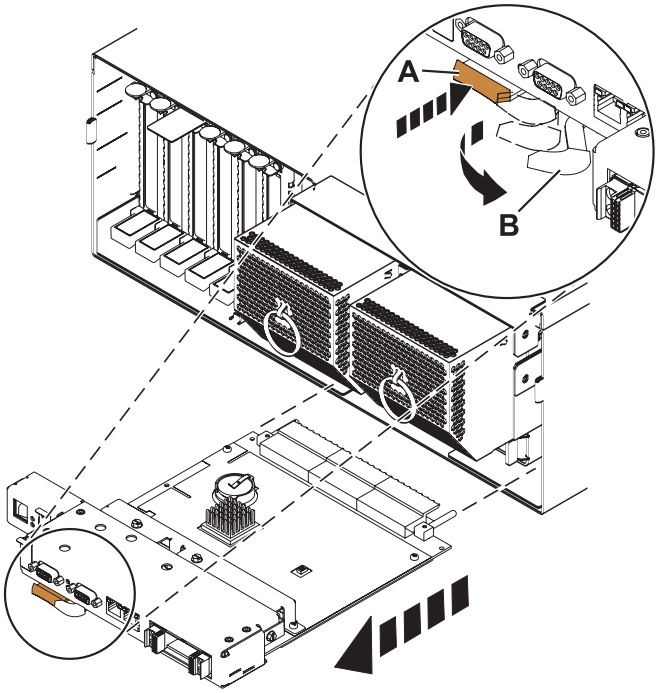
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



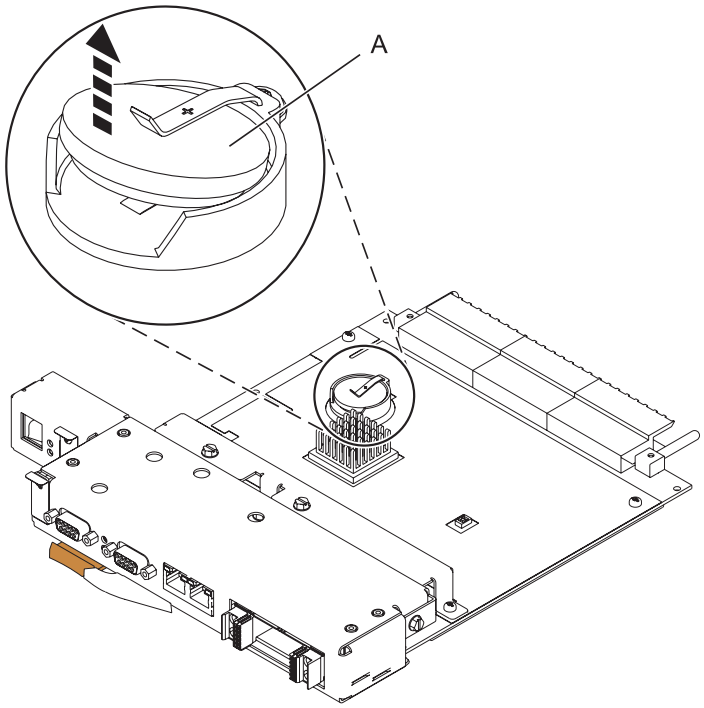
3. Remove the Service Processor Assembly

1. Label and disconnect all cables connected to the service processor assembly.
2. Press the thumb release **(A)** on the service processor assembly to unlock the handle.
3. Pull the handle to the right to unseat the service processor assembly.
4. Pull the service processor assembly from the card enclosure using the handle and supporting the bottom of the card.



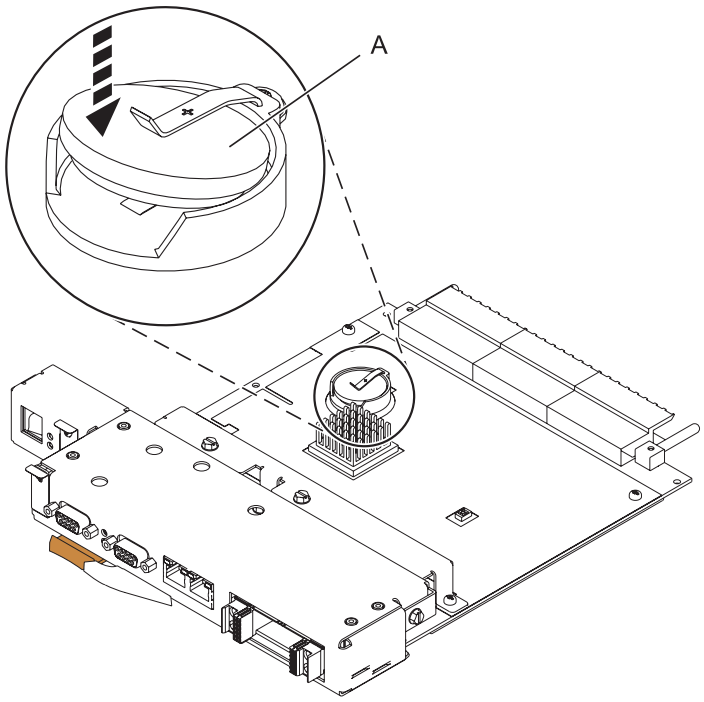
4. **Remove the Time-Of-Day Battery**

Remove the time-of-day battery **(A)** from its slot as shown.



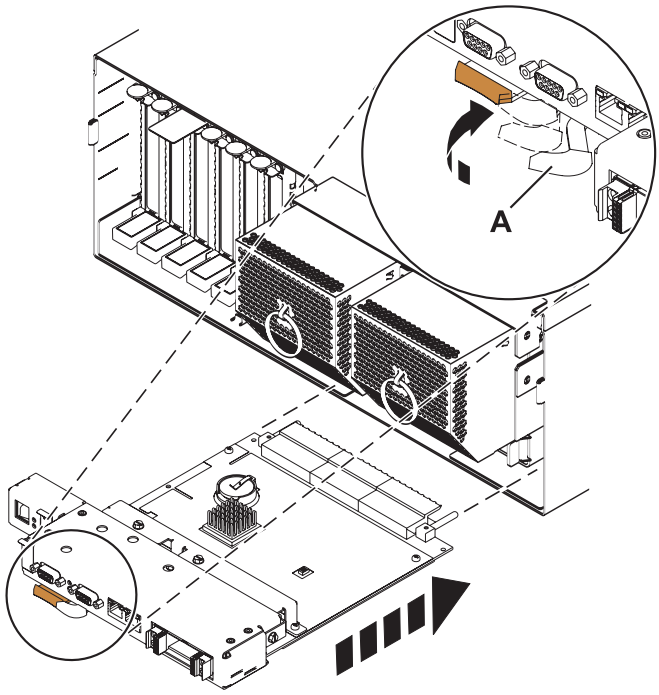
5. **Install the Time-Of-Day Battery**

If a time-of-day battery **(A)** is not present, install one in the new service processor assembly.



6. Install the Service Processor Assembly

1. Align the service processor assembly with the card slot.
2. Slide the service processor assembly all the way into the card slot in the card enclosure.
3. Push the handle **(A)** toward the service processor assembly until the release tab locks the handle in place. This will secure the service processor assembly into the card slot.
4. Reconnect all service processor assembly cables.

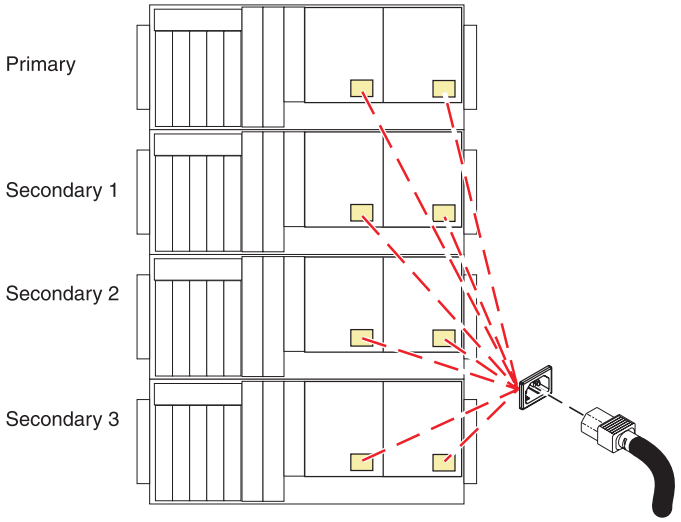


7. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



8. Restore Network Connectivity

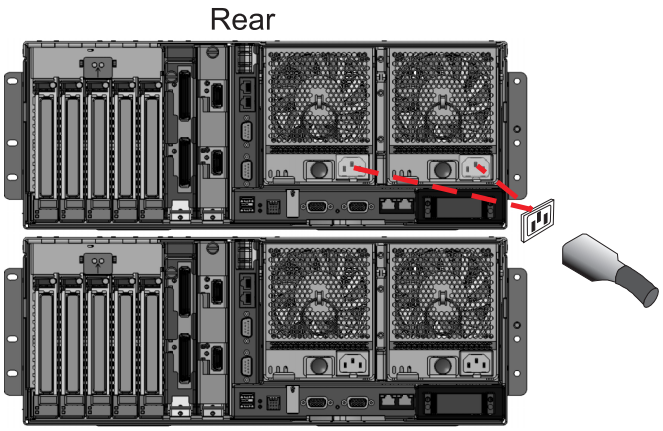
The installed Service Processor must connect to the network to be accessible from the HMC.

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

Configure a static IP Address	Obtain an IP Address automatically from a DHCP server
↓	Go to step 15 on page 235

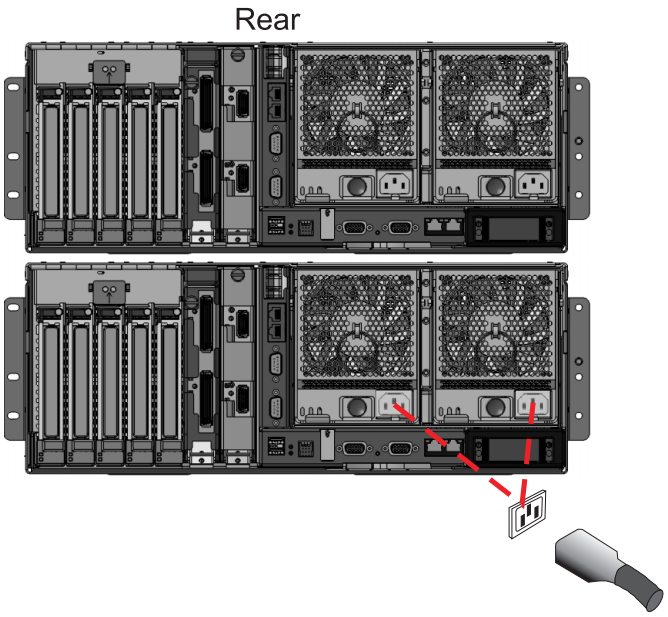
9. **Plug In Top Enclosure**

Connect the AC power source to the top enclosure.



10. **Plug In Second Enclosure**

Connect the AC power source to the second enclosure.



11. To configure the PC or mobile computer to access ASMI:

The Advanced System Management Interface (ASMI) will be used to configure the new Service Processor. A PC or mobile computer must be connected to the Service Processor to access ASMI.

To configure the PC or mobile computer to access ASMI

1. Connect an Ethernet cable from the PC or mobile computer to the Ethernet port labeled HMC1, or the Ethernet port labeled HMC2 on the Service Processor being serviced.
2. Configure the Ethernet interface on the PC or mobile computer to an IP address and subnet mask within the same subnet as the server, so that your PC or mobile computer can communicate with the Service Processor.

   Use the following table to help determine these values:

   ```
   Service
   Processor
   connector  IP address   Subnet mask     Gateway address

   HMC1       169.254.2.147  255.255.255.0   169.254.2.1
   HMC2       169.254.3.147  255.255.255.0   169.254.3.1
   ```

   For example, if you connected your PC or mobile computer to HMC1, the IP address for your PC or mobile computer could be 169.254.2.1 and the subnet mask would be 255.255.255.0. Set the gateway IP address to the same IP address as the PC or mobile computer.

---

12. To connect to the ASMI:

To configure the Service Processor you must connect to the Advanced System Management Interface (ASMI).

To connect to the ASMI

1. Type the ASMI address in the Address field of your PC's or mobile computer's Web browser.
2. When the login display appears, enter one of the following default user IDs and passwords:

   ```
   User ID       Password
   admin         admin
   ```

3. Change the default password when prompted

---

13. To configure the Service Processor's static IP Address:

Configure the Service Processor's static IP Address.

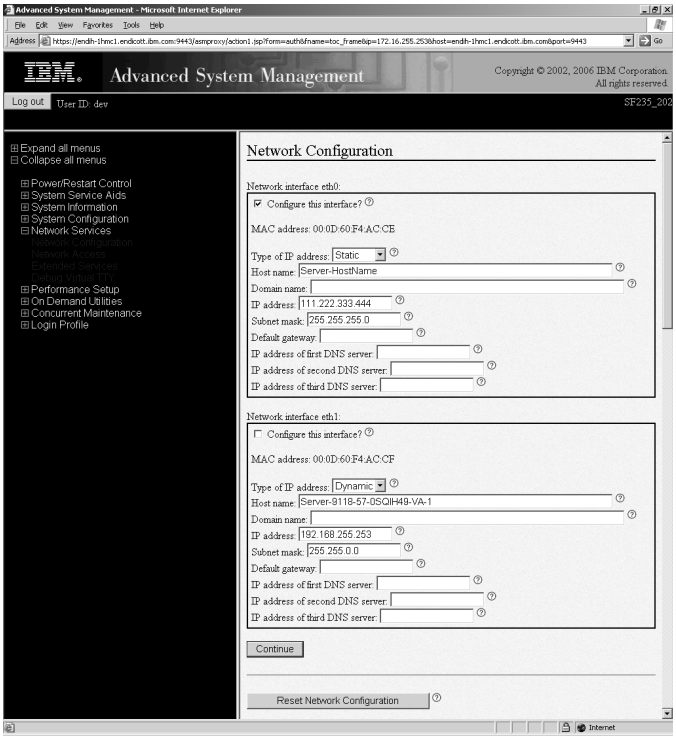
To configure the Service Processor's static IP Address

1. From the navigation area, expand Network Services.
2. Click Network Configuration.
3. If your service processor connects to the network using a static IP address on Ethernet port HMC1, fill in the section labeled Network interface eth0.

   If your service processor connects to the network using a static IP address on Ethernet port HMC2 , fill in the section labeled Network interface eth1.
4. Ensure that the following fields are filled in correctly:

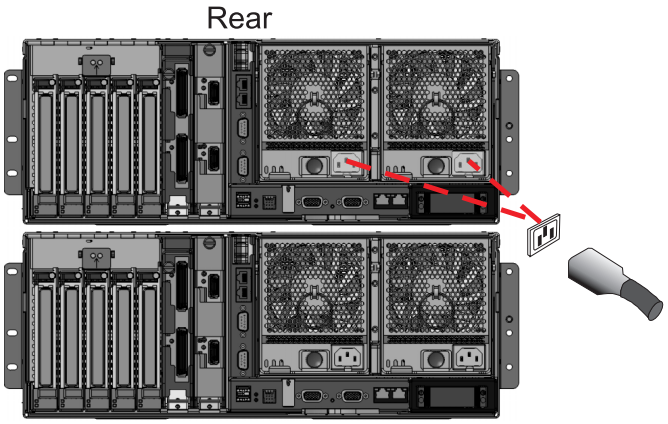
Field	Value
Configure this interface?	Yes
Type of IP address	Static
IP address	The service Processor's static IP address
Subnet mask	255.255.255.0

5. Click **Continue** and verify your settings on the Network Configuration panel.
6. Click **Save Settings** to complete the static IP Address configuration.



14. Unplug service processor enclosure

Disconnect the AC power source from the enclosure.



---

15. If necessary, move the operator panel.

Does the operator panel need to be moved?

Yes	No
↓	Go to step 20 on page 239.

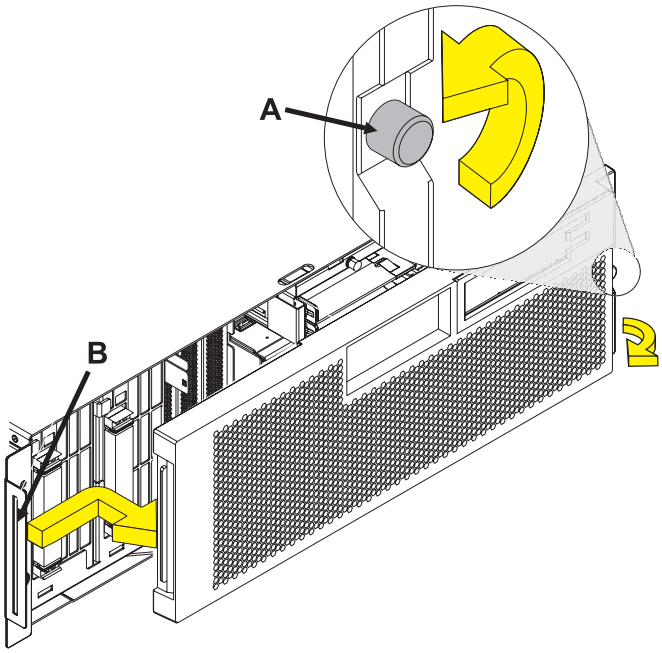
---

16. **Remove the front covers from both drawers containing the redundant service processors.**

To remove:

1. Unlock the cover.
2. Grasp the edges of the right side **(A)** and pull it towards you to open it.
3. After opening the cover, press down on the lever **(B)** that is located inside along the top, left side of the cover.
4. Tilt the top of the cover away from the tower and lift the cover off.

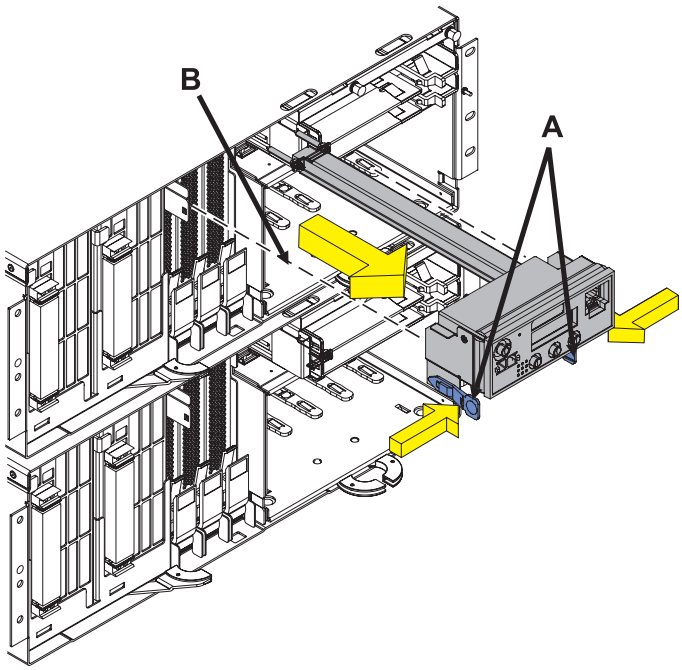
When you have completed these steps for both drawers, click **Next** to continue.



17. Remove the Control Panel

Remove the control panel from the top drawer by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges of the panel, and pulling it out of its bay **(B)**.

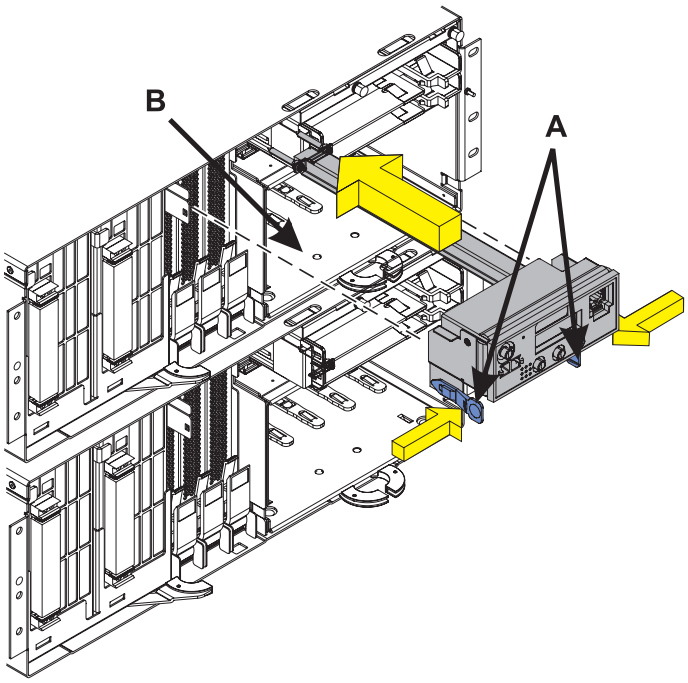
Attention: A control panel or control panel filler must be in place when the system is on for proper air flow and cooling.



18. Install the Control Panel

Install the control panel in the top drawer by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges of the panel, and pulling it out of its bay **(B)**.

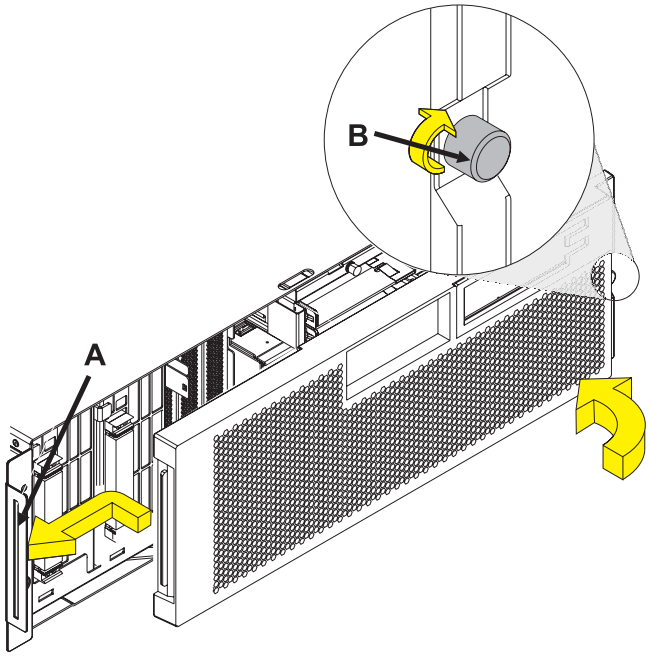
Attention: A control panel or control panel filler must be in place when the system is on for proper air flow and cooling.



19. Install the front covers on both drawers containing the redundant service processors

To install:

1. Tilt the top of the cover towards you while inserting the lower corner pin **(A)** into the lower hole in the cover.
2. Tilt the top of the cover towards the tower until the spring loaded upper pin **(B)** seats into the upper hole in the enclosure.
3. Grasp the right side of the cover and push it towards the frame to close it.

