ESCALA Power7

PCI Adapters for the E2-700, E2-700T, E2-705, E2-705T, E4-700, E4-700T or E4-705

PCI Adapters for the E2-700, E2-700T, E2-705, E2-705T, E4-700, E4-700T or E4-705

The ESCALA Power7 publications concern the following models:

 - Bull Escala E1-700 (Power 710 / 8231-E2B)