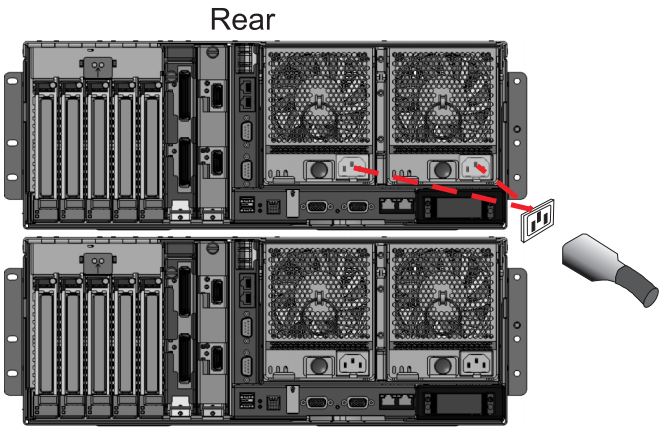


20. Power on both enclosures.

Using the next two steps, power on both enclosures. First, power on the primary enclosure, the enclosure you did not replace. Second, power on the secondary enclosure, the one you replaced. After powering on the primary enclosure, wait for a connection before powering on the secondary.

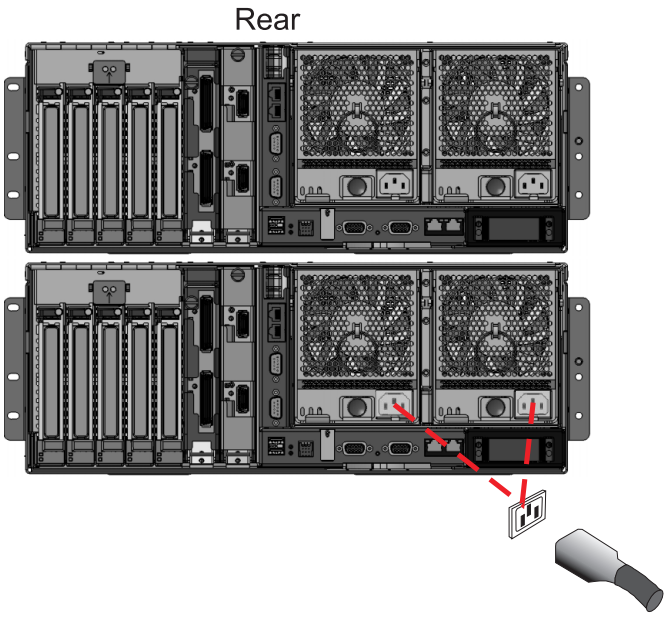
21. Plug In Top Enclosure

Connect the AC power source to the top enclosure.



22. Plug In Second Enclosure

Connect the AC power source to the second enclosure.



23.

Note: If you can not access the ASMI. or if the system will not power-on, after exchanging a service processor assembly, you might have a server firmware level problem. If the new service processor assembly contains an earlier release of server firmware than you were using, it might not support your current hardware configuration. You will need to update your server firmware using the USB port on the service processor assembly. Refer to Hardware Management Console models 7042-CR4, 7042-C06, and 7042-C07 service.

24.

Verify the repair.

Go to Verifying a repair.

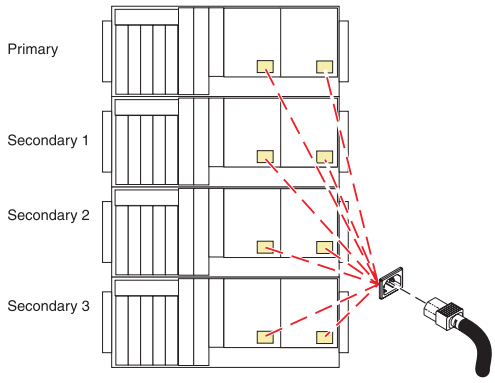
Service processor cable

Use this information to replace the service processor cable.

1. **Do not power off the system and remove the power cords:**

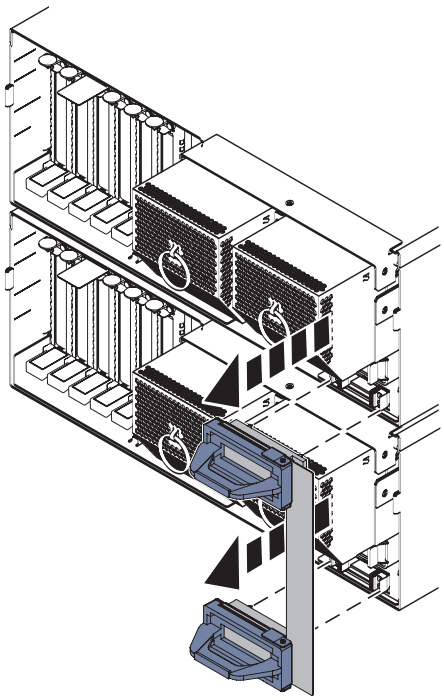
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



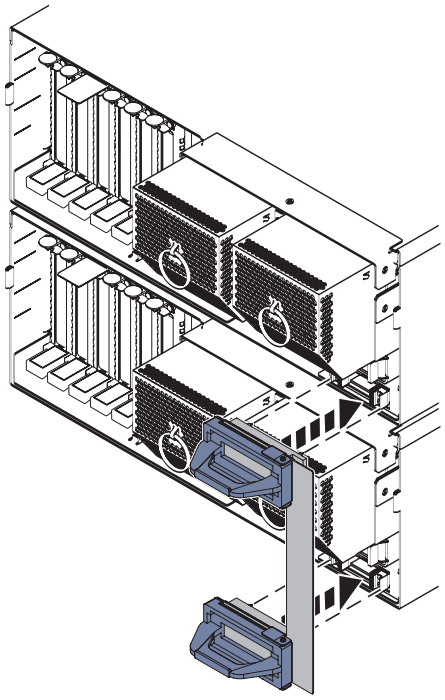
2. Remove the Service Processor Cable

1. Grasp the service processor cable handle on one system unit and pull it from the system unit.
2. Repeat the process for the other system unit.



3. Install the Service Processor Cable

1. Align the pins on the back of the service processor cable handle with the alignment holes on the back of one of the system units.
2. Using the handle, push the cable connector in place.
3. Repeat the process for the other system unit.

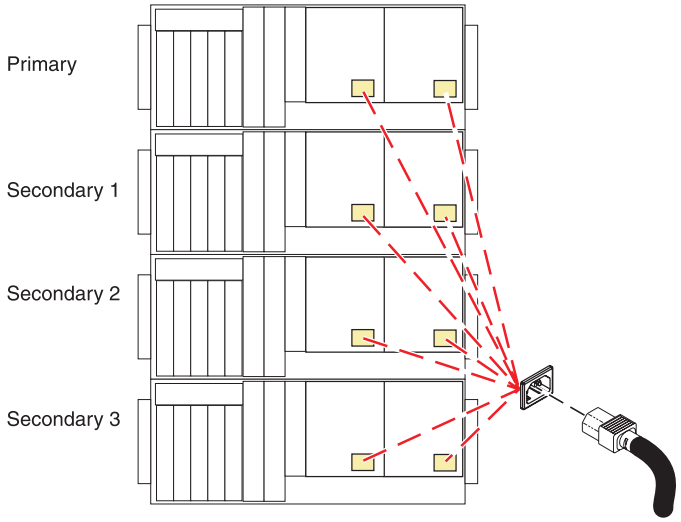


4. **Install the power cords**

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



5. **Verify the repair**

Go to Verifying a repair.

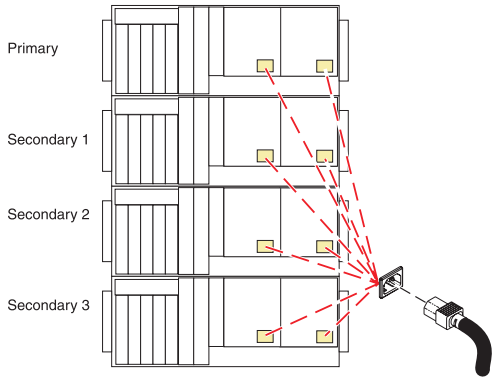
SMP cable

Use this information to replace the SMP cable.

1. Do not power off the system and remove the power cords:

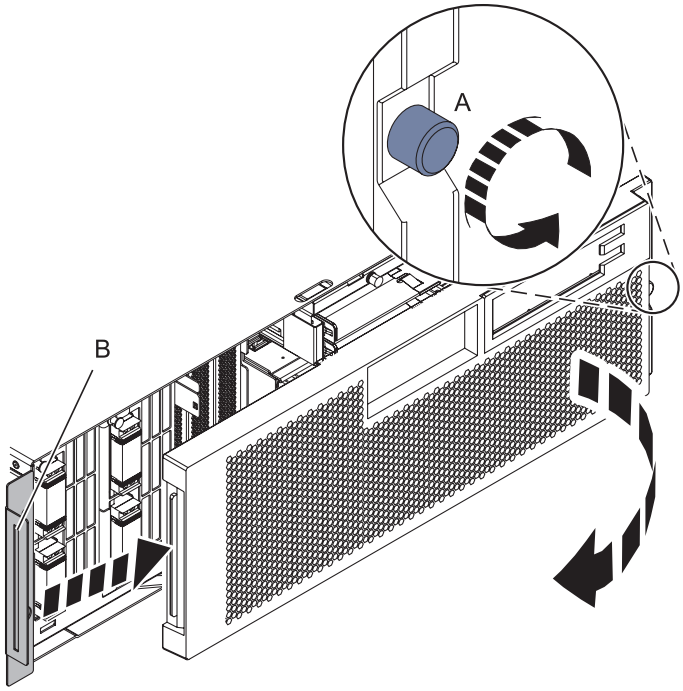
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



2. Remove the Front Cover

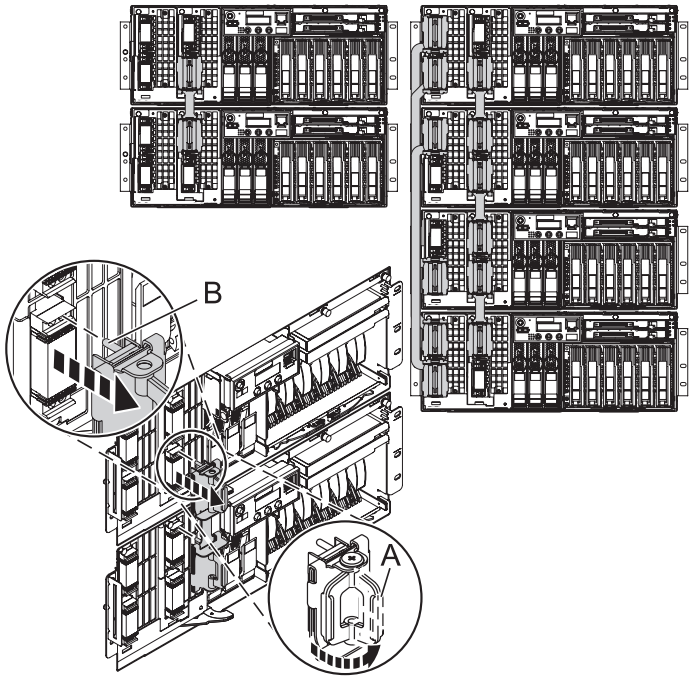
1. Open the front rack door.
2. Loosen the thumbscrew **(A)** on the right side of the cover.
3. Slide the cover to the right and remove it from the system unit slot **(B)**.



3. Remove SMP Cable

Beginning with the SMP processor cable connection to the lowest system unit in the rack, and moving up to the SMP processor cable connection to the highest system unit in the rack, perform the following for each rack:

1. Carefully pull the handle **(A)** from the system until the connector is unseated.
2. When the guide pins **(B)** are free, carefully pull the SMP processor cable away from the system unit.
3. Carefully pull the cable away from the rack and set it aside.

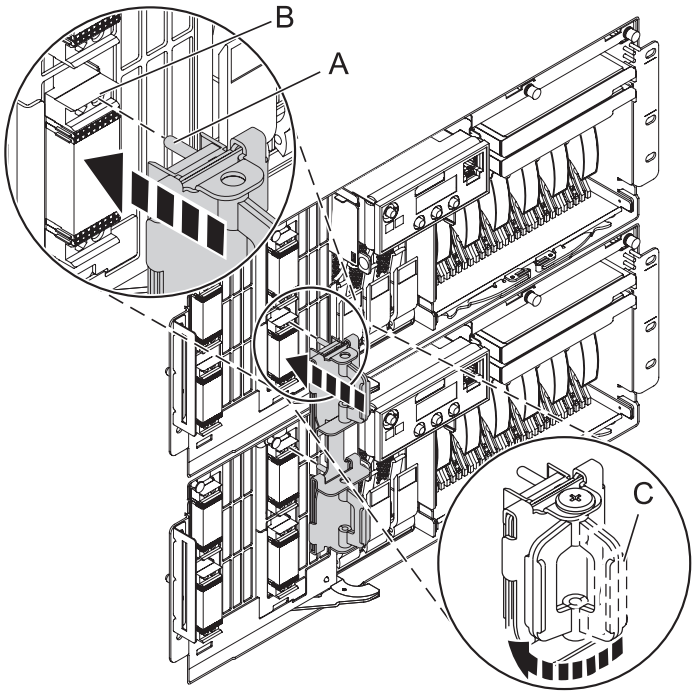


4. **Install SMP Cable**

Place the SMP processor cable into position over the system units so that the connectors on the cable align with the processor cards in each unit.

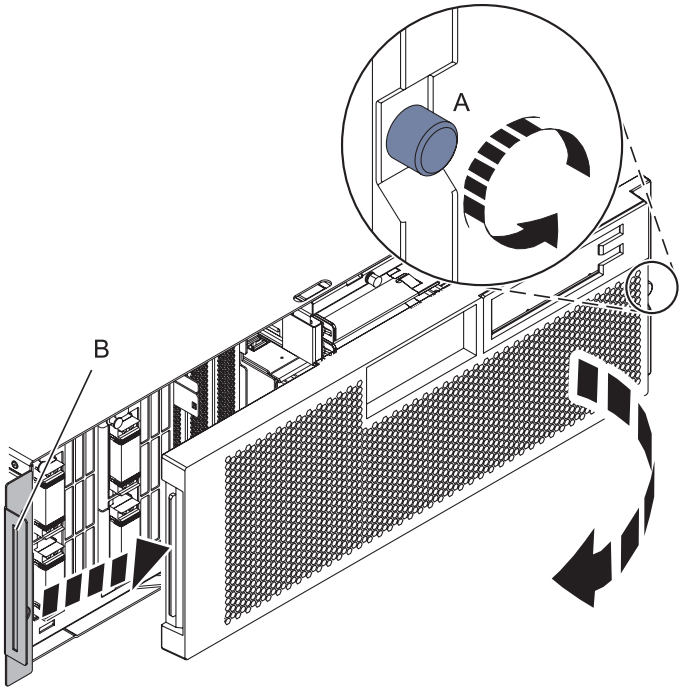
Beginning with the topmost SMP cable connection and continuing downward, perform the following for each rack:

1. Align the guide pins **(A)** with the connectors **(B)** on the system unit.
2. Using the handle **(C)**, carefully push the SMP processor cable into the system unit connector.



5. Install the Front Cover

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)**.

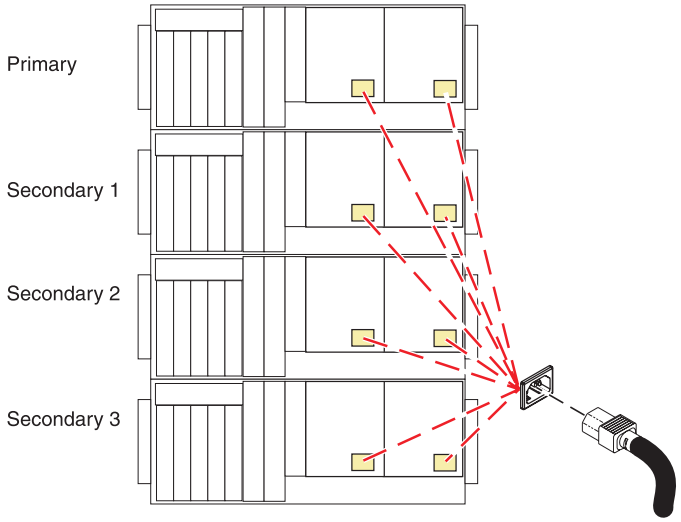


6. **Install the power cords**

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



7. **Verify the repair**

Go to Verifying a repair.

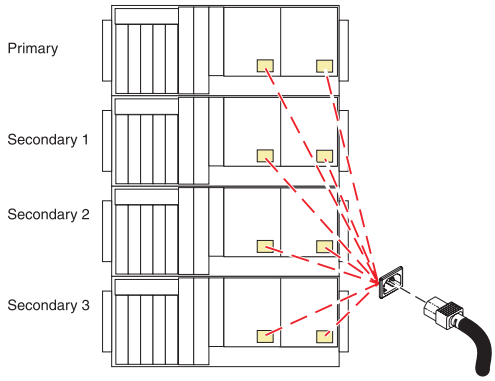
System backplane

Use this procedure to service a system backplane.

1. **Do not power off the system and remove the power cords:**

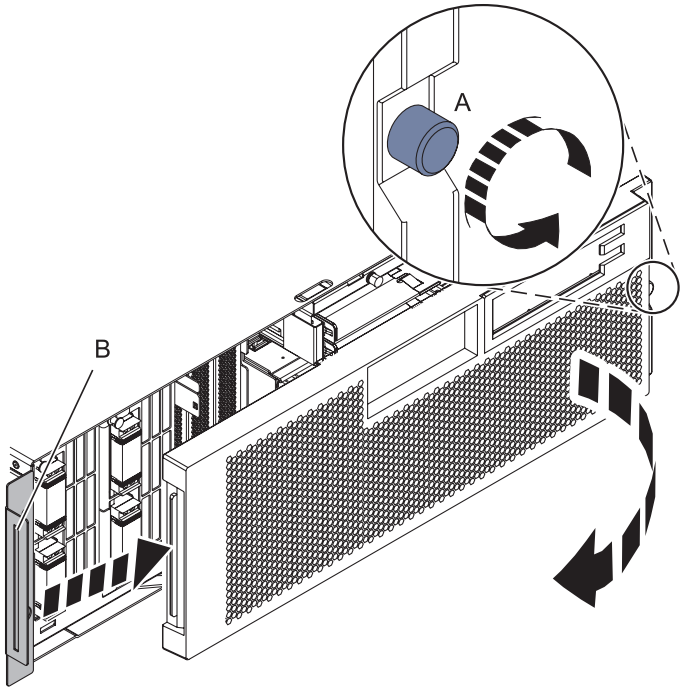
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



2. Remove the Front Cover

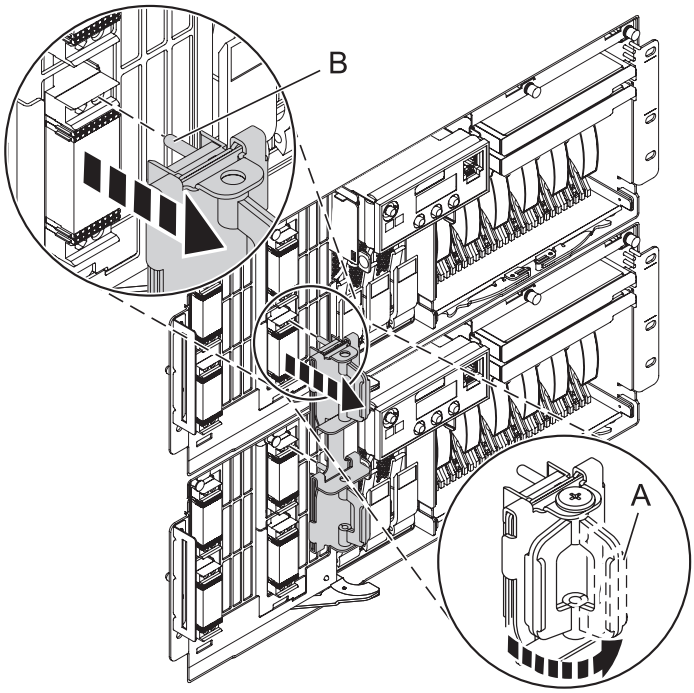
1. Open the front rack door.
2. Loosen the thumbscrew **(A)** on the right side of the cover.
3. Slide the cover to the right and remove it from the system unit slot **(B)**.



3. Disconnect the SMP Cable

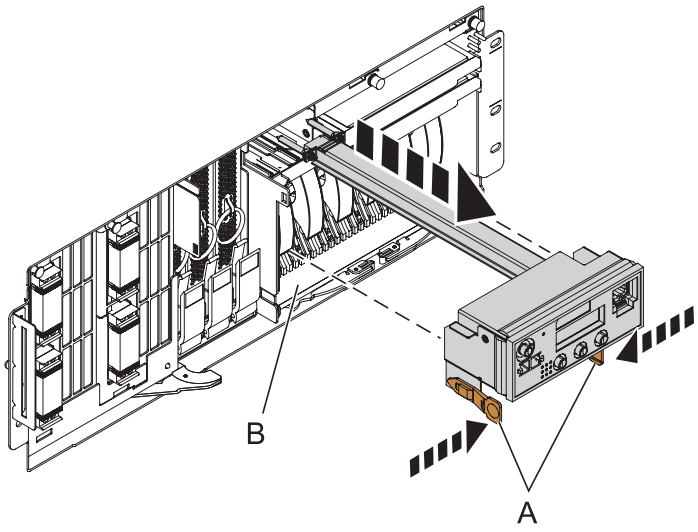
1. Carefully pull the handle **(A)** from the system until the connector is unseated.
2. When the guide pins **(B)** are free, carefully pull the SMP processor cable away from the system unit.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



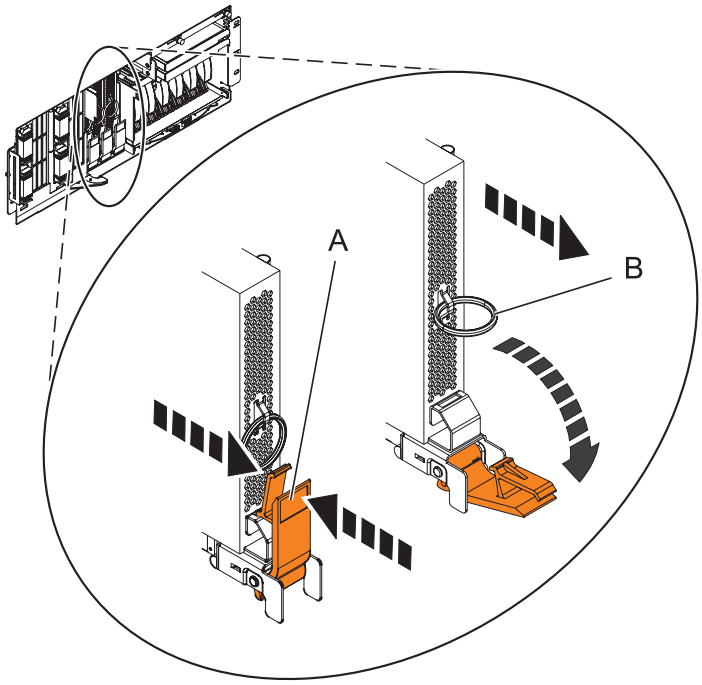
4. Remove the Control Panel or Control Panel Filler

In the enclosure you are servicing, remove the control panel or, if present, the control panel filler, by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges, and pulling it out of its bay **(B)**.



5. Remove the Voltage Regulator Assemblies

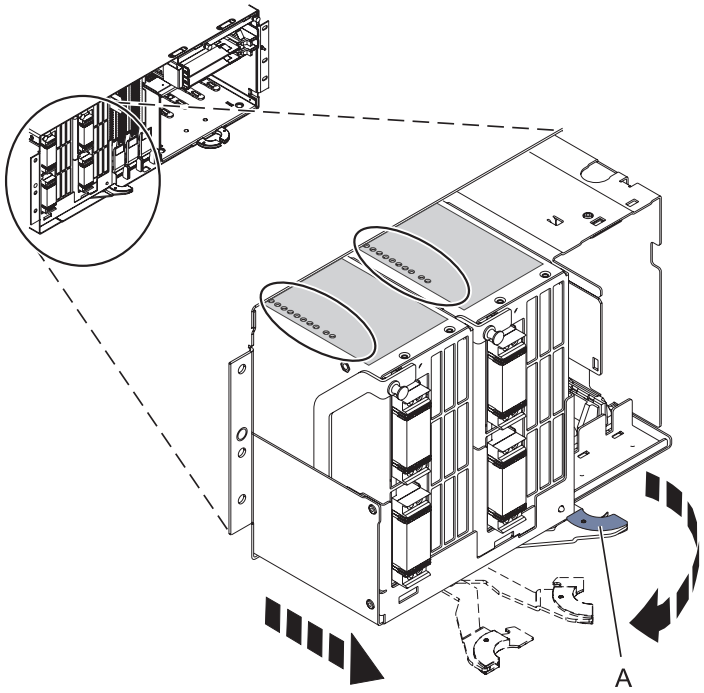
1. Squeeze the top of the latch **(A)** to release it, then rotate the latch out and then down.
2. Grasp the pull ring **(B)** and slowly pull the voltage regulator out of the enclosure. **NOTE:** Pulling the voltage regulator assembly out of the card enclosure requires a large amount of force. The voltage regulator assembly is of substantial weight, so grasp it firmly when it is free of the card enclosure.
3. Repeat these steps until all voltage regulator assemblies have been removed.



6. Remove the System Backplane Assembly

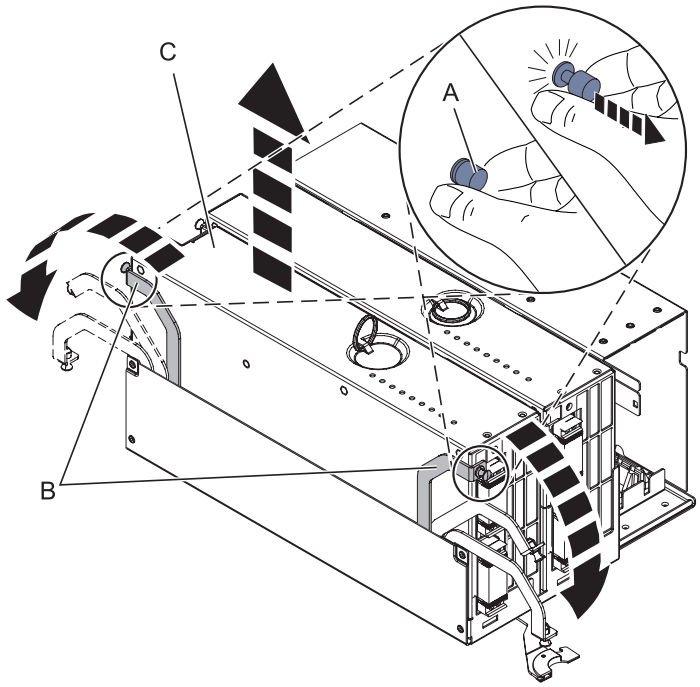
Note: A shipping support clamp has been installed on your server. Removal is not required. This clamp will not interfere with the drawer front covers or machine operation. If removed, store for re-use when the server is relocated.

1. Push the blue lever to the left and out from the system **(A)** to unlock the system backplane assembly.
2. Pull the system backplane assembly out of the system using both hands. **ATTENTION:** The system backplane assembly weighs 35 lbs and should not be pulled out using the blue lever. Grasp the backplane assembly firmly with both hands when it is free of the system.



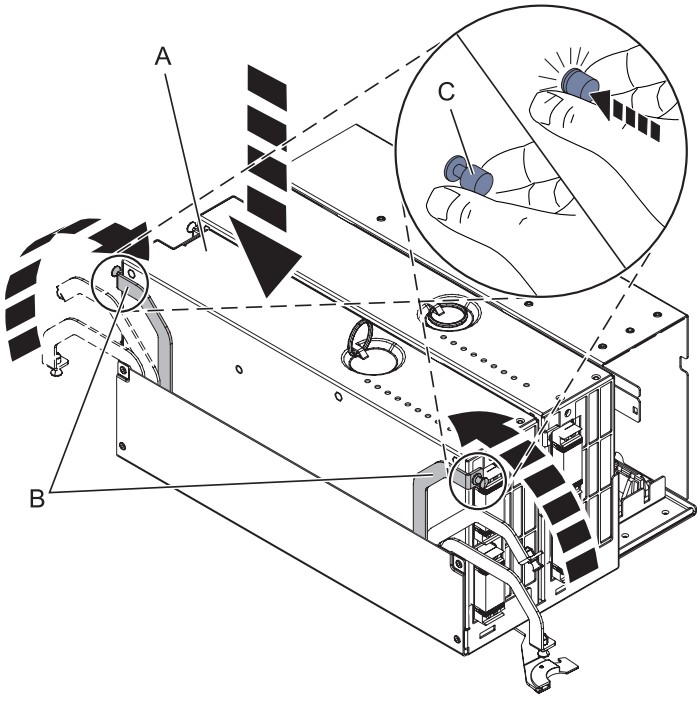
7. Remove all Processor Assemblies or Fillers

1. Pull the locking knobs out **(A)** to the unlocked position.
2. Push the locking arms down and out **(B)** to unlock the system processor assembly.
3. Lift the system processor assembly out of the system backplane assembly **(C)**.
4. Remove all system processor assemblies (or fillers) from the system backplane assembly. Record the location of each system processor assembly being removed.



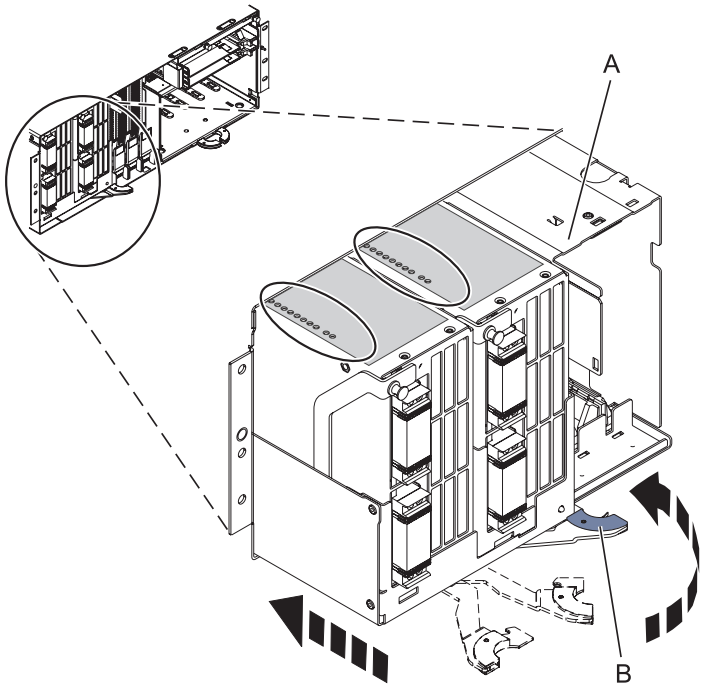
8. Install all Processor Assemblies or Fillers

1. Place the system processor assembly **(A)** into the new system backplane assembly using the location information that you recorded during the removal procedure.
2. Lock the system processor assembly into place with the locking arms **(B)**.
3. Press the locking knobs **(C)** in to the locked position.
4. Replace all system processor assemblies (or fillers) that were removed earlier.



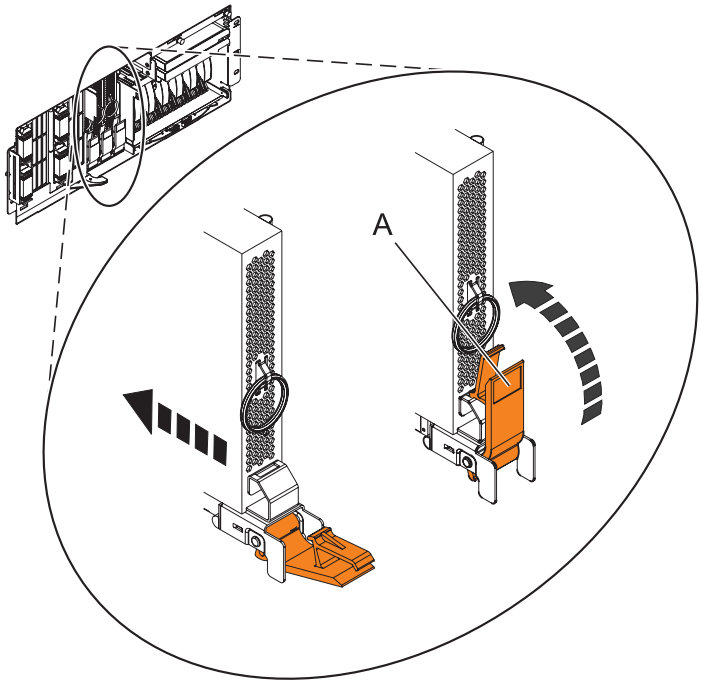
9. Install the new system backplane assembly

1. Align the system backplane assembly with the slot in the system.
2. Slide the system backplane assembly into the system **(A)**.
3. Push the blue lever **(B)** to the right and in toward the system to lock the system backplane assembly.



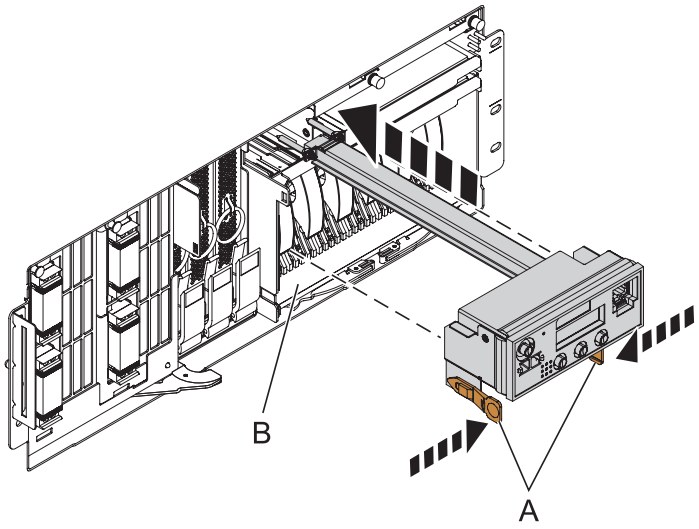
10. Install the Voltage Regulator Assemblies

1. Ensure that the voltage regulator assembly latch **(A)** is rotated out and down into the unlocked position.
2. Carefully grasp the voltage regulator assembly and slide it into the enclosure.
3. When the voltage regulator assembly is all the way into the card enclosure, rotate the latch **(A)** up into the locked position.
4. Repeat these steps until all voltage regulator assemblies have been installed.



11. Install the Control Panel or Control Panel Filler

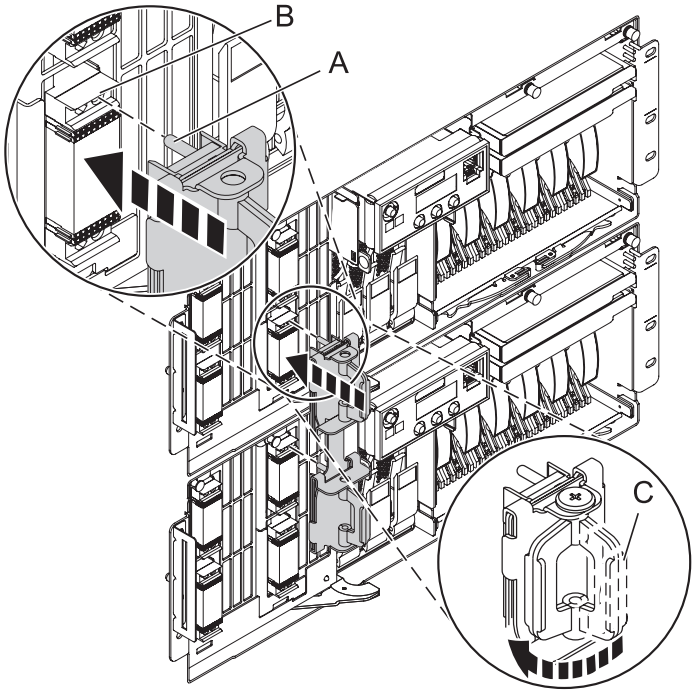
In the enclosure you are servicing, carefully slide the control panel or, if present, the control panel filler, into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



12. Connect SMP Cable

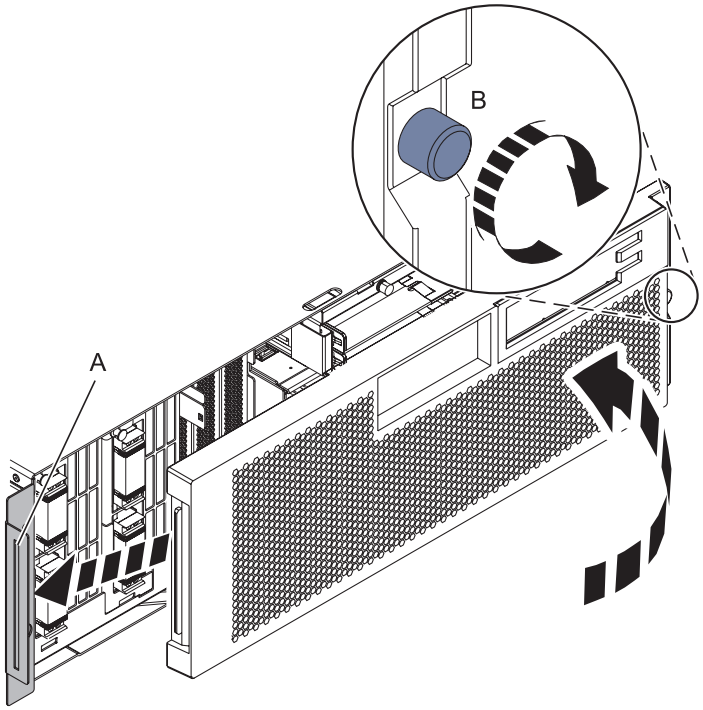
1. Align the guide pins **(A)** with the connectors **(B)** on the system unit.
2. Using the handle **(C)**, carefully push the SMP processor cable into the system unit connector.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



13. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.

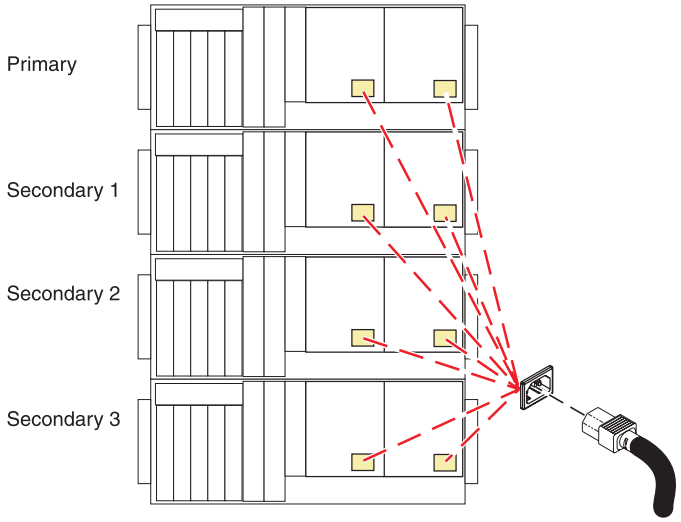


14. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



15. Verify the repair

Go to Verifying a repair.

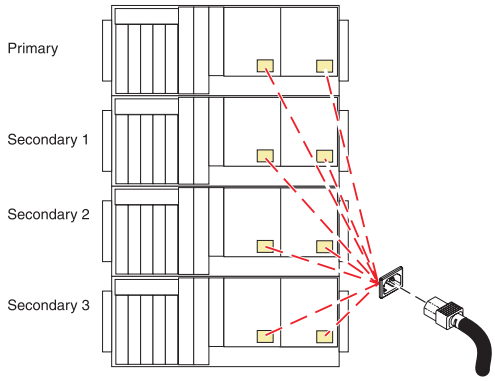
System processor assembly

Use this procedure to service a system processor assembly.

1. Do not power off the system and remove the power cords:

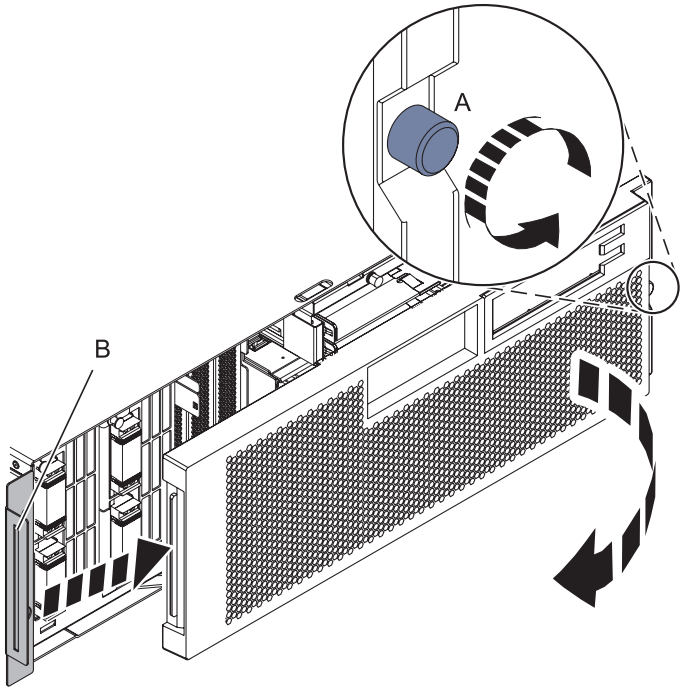
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



2. Remove the Front Cover

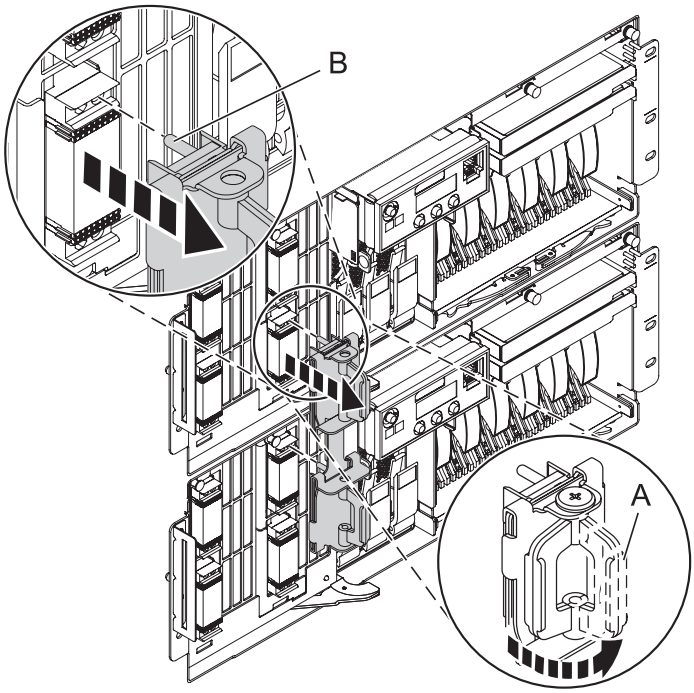
1. Open the front rack door.
2. Loosen the thumbscrew **(A)** on the right side of the cover.
3. Slide the cover to the right and remove it from the system unit slot **(B)**.



3. Disconnect the SMP Cable

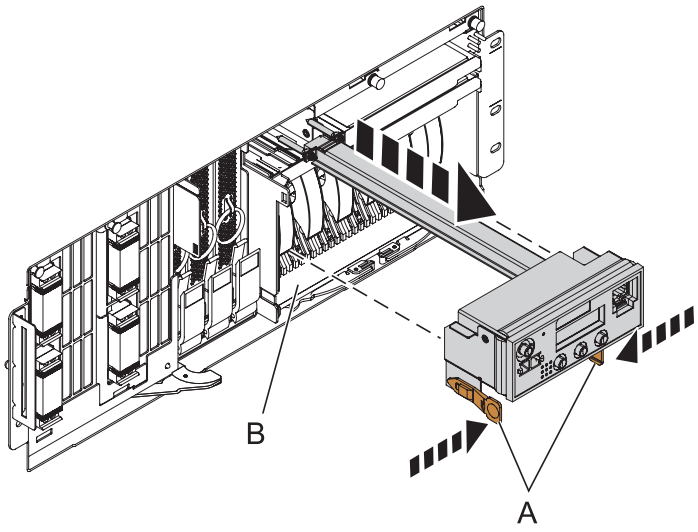
1. Carefully pull the handle **(A)** from the system until the connector is unseated.
2. When the guide pins **(B)** are free, carefully pull the SMP processor cable away from the system unit.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



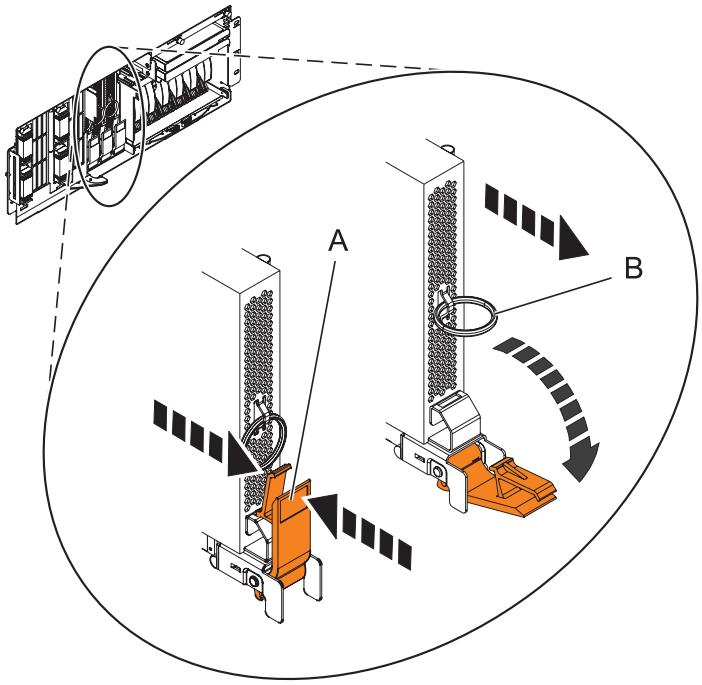
4. Remove the Control Panel or Control Panel Filler

In the enclosure you are servicing, remove the control panel or, if present, the control panel filler, by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges, and pulling it out of its bay **(B)**.



5. Remove the Voltage Regulator Assemblies

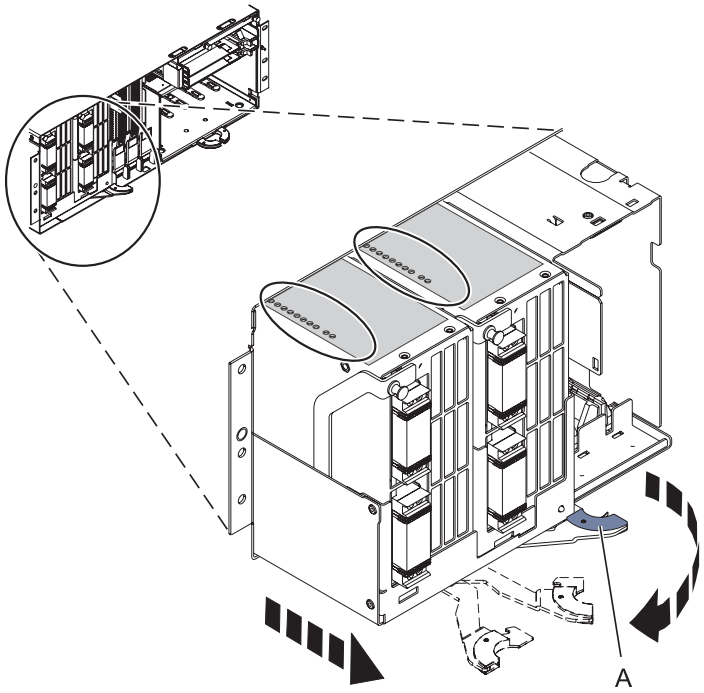
1. Squeeze the top of the latch **(A)** to release it, then rotate the latch out and then down.
2. Grasp the pull ring **(B)** and slowly pull the voltage regulator out of the enclosure. **NOTE:** Pulling the voltage regulator assembly out of the card enclosure requires a large amount of force. The voltage regulator assembly is of substantial weight, so grasp it firmly when it is free of the card enclosure.
3. Repeat these steps until all voltage regulator assemblies have been removed.



6. Remove the System Backplane Assembly

Note: A shipping support clamp has been installed on your server. Removal is not required. This clamp will not interfere with the drawer front covers or machine operation. If removed, store for re-use when the server is relocated.

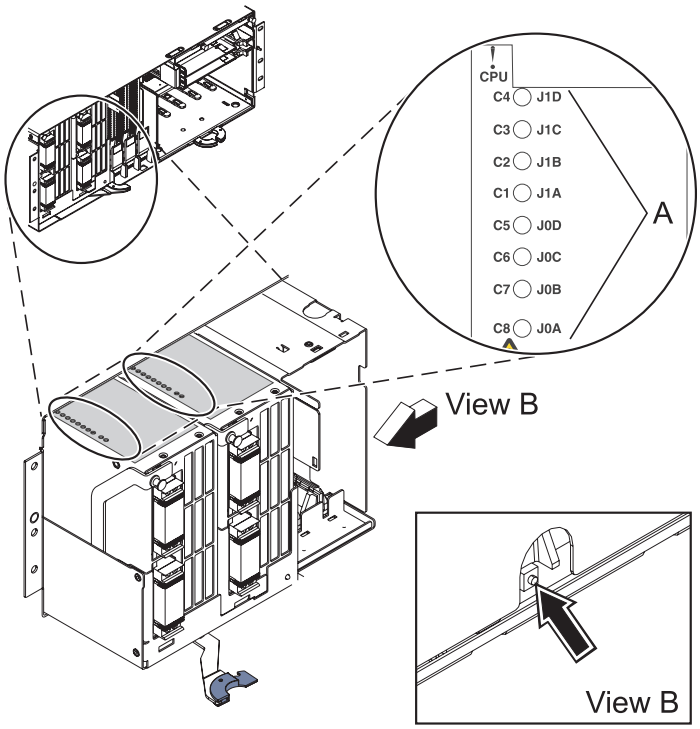
1. Push the blue lever to the left and out from the system **(A)** to unlock the system backplane assembly.
2. Pull the system backplane assembly out of the system using both hands. **ATTENTION:** The system backplane assembly weighs 35 lbs and should not be pulled out using the blue lever. Grasp the backplane assembly firmly with both hands when it is free of the system.



7. Identify the Failing System Processor Assembly

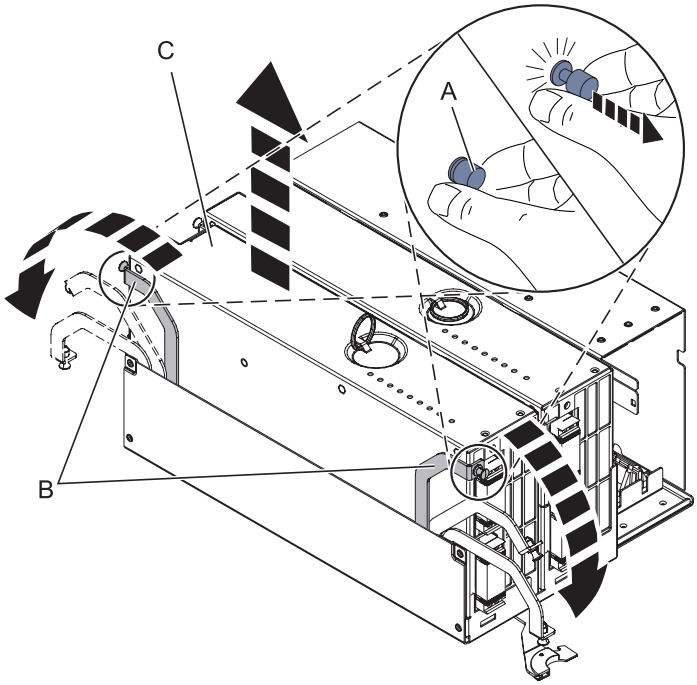
If you are removing the system backplane assembly because of a system failure, look at the LEDs **(A)** located on top of the system processor assemblies to identify the failing processor location. To illuminate the location LED for the failing processor, press the LED actuator button **(B)**.

ATTENTION: The actuator button must be used within 20 minutes after the system backplane assembly is removed from the system. The assembly retains the energy to light the LEDs for 40 seconds after the actuator button has been pressed.



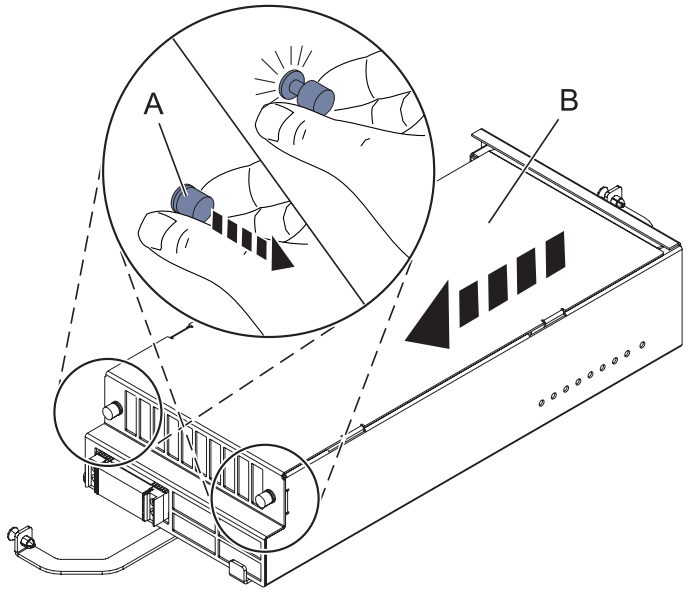
8. Remove the System Processor Assembly

1. Remove the processor alignment face plate.
2. Pull the locking knobs **(A)** out to the unlocked position.
3. Push the locking arms **(B)** down and out to unlock the processor card assembly.
4. Lift the processor card assembly **(C)** out of the system backplane assembly.



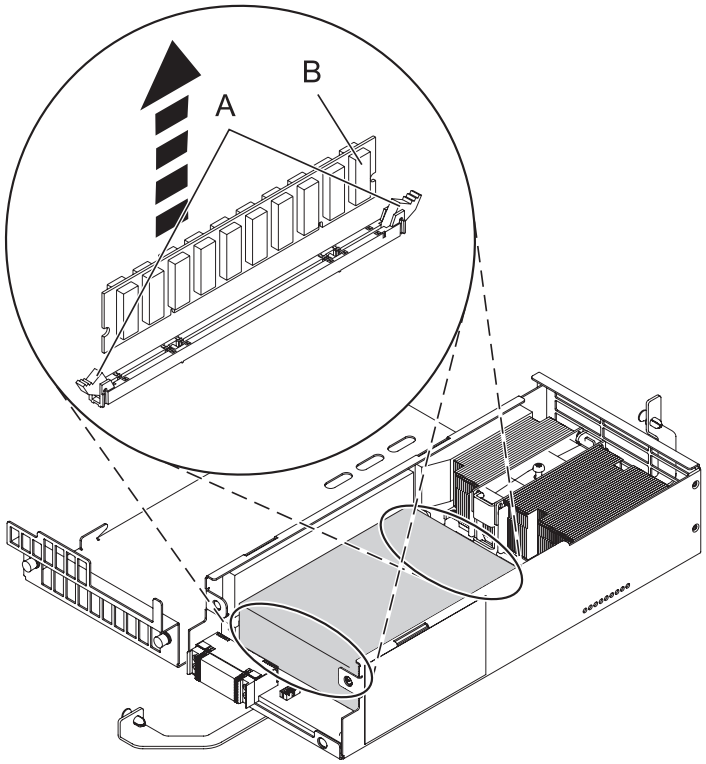
9. Remove the System Processor Assembly Cover

1. Unlock the two retaining knobs **(A)** on the system processor assembly.
2. Slide the cover **(B)** back.
3. Lift the cover off of the assembly.



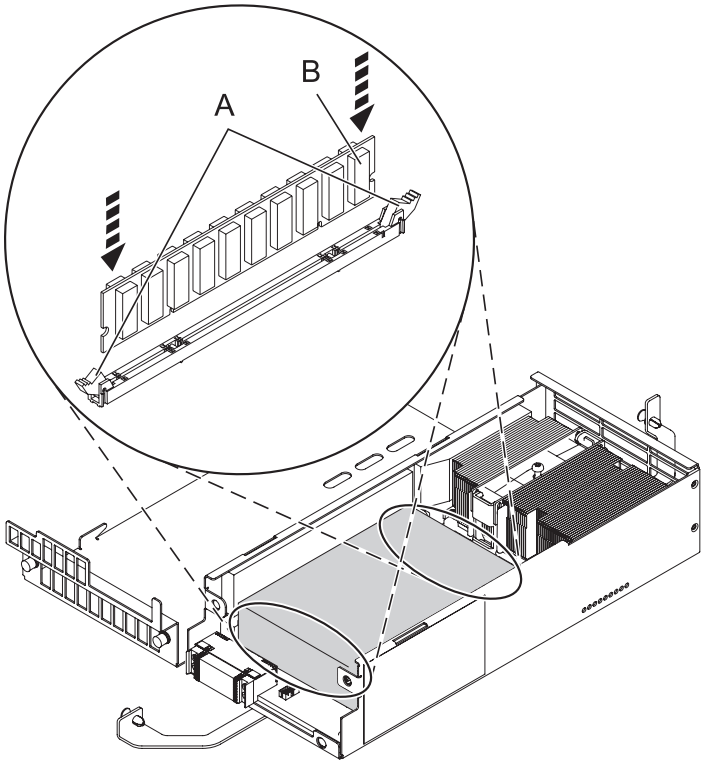
10. Remove all Memory DIMMs from the System Processor Assembly

1. If you are removing Tall DIMMs, remove the mylar cover, if installed, that is covering the memory DIMMS.
2. Unlock the memory DIMM by pushing the connector tabs **(A)** out and then down. The tabs' lever action forces the memory DIMM **(B)** out of the connector.
3. Lift the memory DIMM out of the processor assembly.
4. Label the memory DIMM according to its location.
5. Repeat these steps for the remaining memory DIMMs installed in this System Processor Assembly.



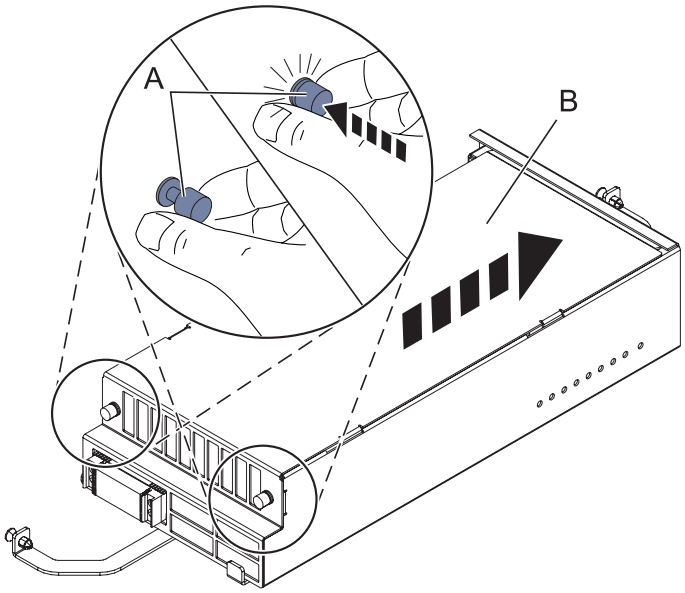
11. Install the Memory DIMMs in the new System Processor Assembly

1. Remove the cover of the new system processor assembly by unlocking the two retention knobs, pulling back and lifting up the cover.
2. Ensure that the connector locking tabs **(A)** are pushed out into the unlocked position before installing a memory DIMM.
3. Carefully grasp the memory DIMM **(B)** along two edges and align it with the connector. **ATTENTION:** System Processors 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.
4. Push the memory DIMM firmly into the connector until the connector locking tabs engage.
5. Repeat these steps until all Memory DIMMs are installed.
6. If you are installing any Tall DIMMs, place the mylar cover over the DIMMs in the processor card to prevent the DIMMs from contacting the lid. **Note:** If you replace Tall DIMMs with regular-sized modules, remove the mylar cover. Failing to remove the mylar cover might restrict airflow in the unit.



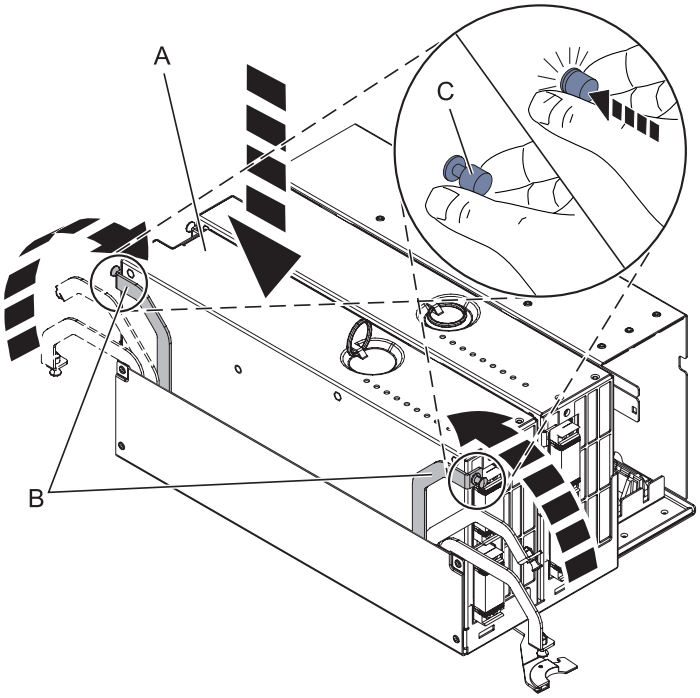
12. Install the System Processor Assembly Cover

1. Place the cover **(B)** on the system processor assembly.
2. Lock the two retention knobs **(A)**.



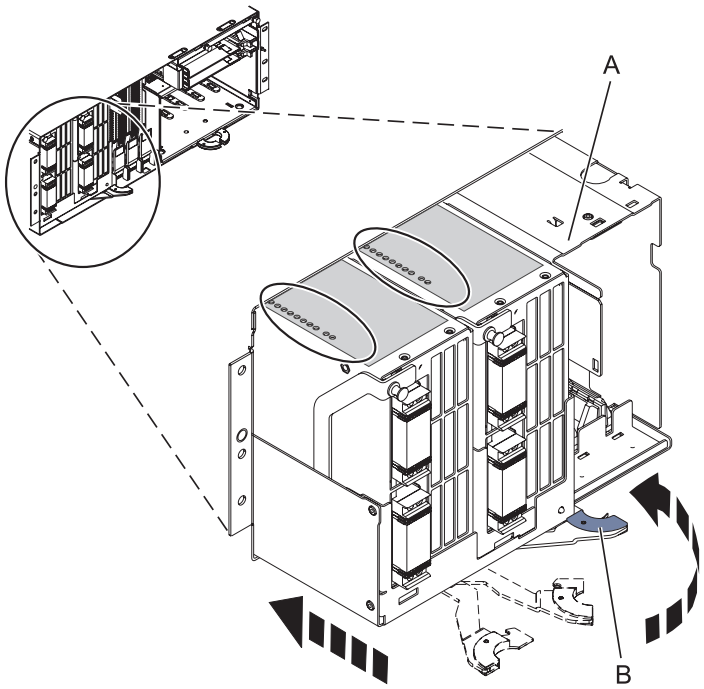
13. Install the System Processor Assembly

1. Place the processor assembly **(A)** into the system backplane assembly, and then lock it into place with the locking arms **(B)**.
2. Press the locking knobs **(C)** in to the locked position.
3. Install the processor alignment face plate.



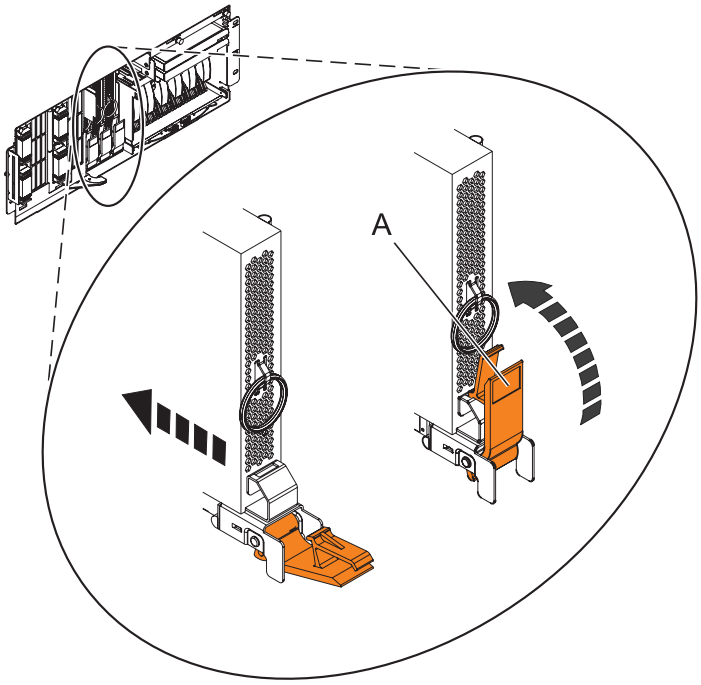
14. Install the System Backplane Assembly

1. Align the system backplane assembly with the slot in the system.
2. Slide the system backplane assembly into the system **(A)**.
3. Push the blue lever **(B)** to the right and in toward the system to lock the system backplane assembly.



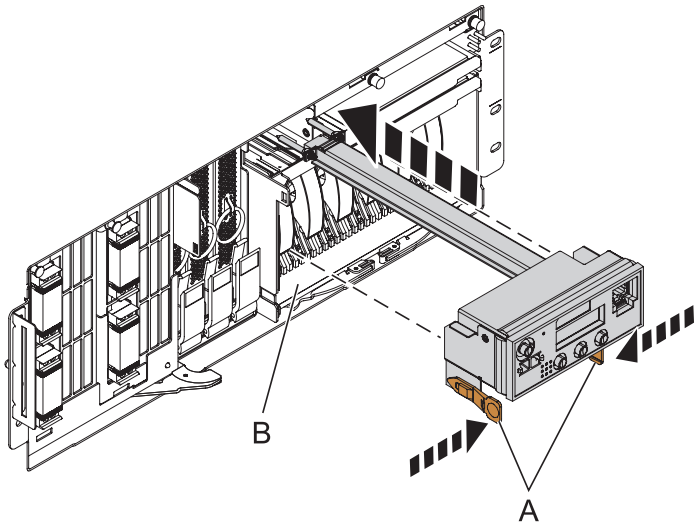
15. Install the Voltage Regulator Assemblies

1. Ensure that the voltage regulator assembly latch **(A)** is rotated out and down into the unlocked position.
2. Carefully grasp the voltage regulator assembly and slide it into the enclosure.
3. When the voltage regulator assembly is all the way into the card enclosure, rotate the latch **(A)** up into the locked position.
4. Repeat these steps until all voltage regulator assemblies have been installed.



16. Install the Control Panel or Control Panel Filler

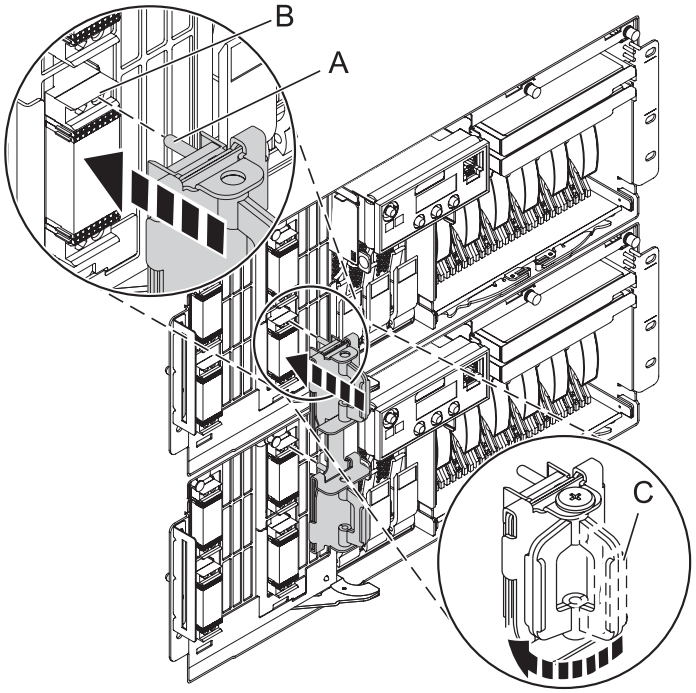
In the enclosure you are servicing, carefully slide the control panel or, if present, the control panel filler, into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



17. Connect SMP Cable

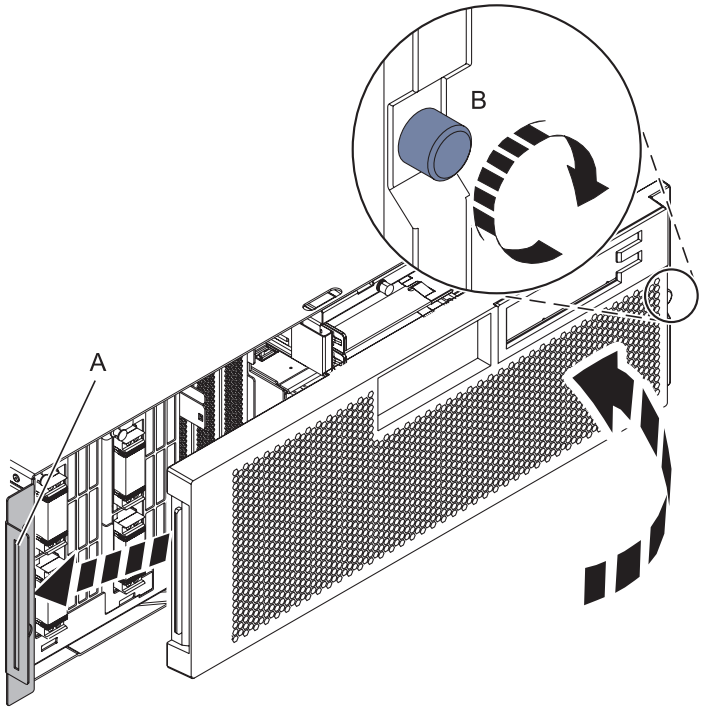
1. Align the guide pins **(A)** with the connectors **(B)** on the system unit.
2. Using the handle **(C)**, carefully push the SMP processor cable into the system unit connector.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



18. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.

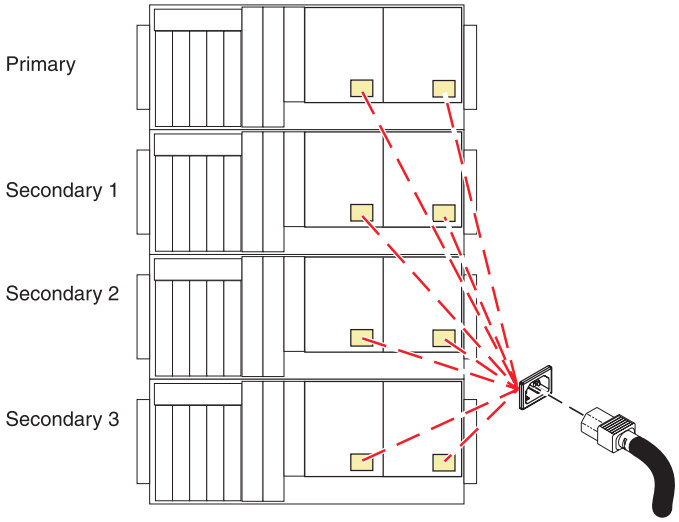


19. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



20. Verify the repair

Go to Verifying a repair.

Voltage regulator assembly

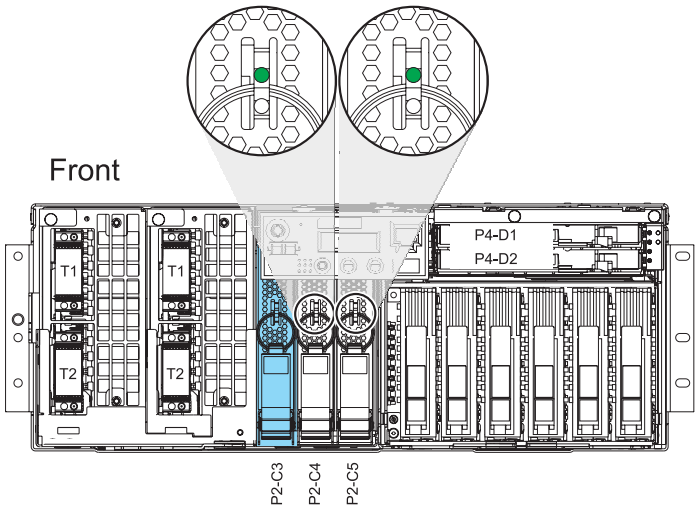
Use this procedure to service the voltage regulator assembly.

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing the voltage regulator assembly from the server. For instructions, see Exchanging a part using the Hardware Management Console.

1. **Determine if this procedure can continue concurrently**

In order for this procedure to be performed concurrently, the following must be true:

- All three voltage regulators must already be installed in the system.
- The green LEDs must be ON for the voltage regulators not being serviced.



Are the green LEDs ON?

Yes	No
↓	You will be doing a nonconcurrent repair. Go to step 5 on page 281.

---

2. **Determine if there is a control panel present in the enclosure.**

If a control panel is present in the same enclosure as the FRU being serviced, it must be removed.

Is a control panel present in the same enclosure as the FRU being serviced?

Yes	No
↓	Go to step 6 on page 282.

---

3. 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.

---

4. Prepare the Control Panel for concurrent replacement

1. In the navigation area of the ASMI, expand **Conurrent Maintenance** then select **Control panel**.
2. At the Preparing the control panel window, select **Remove**and click **Continue**.
3. Select the control panel's location and click **Save Settings**.
4. The message **Opeation completed successfully** is displayed.

Did the operation complete successfully?

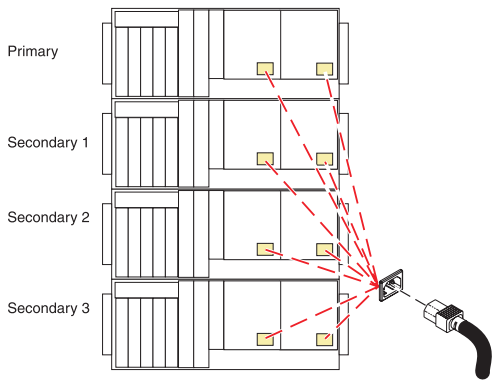
No	Yes
↓	Go to step 6 on page 282

---

5. Do not power off the system and remove the power cords:

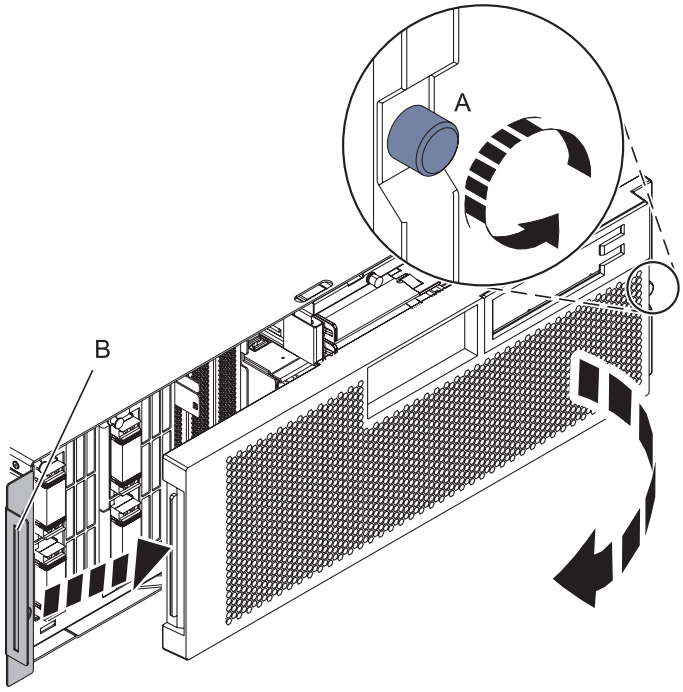
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



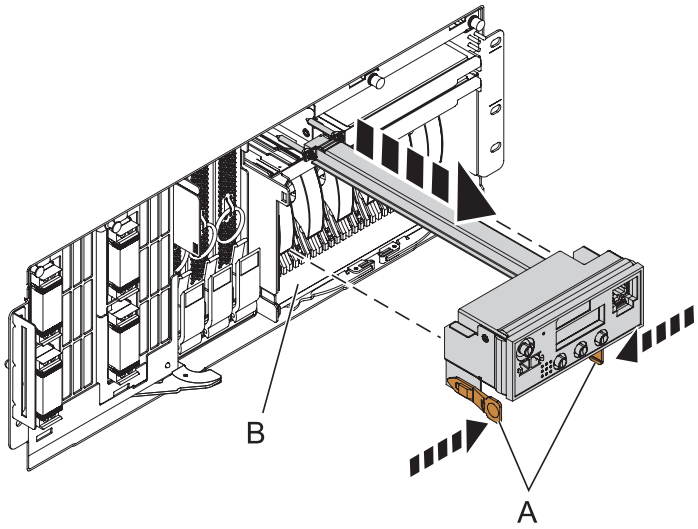
6. Remove the Front Cover

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)**.



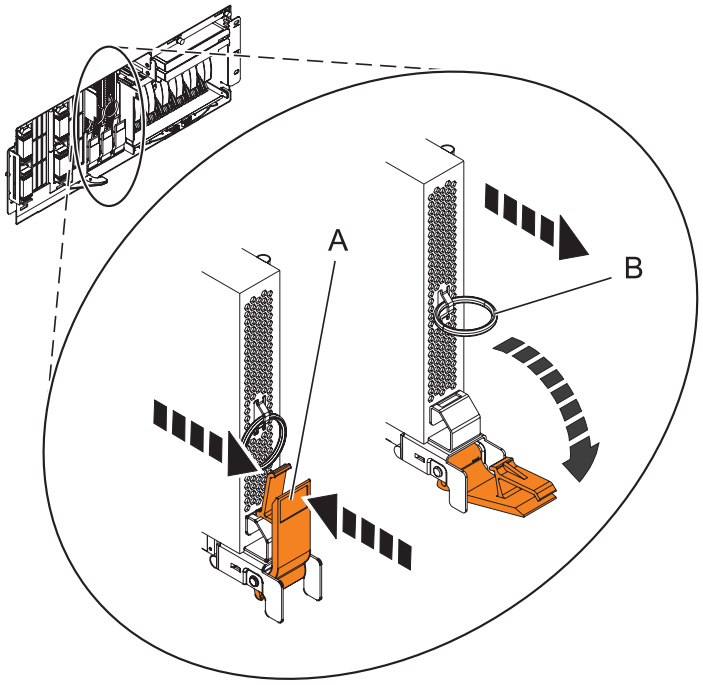
7. Remove the Control Panel or Control Panel Filler

In the enclosure you are servicing, remove the control panel or, if present, the control panel filler, by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges, and pulling it out of its bay **(B)**.



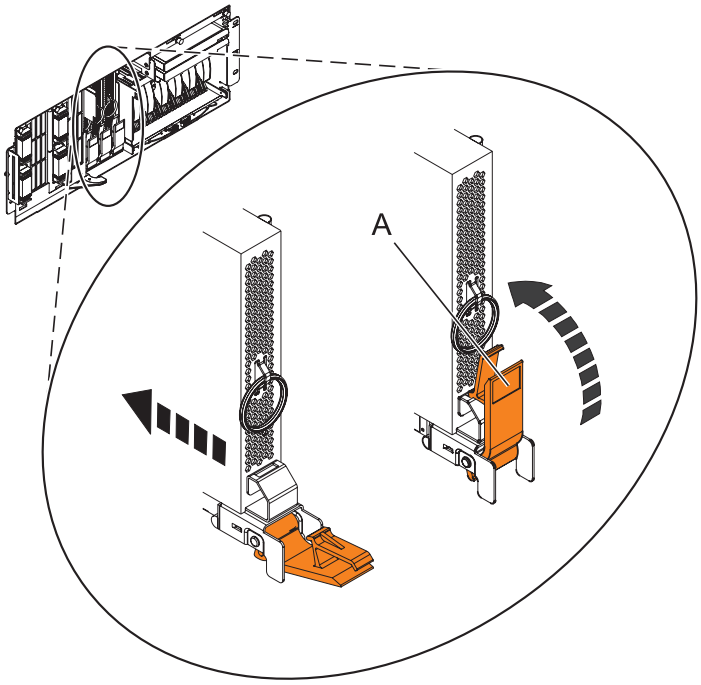
8. Remove the Voltage Regulator Assembly

1. Squeeze the top of the latch **(A)** to release it, then rotate the latch out and then down.
2. Grasp the pull ring **(B)** and slowly pull the voltage regulator out of the enclosure. **NOTE:** Pulling the voltage regulator assembly out of the card enclosure requires a large amount of force. The voltage regulator assembly is of substantial weight, so grasp it firmly when it is free of the card enclosure.



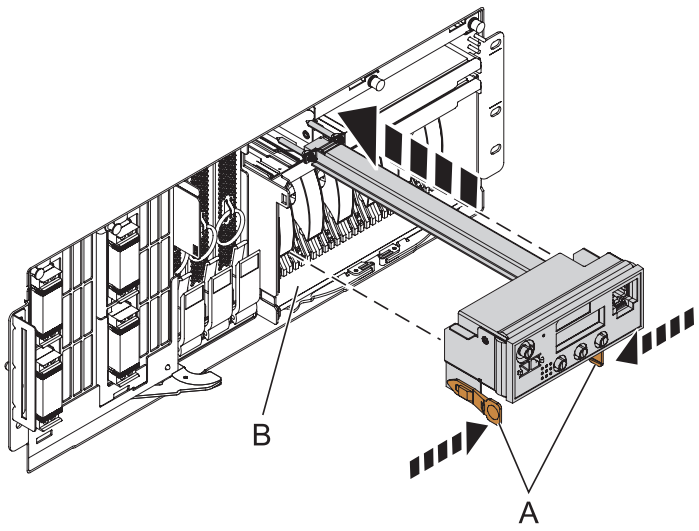
9. **Install the new voltage regulator assembly**

1. Ensure that the voltage regulator assembly latch **(A)** is rotated out and down into the unlocked position.
2. Carefully grasp the voltage regulator assembly and slide it into the enclosure.
3. When the voltage regulator assembly is all the way into the card enclosure, rotate the latch **(A)** up into the locked position.



10. Install the Control Panel or Control Panel Filler

In the enclosure you are servicing, carefully slide the control panel or, if present, the control panel filler, into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



11.

If you are performing a concurrent repair, continue with the next step. Otherwise, go to step 13 on page 286.

---

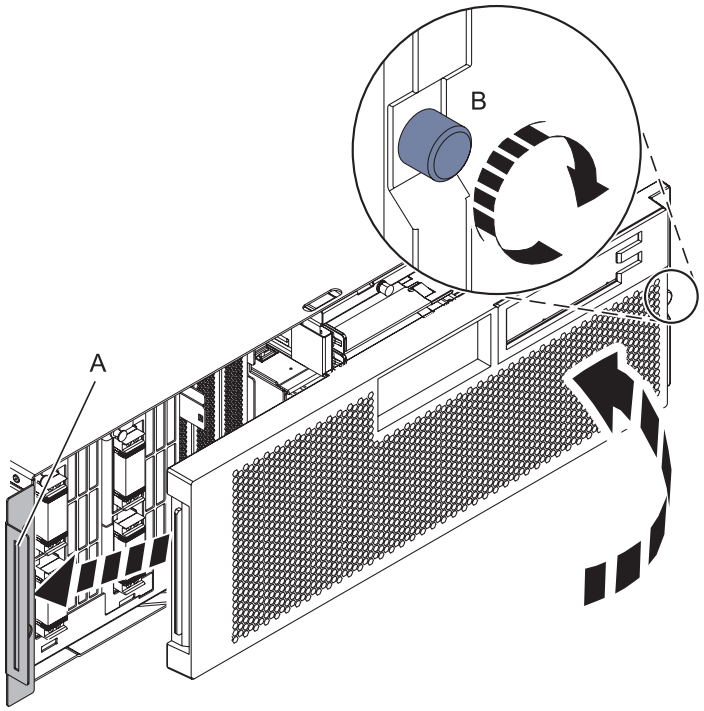
12. Install the Control Panel

1. In the navigation area of the ASMI, expand "**Concurrent Maintenance**" and then select "**Control panel**".
2. At the Preparing the control panel window, select "Install" and click "Continue".
3. Choose the control panel's location and click "Save Settings".
4. If the operation was successful, the Operation completed successfully window will display.

---

13. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.



14.

If you are performing a nonconcurrent repair, continue with the next step. Otherwise, go to step 16 on page 287.

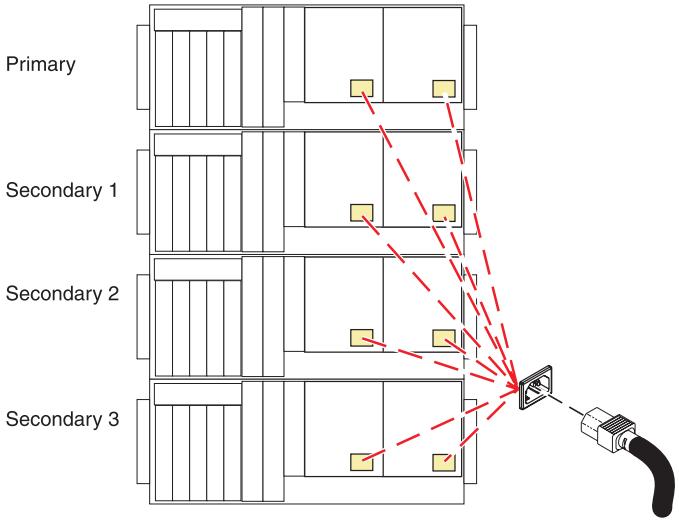
---

15. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



16. Verify the repair

Go to Verifying a repair.

VPD Card

Use this procedure to service the vital product data (VPD) card.

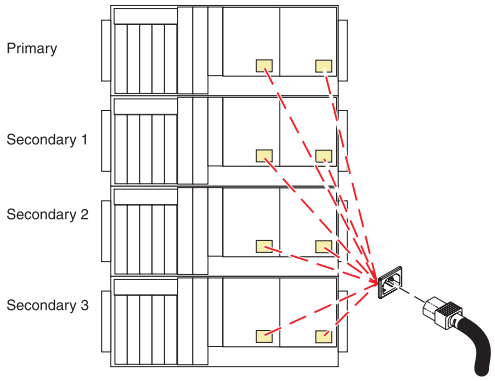
1. Save the system identifiers

1. Access the Advanced System Management Interface (ASMI) using a Web browser, an ASCII console, or the Hardware Management Console (HMC).
2. On the ASMI 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.
3. In the navigation area, expand System Configuration and Program Vital Product Data.
4. Select System Keywords.
5. In the right pane, manually record the values for the machine type-model and system serial number.

2. Do not power off the system and remove the power cords:

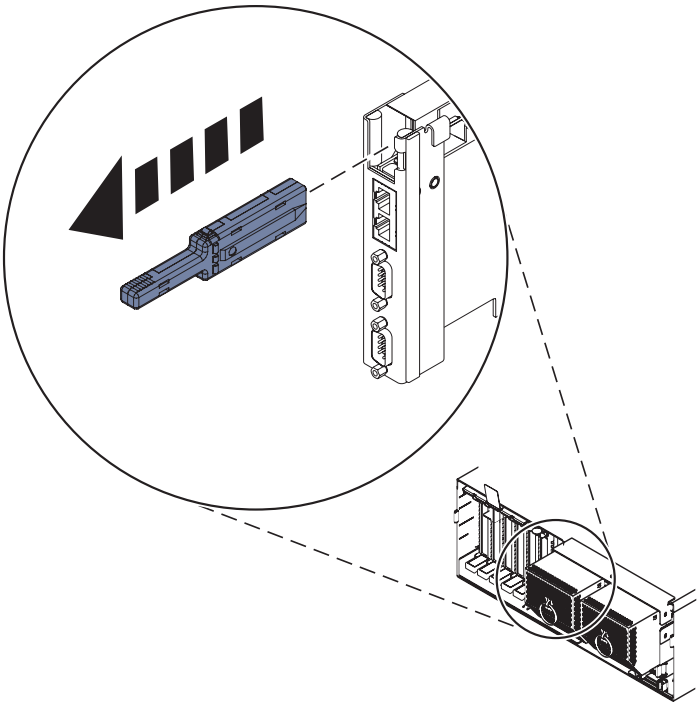
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



3. Remove the VPD Card

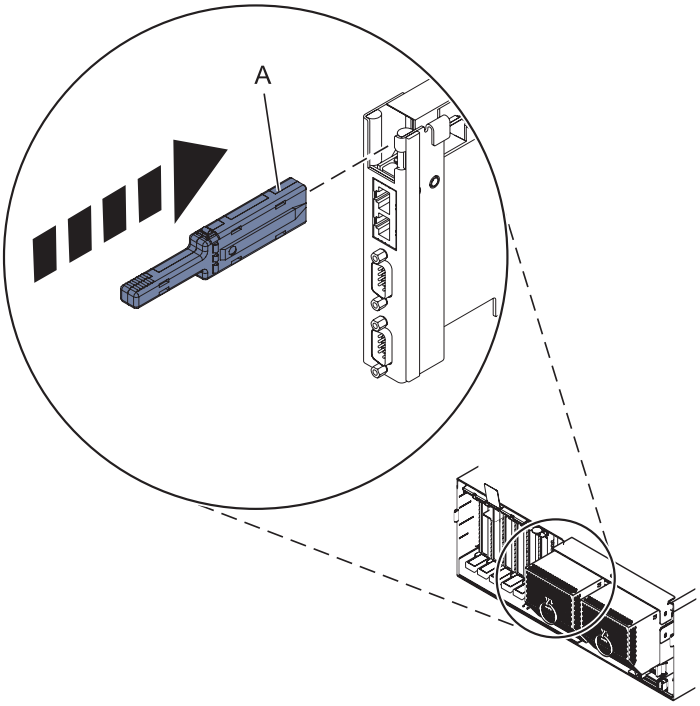
Pull the VPD card free by the blue handle and remove from the system.



---

4. Install the new VPD card

1. Insert the VPD card with the key **(A)** positioned to the right as shown.
2. Push until fully seated.



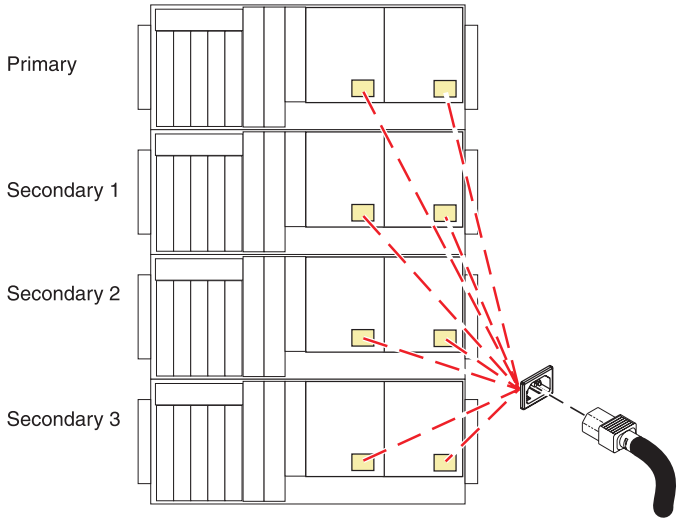
---

5. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



6. Power On the System

Power on the system. For instructions, refer to Powering on and powering off.

7. 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.

8. **Setting the system identifiers**

1. Access the Advanced System Management Interface (ASMI) using a Web browser, an ASCII console, or the Hardware Management Console (HMC).
2. On the ASMI Welcome pane, specify your user ID and password, and click Log In.
   Note: To perform this operation, your authority level must be authorized service provider (which requires a celogin). If a celogin password is not available, a dynamic password can be requested by calling IBM technical support and then the brand value can be updated after logging in with the user ID *celogin*. Alternatively, you can ask the system administrator to use the admin user ID to enable *celogin1* and create a static password. After logging in with user ID *celogin1*, the system brand can be updated. After the update is complete, the admin user should disable *celogin1*. For more information on logging in as an authorized service provider, see "ASMI Authority Levels" in Chapter 2 of the ASMI and nonpartitioned systems.
3. In the navigation area, expand System Configuration.
4. Expand Program Vital Product Data.
5. Select System Brand.
6. If the backed up system brand is correct, click **Accept backed up setting and save**. Otherwise, enter the correct system brand and click **Continue**.
7. **NOTE:** If you do not know the correct system brand, contact your next level of support.
8. Click **Save settings** to update the system brand to the VPD.
9. Select System Keywords under Program Vital Product Data.
10. If the backed up system keywords are correct, click **Accept backed up setting and save**. Otherwise, enter the values for the machine type-model, system serial number, and system unique ID. The existing world-wide port name index (which is also known as the world wide port number (WWPN)), keyword WN, will be restored from the service processor (or system processor). If the service processor (or system processor) has also been changed, the WWPN has to be entered manually. (Replacement of the VPD card and the service processor (or system processor) at the same time is not recommended.) 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.
11. Click **Save settings** to update the system keywords and save them to the VPD.

9. **Verify the repair**

Go to Verifying a repair.

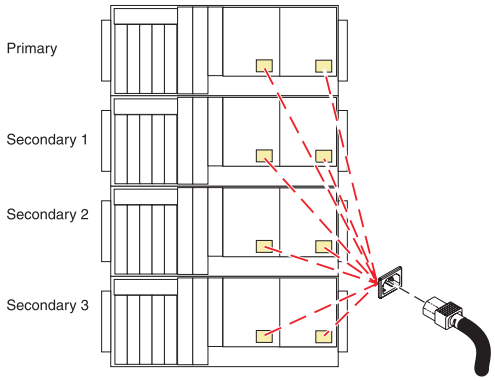
VPD passthru card

Use this procedure to service the VPD passthru card.

1. **Do not power off the system and remove the power cords:**

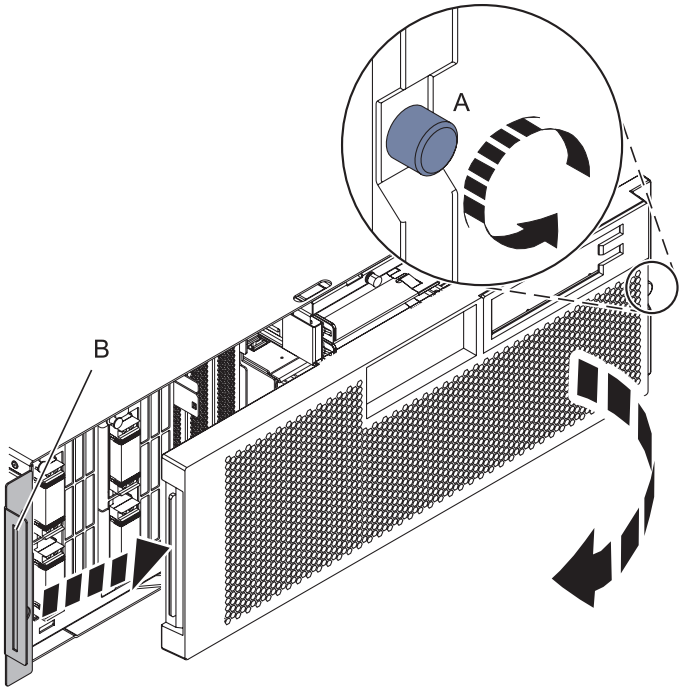
Do not power off the system and remove the power cords:

1. Service the component concurrently. Before continuing ensure the device is not being used by the customer.
2. If possible, shut down any running applications and the operating system before powering off the system.
3. After the system is powered off, remove all power cords from all of the processor enclosures, starting with the primary processor enclosure (topmost) and then each secondary enclosure, working from top to bottom.



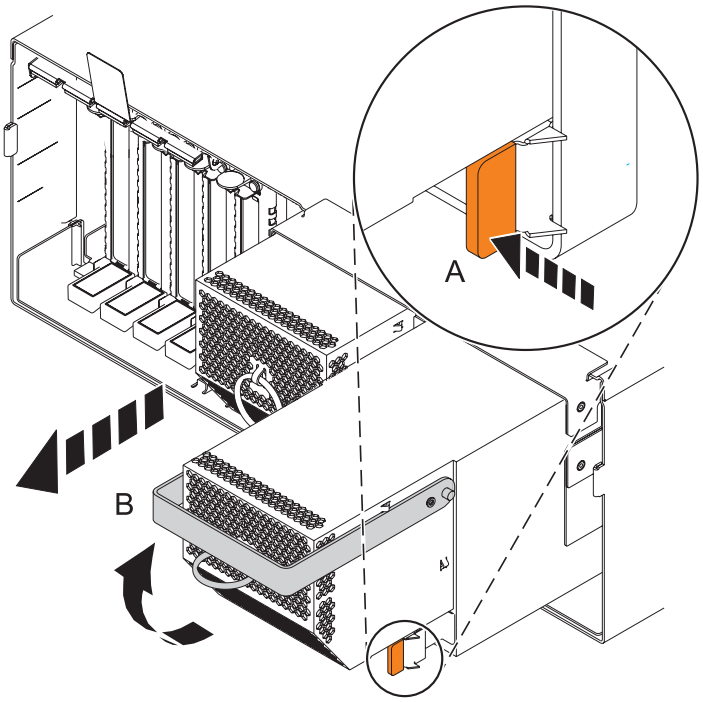
2. Remove the Front Cover

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)**.



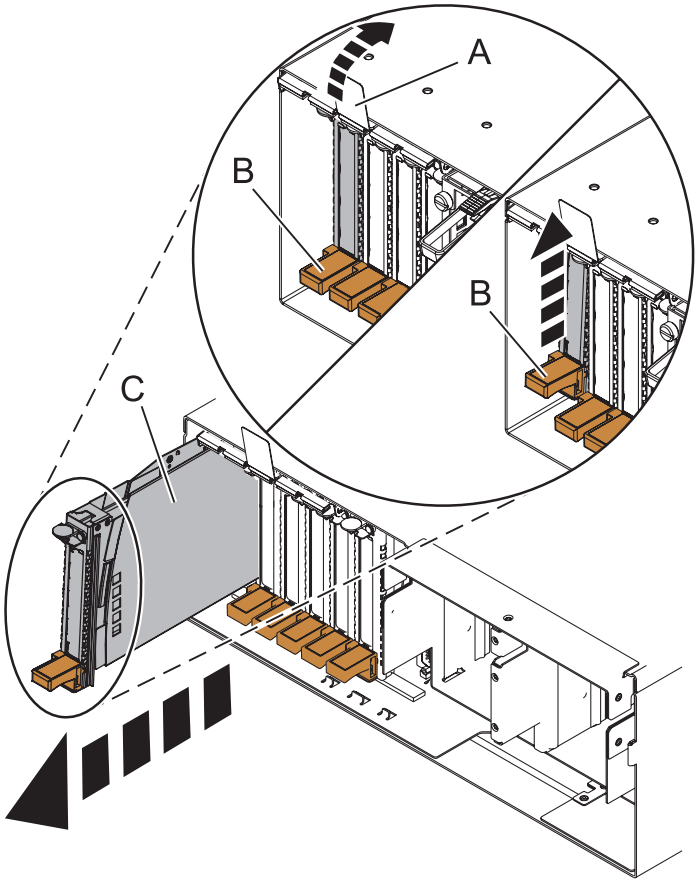
3. Remove both power supplies

1. Push the handle latch **(A)** to release the handle.
2. Lift the handle **(B)** up and into the open position.
3. Using the handle, pull the power supply out of the power supply bay.
   CAUTION: This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). Use care when lifting, removing, or installing this part or unit. (C008)
4. Repeat these steps until both power supplies are removed.



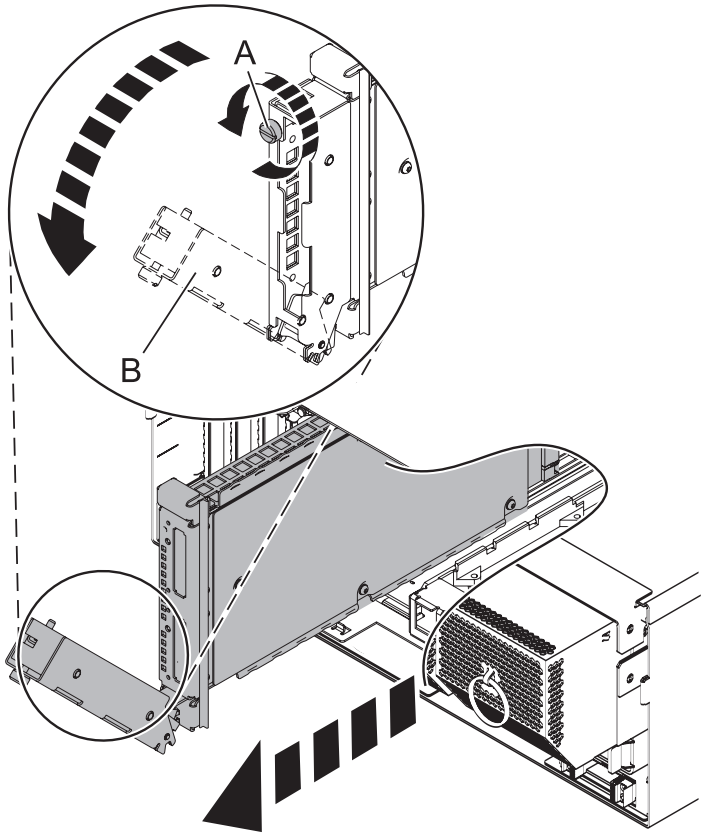
4. Remove all PCI cards

1. Label and remove all Peripheral Component Interconnect (PCI) cables from the rear of the system.
2. Lift and hold the PCI adapter EMC shield **(A)** in the open position.
3. Lift the lower cassette handle up **(B)** as shown.
4. Pull the PCI cassette **(C)** out of the system unit.
5. Lower the PCI adapter EMC shield into the closed position.
6. Repeat these steps until all PCI adapter cards or PCI adapter fillers in slots C1 through C5 have been removed.



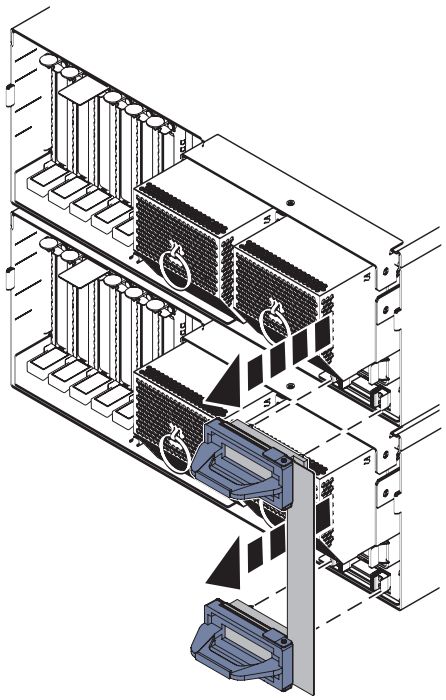
5. Remove the RIO/HSL Adapter Card

1. Label and remove all RIO/HSL cables from the rear of the system.
2. Rotate the thumbscrew **(A)** counterclockwise to unfasten the card.
3. Pull the handle **(B)** down.
4. Pull the card from its slot.
5. Repeat these steps to remove a second NIC card (if present).



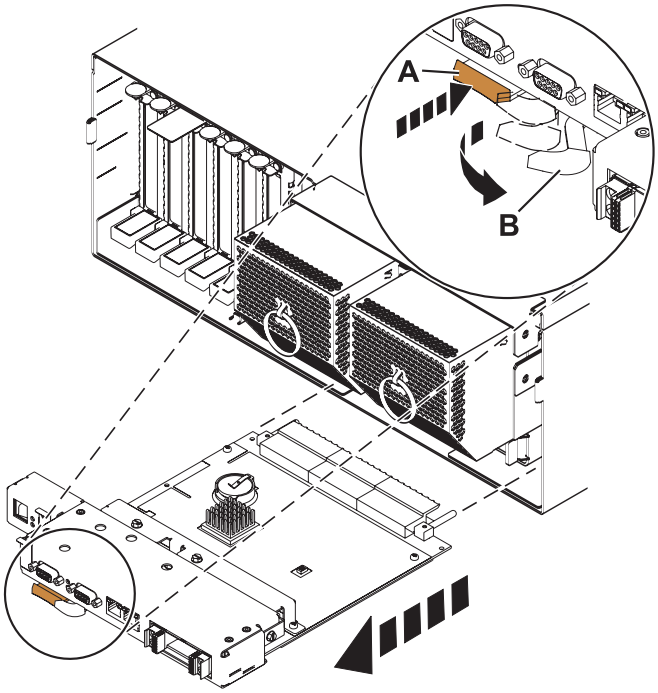
6. Remove the Service Processor Cable

1. Grasp the service processor cable handle on one system unit and pull it from the system unit.
2. Repeat the process for the other system unit.



7. Remove the Service Processor Assembly

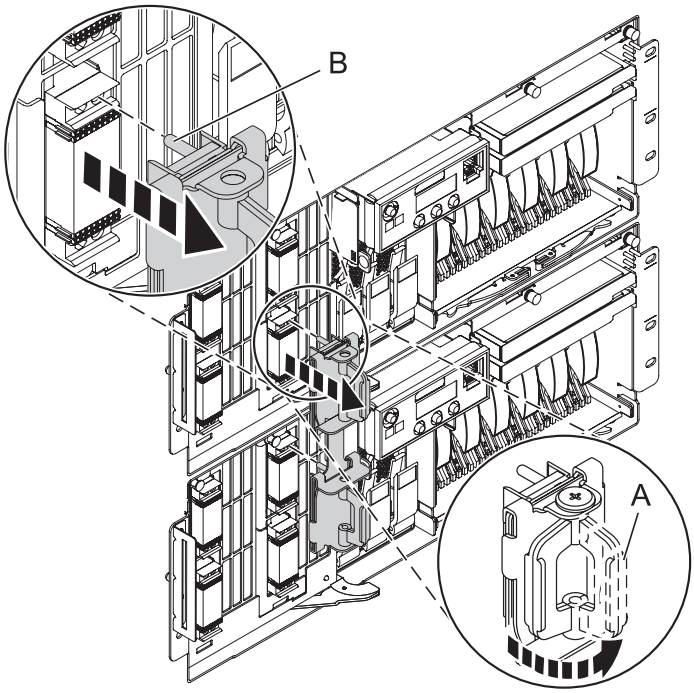
1. Label and disconnect all cables connected to the service processor assembly.
2. Press the thumb release **(A)** on the service processor assembly to unlock the handle.
3. Pull the handle to the right to unseat the service processor assembly.
4. Pull the service processor assembly from the card enclosure using the handle and supporting the bottom of the card.



8. Disconnect the SMP Cable

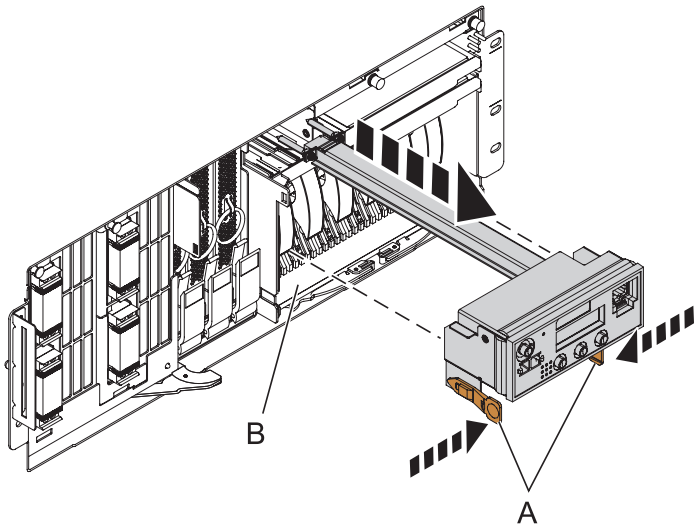
1. Carefully pull the handle **(A)** from the system until the connector is unseated.
2. When the guide pins **(B)** are free, carefully pull the SMP processor cable away from the system unit.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



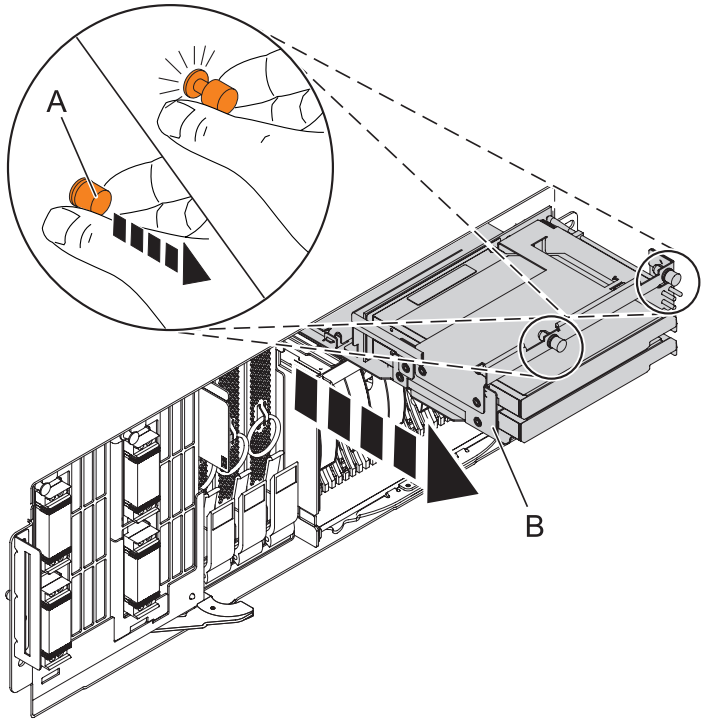
9. Remove the Control Panel or Control Panel Filler

In the enclosure you are servicing, remove the control panel or, if present, the control panel filler, by pressing the locking tabs **(A)** on both sides of the panel, grasping the edges, and pulling it out of its bay **(B)**.



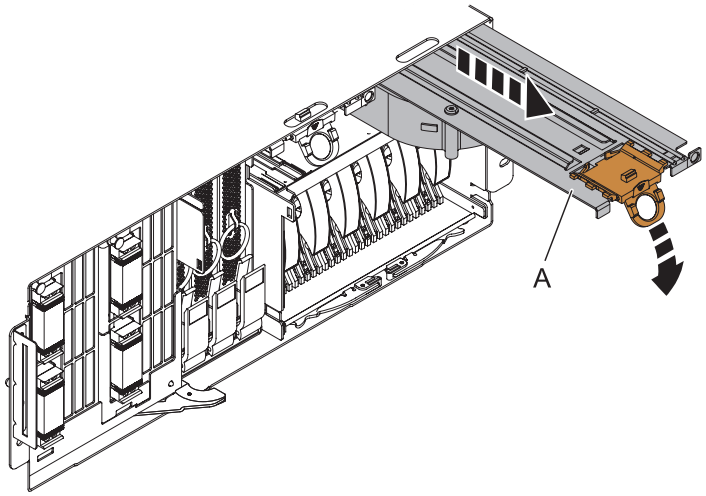
10. Remove the Media Device Enclosure

1. Pull the two terra-cotta locking knobs **(A)** out until they unlock.
2. Pull the enclosure **(B)** out of the system chassis.



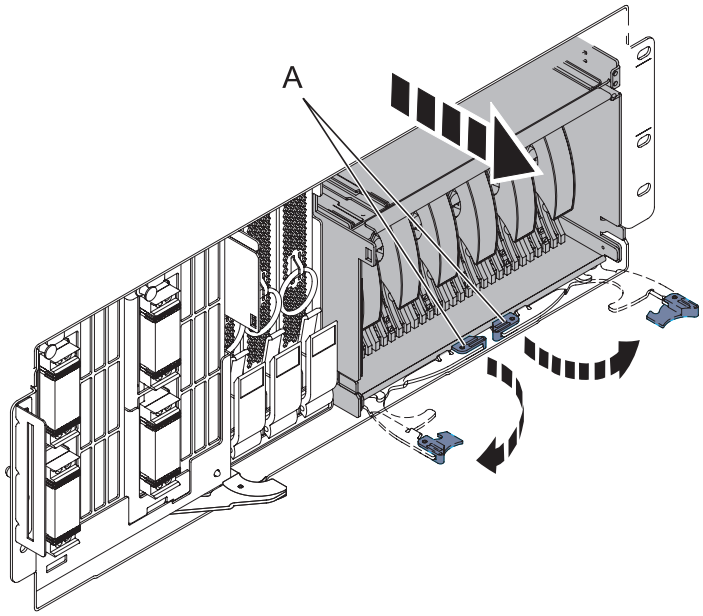
11. Remove the Fans

1. Pull the ring **(A)** downward to disengage it from the system unit.
2. Using the ring, pull the fan straight out of the system unit.
3. Repeat these steps until both fans are removed.



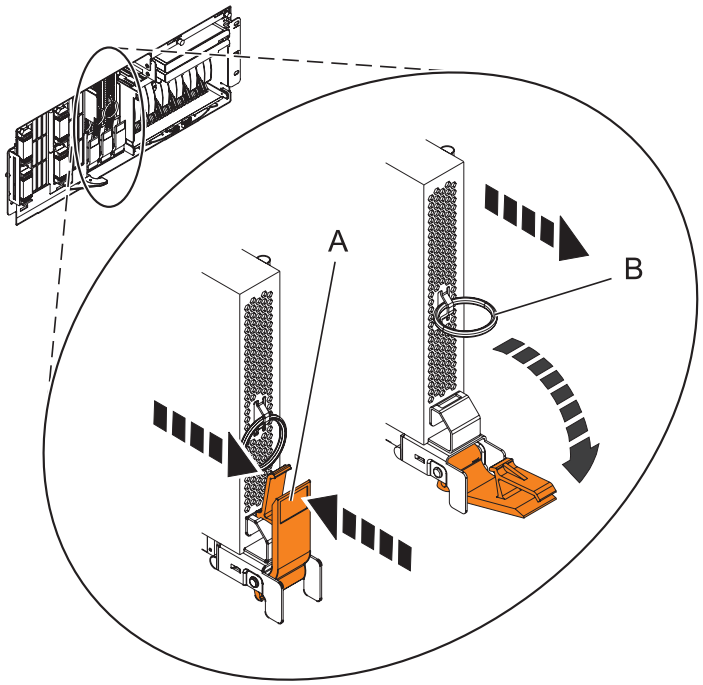
12. Remove the disk unit enclosure

1. Press down and rotate handles **(A)**.
2. Slide the enclosure out of the machine.



13. Remove the Voltage Regulator Assemblies

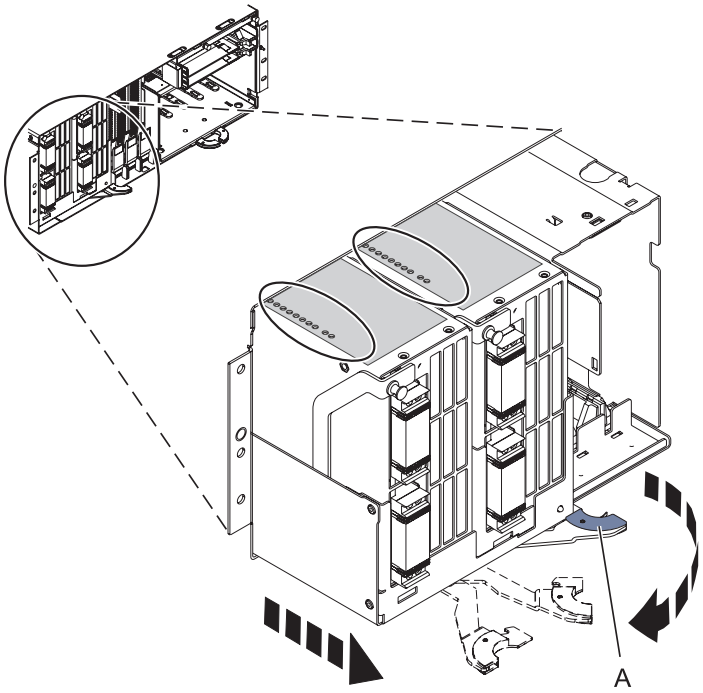
1. Squeeze the top of the latch **(A)** to release it, then rotate the latch out and then down.
2. Grasp the pull ring **(B)** and slowly pull the voltage regulator out of the enclosure. **NOTE:** Pulling the voltage regulator assembly out of the card enclosure requires a large amount of force. The voltage regulator assembly is of substantial weight, so grasp it firmly when it is free of the card enclosure.
3. Repeat these steps until all voltage regulator assemblies have been removed.



14. Remove the System Backplane Assembly

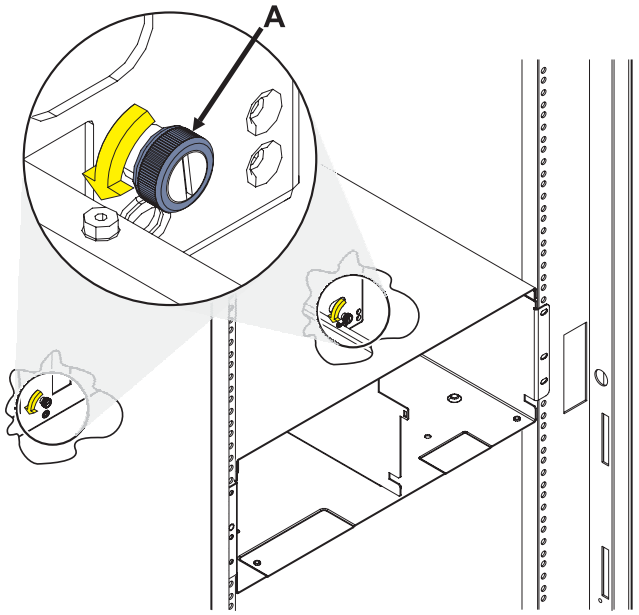
Note: A shipping support clamp has been installed on your server. Removal is not required. This clamp will not interfere with the drawer front covers or machine operation. If removed, store for re-use when the server is relocated.

1. Push the blue lever to the left and out from the system **(A)** to unlock the system backplane assembly.
2. Pull the system backplane assembly out of the system using both hands. **ATTENTION:** The system backplane assembly weighs 35 lbs and should not be pulled out using the blue lever. Grasp the backplane assembly firmly with both hands when it is free of the system.



15. Loosen the thumbscrews

Loosen the two thumbscrews **(A)** at the front of the backplane.



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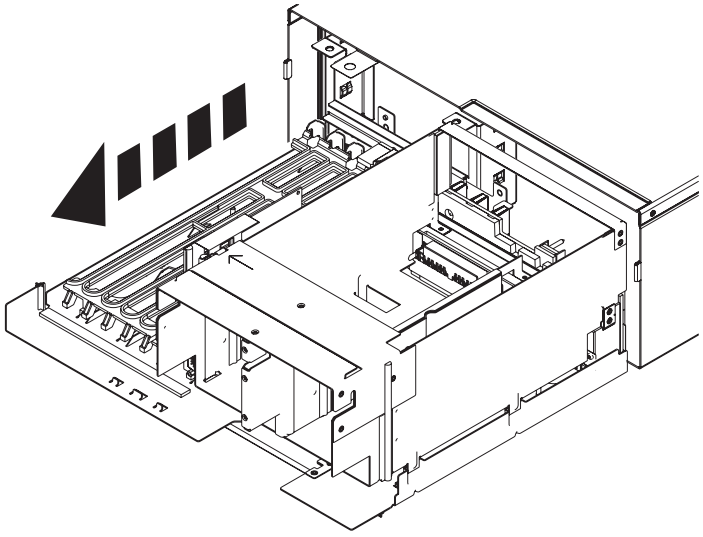
16. Remove the I/O backplane from the rear of the system

1. Slide the I/O backplane from the enclosure and set it aside.



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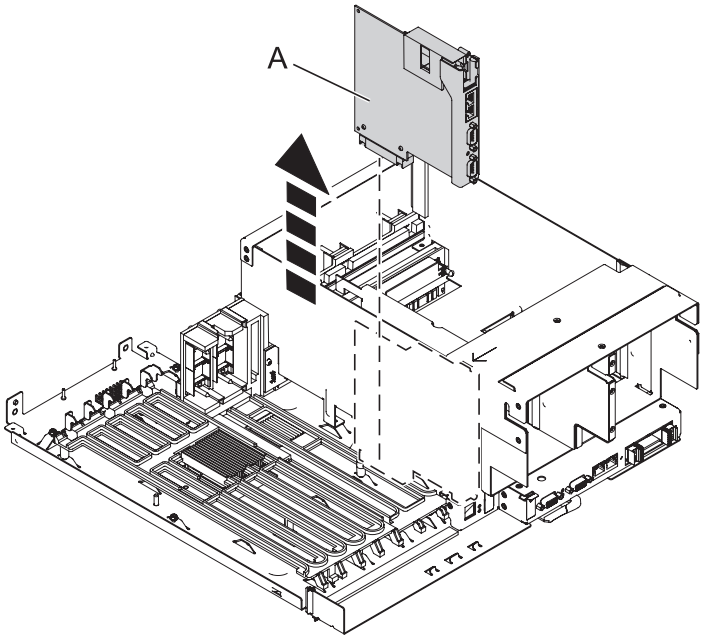
17. Remove the VPD passthru card

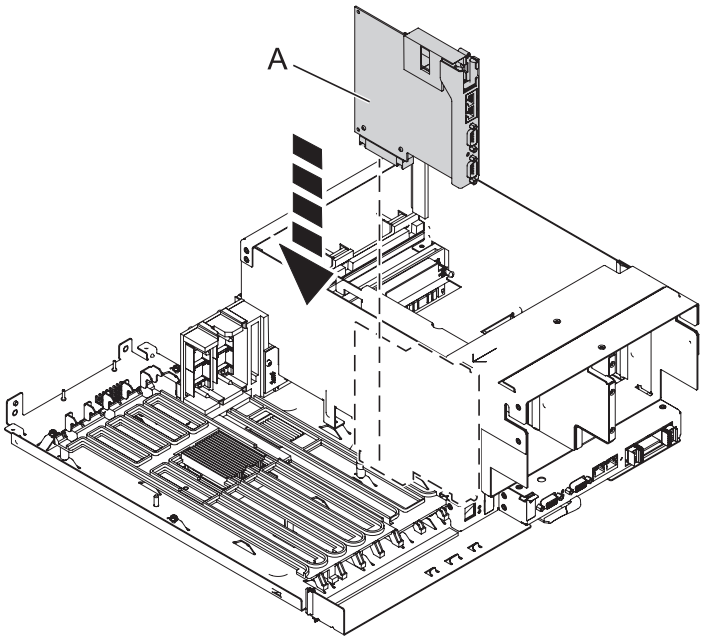
Remove the passthru card from the I/O backplane assembly by pulling it straight up and out of the I/O backplane assembly.



18. Install the VPD passthru card

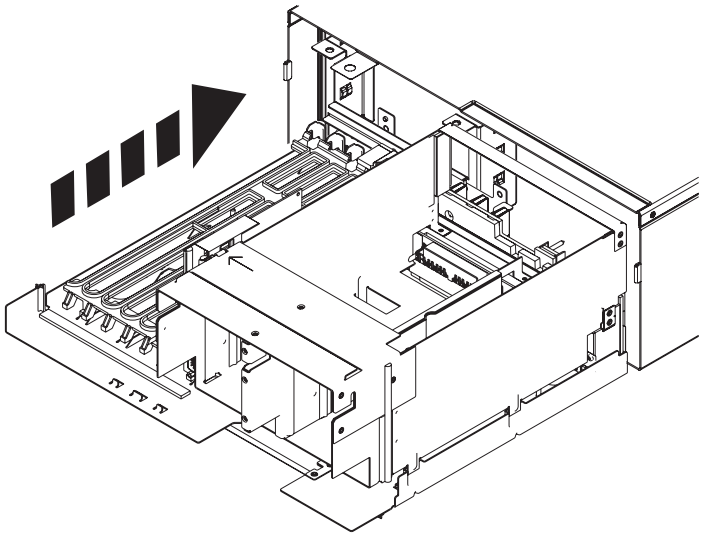
1. Note the metal tab on the top edge of the pass-through card.
2. Insert the card into the connector on the I/O backplane ensuring that the metal tab engages the slot on the top edge of the shroud for the power supplies.

ATTENTION: If the tab does not engage the slot in the shroud, the passthru card will not connect securely and damage to the pins on the connector could occur.



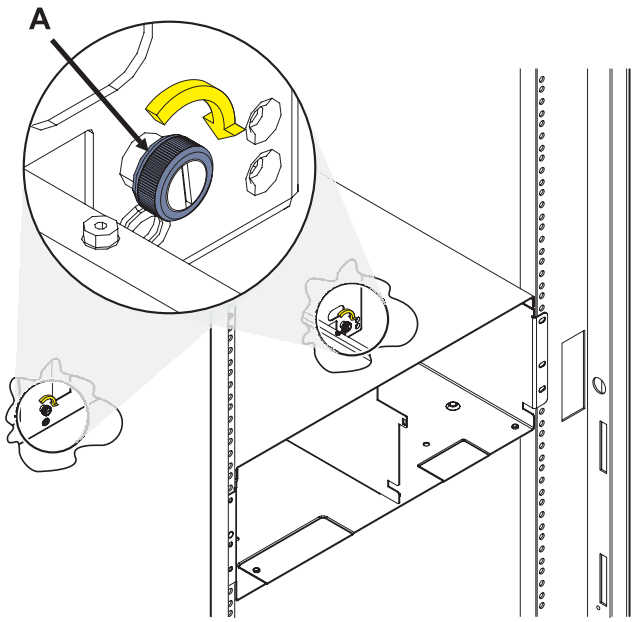
19. Install the I/O backplane

1. Carefully slide the I/O backplane into the enclosure.



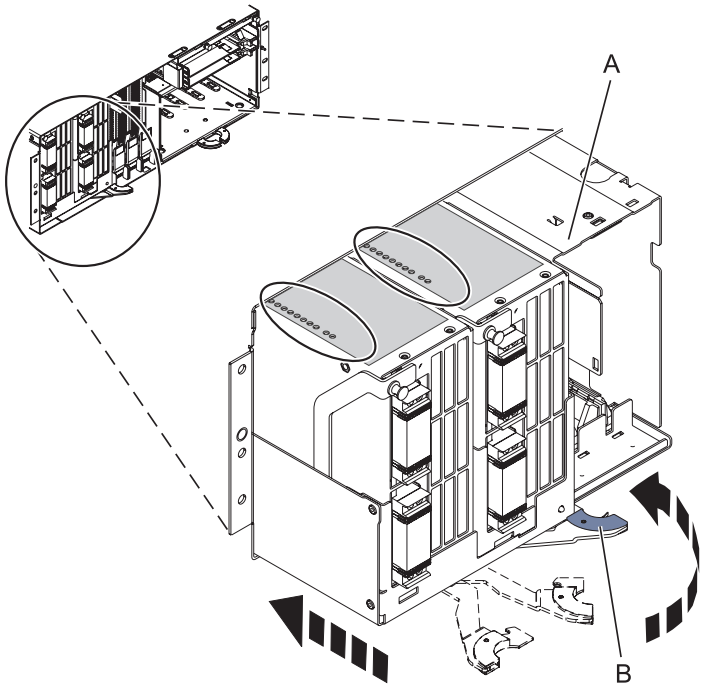
20. Tighten the thumbscrews

1. Tighten the two thumbscrews **(A)** at the front of the backplane.
2. Ensure the backplane is seated properly.



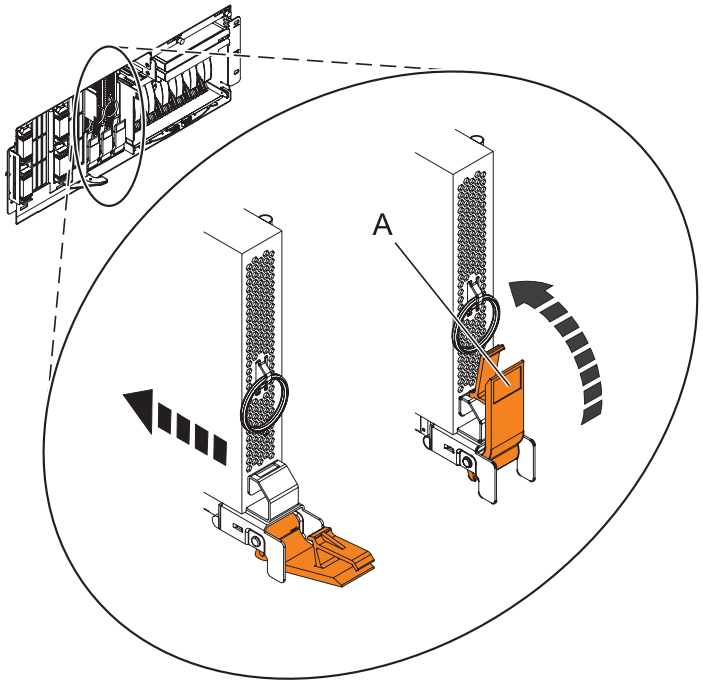
21. Install the System Backplane Assembly

1. Align the system backplane assembly with the slot in the system.
2. Slide the system backplane assembly into the system **(A)**.
3. Push the blue lever **(B)** to the right and in toward the system to lock the system backplane assembly.



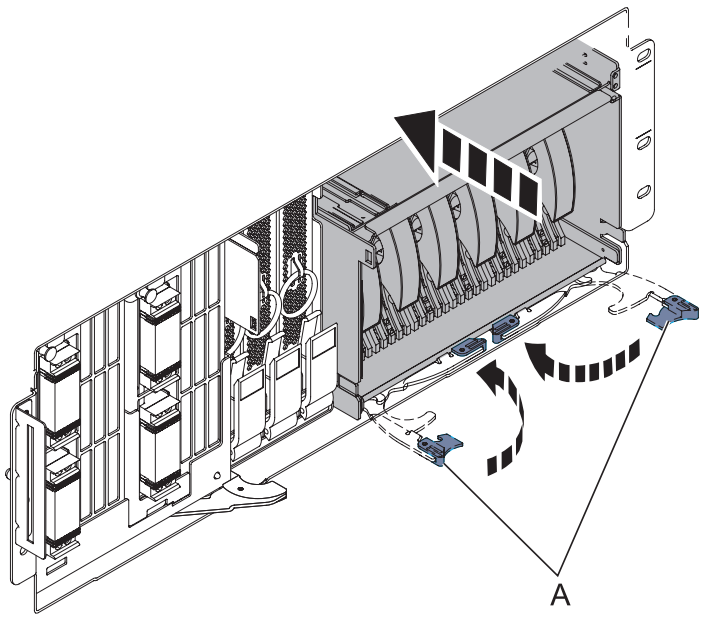
22. Install the Voltage Regulator Assemblies

1. Ensure that the voltage regulator assembly latch **(A)** is rotated out and down into the unlocked position.
2. Carefully grasp the voltage regulator assembly and slide it into the enclosure.
3. When the voltage regulator assembly is all the way into the card enclosure, rotate the latch **(A)** up into the locked position.
4. Repeat these steps until all voltage regulator assemblies have been installed.



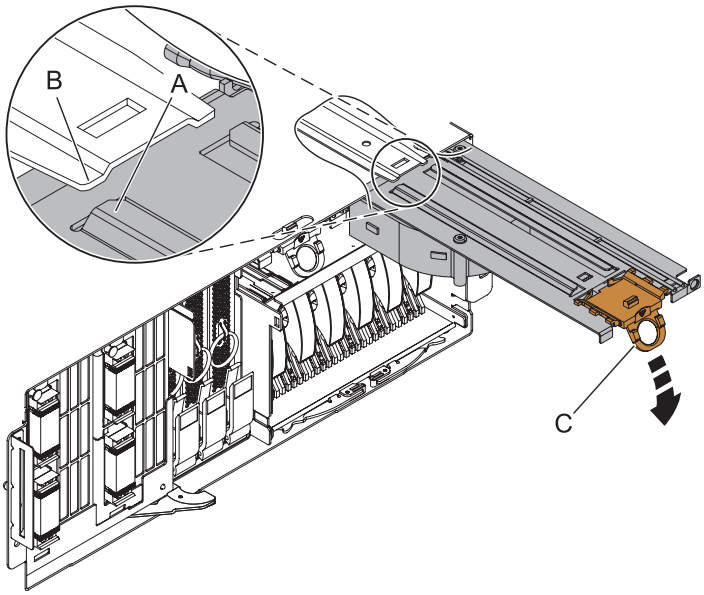
23. Install the disk unit enclosure

1. Insert the new disk unit enclosure into the system unit.
2. Slide the disk unit enclosure into the system until you feel it lock into place.
3. Rotate the handles **(A)** in the direction shown.



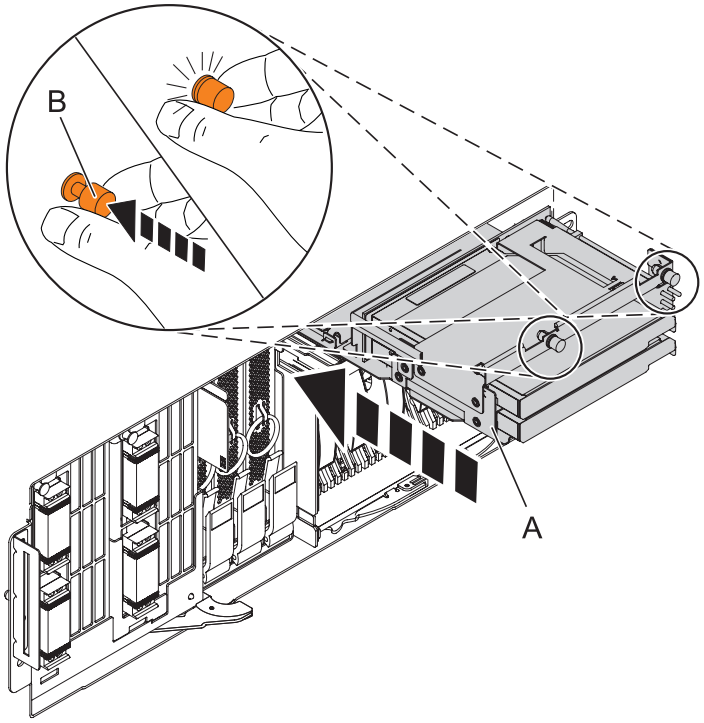
24. Install the Fans

1. Align the fan **(A)** with the guide rails **(B)** inside of the fan slot.
2. Press the fan all the way into the fan slot.
3. Lift up the ring **(C)** to lock the fan into place.
4. Repeat these steps until both fans are installed.



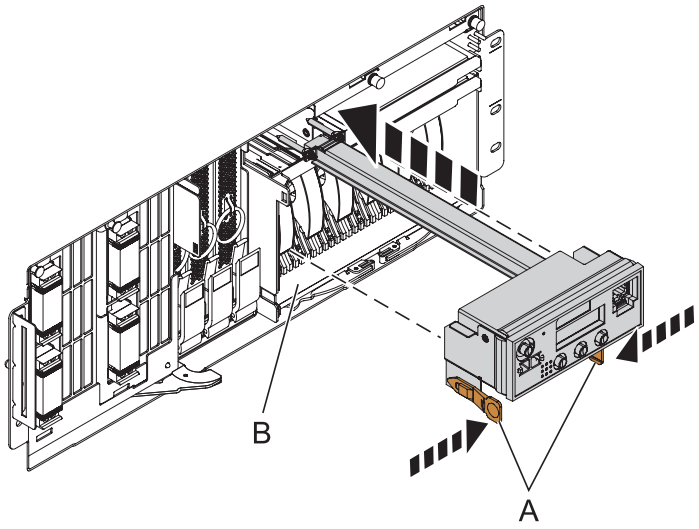
25. Install the Media Device Enclosure

1. Align the media device enclosure with the chassis opening.
2. Push the media device enclosure **(A)** into place, and then push the two terra-cotta locking knobs **(B)** into the locked position.



26. Install the Control Panel or Control Panel Filler

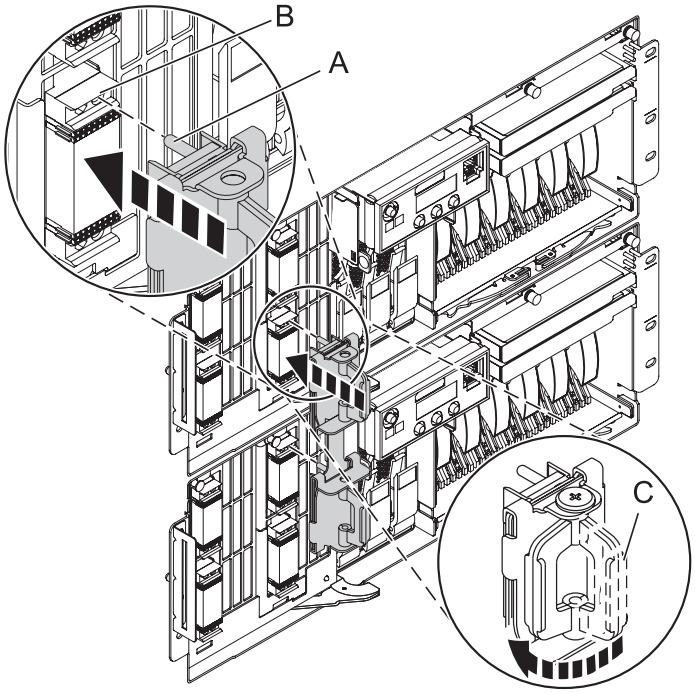
In the enclosure you are servicing, carefully slide the control panel or, if present, the control panel filler, into the control panel bay **(B)** until you feel the locking tabs **(A)** lock in place.



27. Connect SMP Cable

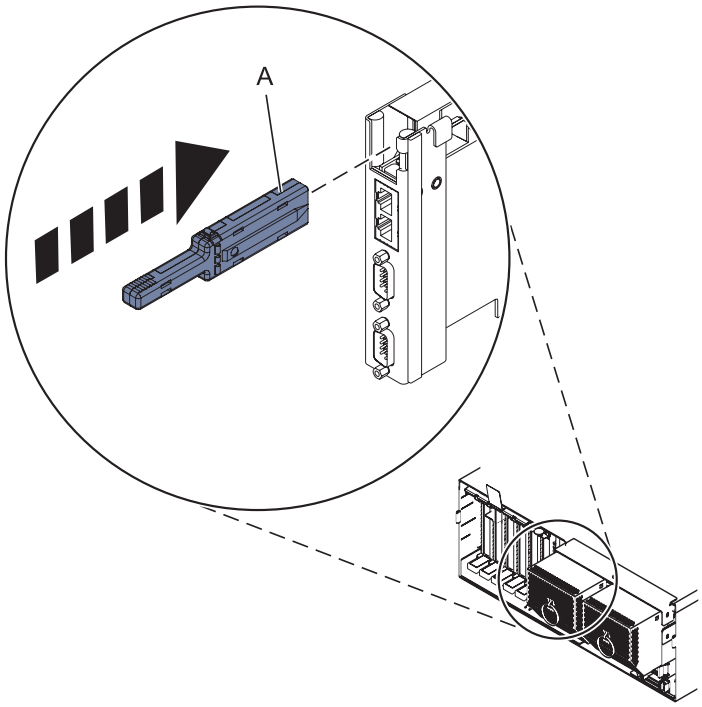
1. Align the guide pins **(A)** with the connectors **(B)** on the system unit.
2. Using the handle **(C)**, carefully push the SMP processor cable into the system unit connector.

Repeat these steps for all SMP cable connectors that are present on the system you are servicing.



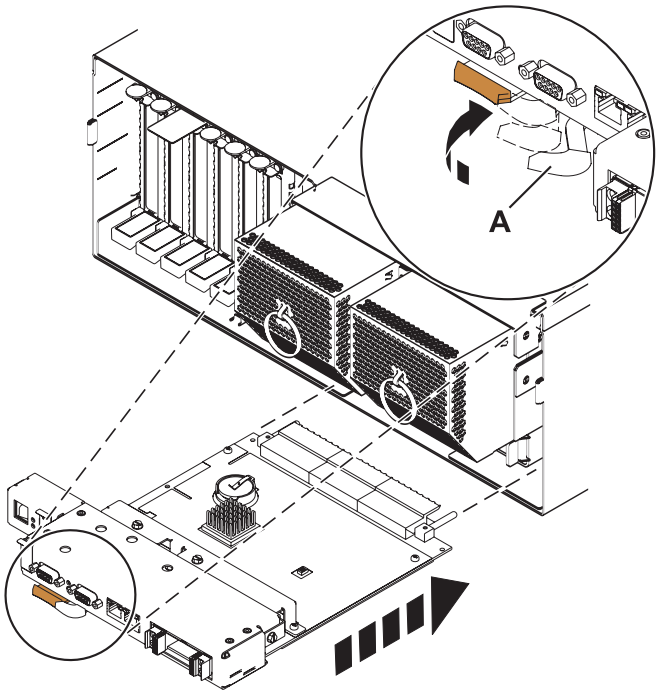
28. Install the VPD Card

1. Insert the VPD card with the key **(A)** positioned to the right as shown.
2. Push until fully seated.



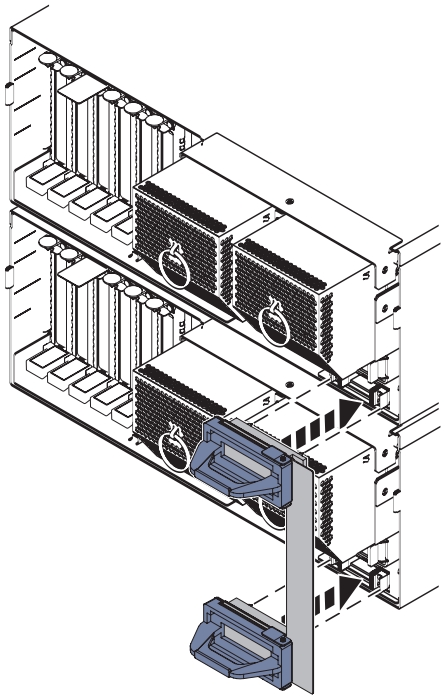
29. Install the Service Processor Assembly

1. Align the service processor assembly with the card slot.
2. Slide the service processor assembly all the way into the card slot in the card enclosure.
3. Push the handle **(A)** toward the service processor assembly until the release tab locks the handle in place. This will secure the service processor assembly into the card slot.
4. Reconnect all service processor assembly cables.



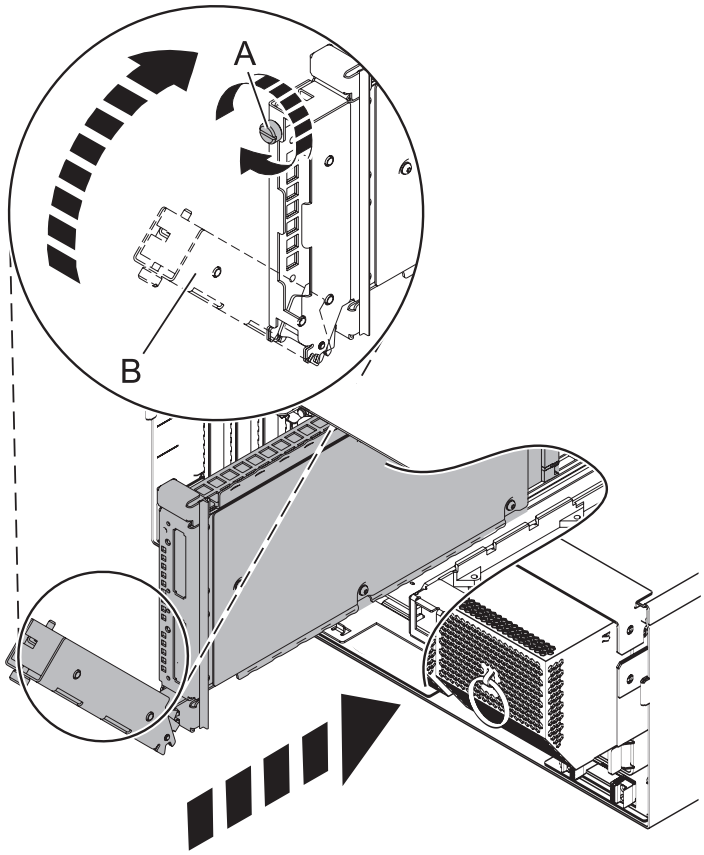
30. Install the Service Processor Cable

1. Align the pins on the back of the service processor cable handle with the alignment holes on the back of one of the system units.
2. Using the handle, push the cable connector in place.
3. Repeat the process for the other system unit.



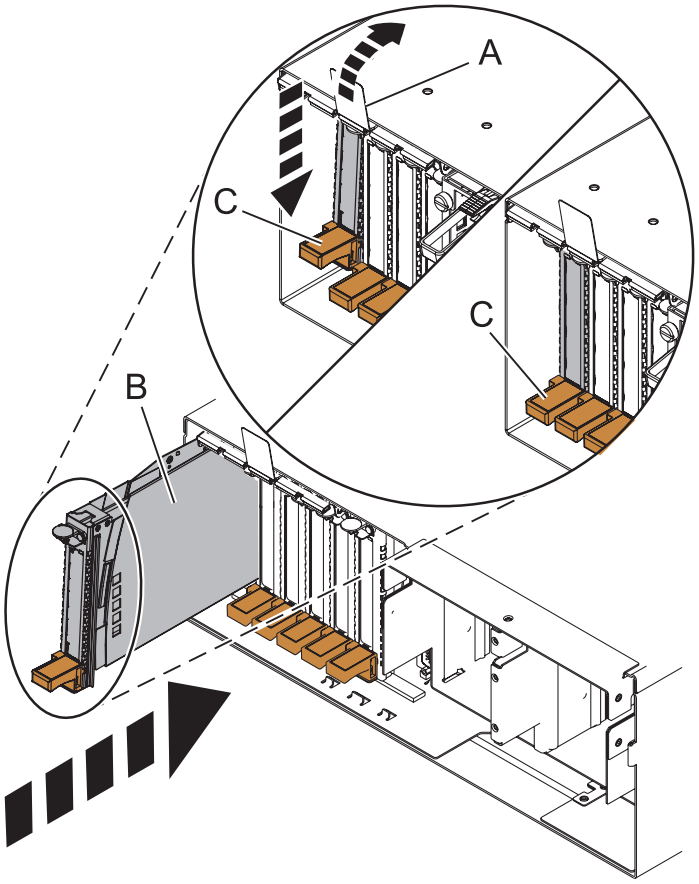
31. Install the RIO/HSL adapter card

1. Push the card into its slot.
2. Push the handle **(B)** up and toward the system until the handle stops against the adapter card.
3. Rotate the thumbscrew **(A)** clockwise to fasten the card.
4. Repeat these steps to install a second NIC card if necessary.



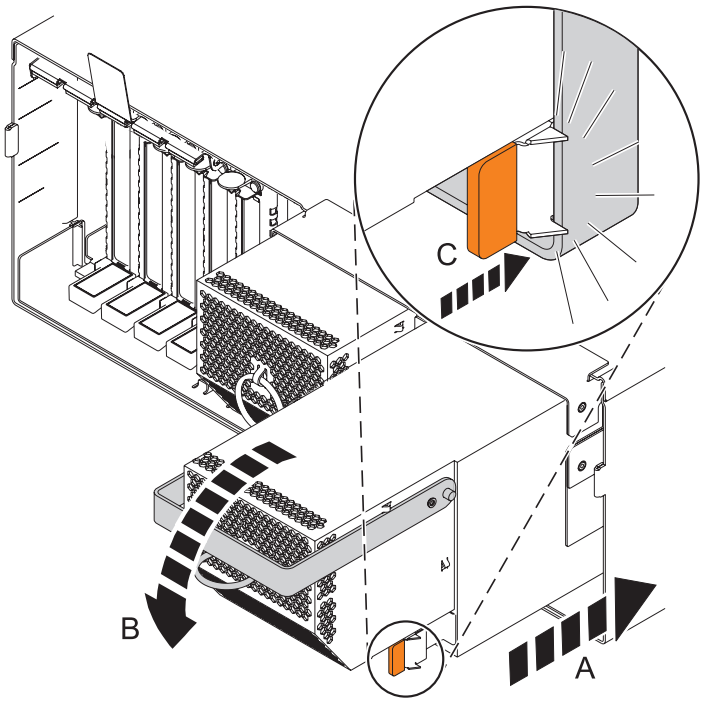
32. Install all PCI Adapter Cards

1. At the back of the system, identify the cassette slot you want to use.
2. Ensure that the cassette handle is in the open position.
3. Lift and hold the PCI adapter EMC shield **(A)** in the open position.
4. Slide the cassette **(B)** into the cassette slot as shown.
5. When the cassette is fully inserted into the system, firmly press downward on the lower cassette handle **(C)**.
6. Lower the PCI adapter EMC shield into the closed position.
7. Repeat these steps until all PCI adapter cards or PCI adapter fillers in slots C1 through C5 have been installed.
8. Install all previously removed PCI cables to the rear of the system.



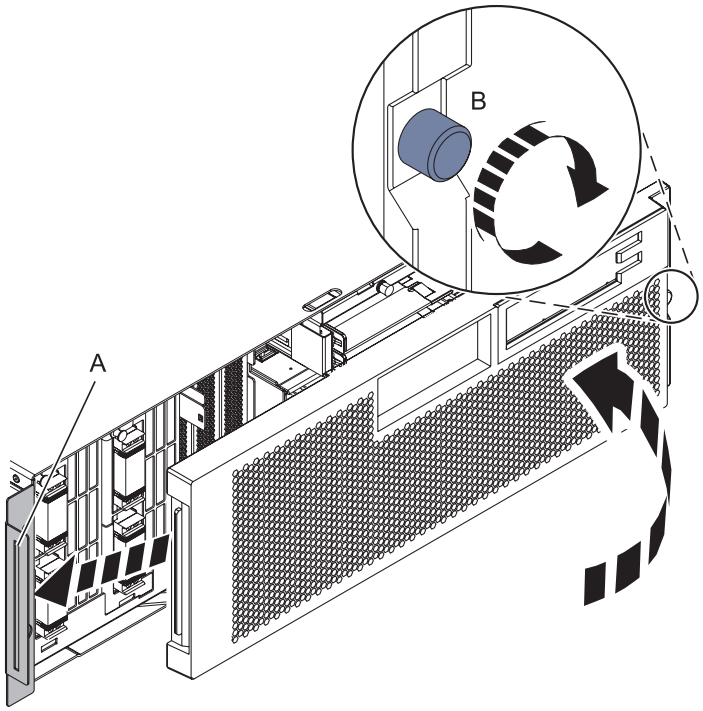
33. Install both power supplies

1. With the handle and latch in the open position, place the power supply in the power supply bay **(A)**.
2. Push the power supply completely into the power supply bay.
3. Close the handle **(B)**, and then push the handle latch into the closed position **(C)**.
4. Repeat these steps until both power supplies are installed.



34. Install the Front Cover

1. Position the cover on the front of the system unit so that the tab on the left side of the cover is in the matching slot **(A)** on the left side of the system unit.
2. Tighten the thumbscrew **(B)** on the right side of the cover.
3. Close the front rack door.

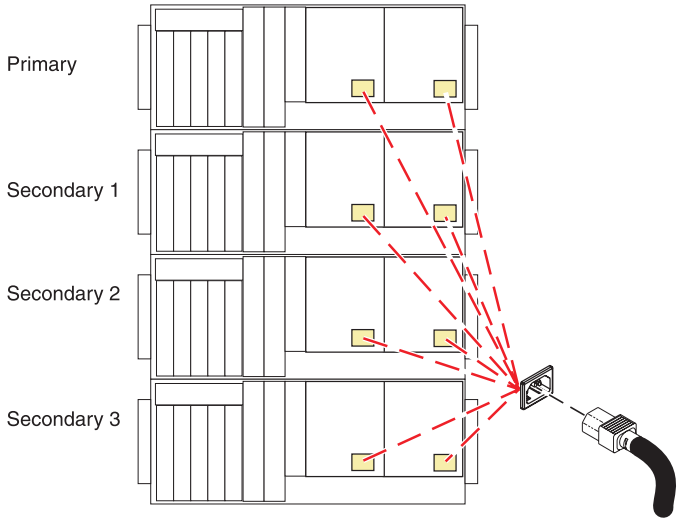


35. Install the power cords

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

Install the cords in the following order:

1. Secondary 2
2. Secondary 3
3. Primary
4. Secondary 1



36. Verify the repair

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 320
   - “Verifying the repair in Linux” on page 323
   - “Verifying a repair using an IBM i system or logical partition” on page 323

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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 321.

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 321; 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 322.

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 and 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, 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.

    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. 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 328
- "Activating or deactivating an identify LED using the Advanced System Management Interface" on page 328

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.

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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**.

Chapter 4. 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 335.
  - 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 339.

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 Chapter 3, "Activating and deactivating LEDs," on page 327. 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 334 for each open service action event.

6. Determine the error class of the serviceable event. Record for future use.

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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 331?

- **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 331?

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

- **Yes:** Continue with the next step.
- **No:** Go to step 32 on page 334.
  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 333.

---

13. Have you begun a list of A*xx* 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 A*xx* 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 A*xx* 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 333.

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 332 empty?

- **Yes:** Go to step 32 on page 334.
- **No:** Continue with the next step.

25. Does the list of all partitions you recorded in step 11 on page 332 contain more than one entry?

- **Yes:** Continue with the next step.
- **No:** Go to step 32 on page 334.

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

- **Yes:** Continue with the next step.
- **No:** Go to step 32 on page 334.

27. Perform the following steps for each entry in the list of all partitions you recorded in step 11 on page 332, 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 332 been processed?

- **Yes:** Continue with the next step.
- **No:** Go to step 24 on page 333 to process the next partition in the list you recorded in step 11 on page 332.

---

32. Have all the serviceable events recorded in step 4 on page 331 been processed?

- **Yes:** Continue with the next step.
- **No:** Go to step 5 on page 331 and process the next service action event in the list of serviceable events recorded in step 4 on page 331.

---

33. While processing all service action events, were you directed to step 14 on page 332?

- **Yes:** Continue with the next step.
- **No:** If the system attention LED is still on, turn off the LED as described in Chapter 3, "Activating and deactivating LEDs," on page 327. 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 A*xx* partitions you began recording in step 14 on page 332, 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 A*xx* 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 A*xx* partitions you began recording in step 14 on page 332 been processed?

- **Yes:** Continue with the next step.
- **No:** Go to step 34 on page 334 to process the next partition in the list you recorded in step 14 on page 332.

39. If the system attention LED is still on, turn off the LED as described in Chapter 3, "Activating and deactivating LEDs," on page 327. 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 Chapter 3, "Activating and deactivating LEDs," on page 327. 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 338 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 335?

- **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 335?

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

---

10. Is the FRU you replaced and recorded in step 1 on page 335 in the list of FRUs for this service action event?

- **Yes:** Continue with the next step.
- **No:** Go to step 30 on page 338.
  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 A*xx* 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 A*xx* partitions by copying the list of partitions obtained in step 11 on page 336. Go to step 16.

---

15. Add the partition list obtained in step 11 on page 336 to the existing list of A*xx* 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 336. If you are referred to the list of partitions obtained in step 11 on page 336 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 336 empty?

- **Yes:** Go to step 30 on page 338.
- **No:** Continue with the next step.

---

23. Does the list of all partitions you recorded in step 11 on page 336 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?

- **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 336, 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 336 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 336.

---

30. Have all the serviceable events recorded in step 4 on page 336 been processed?

- **Yes:** Continue with the next step.
- **No:** Go to step 5 on page 336 and process the next service action event in the list of serviceable events recorded in step 4 on page 336.

---

31. While processing all service action events, were you directed to step 14 on page 337?

- **Yes:** Continue with the next step.
- **No:** If the system attention LED is still on, turn off the LED as described in Chapter 3, "Activating and deactivating LEDs," on page 327. 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 A*xx* partitions you began recording in step 14 on page 337, 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 A*xx* 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 A*xx* partitions you began recording in step 14 on page 337 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 337.

37. If the system attention LED is still on, turn off the LED as described in Chapter 3, "Activating and deactivating LEDs," on page 327. 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 341.
- **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 Chapter 3, "Activating and deactivating LEDs," on page 327.

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 342; 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 an system request number (SRN) displays, suspect a loose card or connection. If no instructions display, no resources were detected as missing. Continue with 9 on page 342.

---

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 343.

---

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 343.

---

13. The parent or child of the resource you just replaced might also require that you run the Resource Repair Action service aid on it.

When a test is run on a resource in system verification mode, and that resource has an entry in the AIX error log, if the test on the resource was successful, the Resource Repair Action menu displays.

After replacing that FRU, you must select the resource for that FRU from the Resource Repair Action menu. This updates the AIX error log to indicate that a system-detectable FRU has been replaced.
Note: If the system attention indicator is on, this action will set it back to the normal state.

Do the following steps:

1. From the Resource Repair Action menu, select the parent or child of the resource that has been replaced. If the repair action was reseating a cable or adapter, select the resource associated with that repair action. If the resource associated with your action is not displayed on the resource list, select **sysplanar0**.
2. Press COMMIT after you make your selections.

Did the No Trouble Found menu display?

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

---

14. If you changed the service processor or network settings, as instructed in previous MAPs, restore the settings to the value they had prior to servicing the system. If you ran stand-alone diagnostics from CD-ROM, remove the stand-alone diagnostics CD-ROM from the system.

Did you perform service on a RAID subsystem involving changing of the PCI RAID adapter cache card or changing the configuration?
Note: This does not refer to the PCI-X RAID adapter or cache.

- **Yes:** Continue with the next step.
- **No:** Go to step 16.

---

15. Use the **Recover Options** selection to resolve the RAID configuration. To do this, do the following steps:

1. On the PCI SCSI Disk Array Manager dialog, select **Recovery options**.
2. If a previous configuration exists on the replacement adapter, this must be cleared. Select **Clear PCI SCSI Adapter Configuration** and press F3.
3. On the Recovery Options dialog, select **Resolve PCI SCSI RAID Adapter Configuration**.
4. On the Resolve PCI SCSI RAID Adapter Configuration dialog, select **Accept Configuration on Drives**.
5. On the PCI SCSI RAID Adapter selections menu, select the adapter that you changed.
6. On the next dialog, press Enter.
7. When you see the Are You Sure selection menu, press Enter to continue.
8. You should see an `OK` status message when the recover is complete. If you get a `Failed` status message, verify that you selected the correct adapter, and then repeat this procedure. When recover is complete, exit the operating system.
9. Go to 16.

---

16. The system hardware is functioning correctly. Return the server to the state that the customer normally uses, such as IPL type, IPL mode, and the way the system is configured or partitioned.

Attention: Before returning the system to the customer, remove the system from service mode. If the system is left in service mode, it automatically places a call for service every two hours.

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The following Class A statements apply to the IBM servers that contain the POWER6 processor.

Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with

the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A respecte est conforme à la norme NMB-003 du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:
IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569
Tele: 0049 (0)711 785 1176
Fax: 0049 (0)711 785 1283
E-mail: tjahn@de.ibm.com

Warning: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

VCCI Statement - Japan

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

The following is a summary of the VCCI Japanese statement in the box above.

This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Electromagnetic Interference (EMI) Statement - People's Republic of China

声　明

此为A级产品，在生活环境中，
该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对其
干扰采取切实可行的措施。

Declaration: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may need to perform practical action.

Electromagnetic Interference (EMI) Statement - Taiwan

警告使用者：
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

The following is a summary of the EMI Taiwan statement above.

Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user will be required to take adequate measures.

IBM Taiwan Contact Information:

台灣IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路7號3樓
電話：0800-016-888

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Please note that this equipment has obtained EMC registration for commercial use. In the event that it has been mistakenly sold or purchased, please exchange it for equipment certified for home use.

Germany Compliance Statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der IBM gesteckt/eingebaut werden.

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:
"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

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

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

Electromagnetic Interference (EMI) Statement - Russia

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать
радиопомехи, для снижения которых необходимы
дополнительные меры

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

REFERENCE
86 A1 89FA 01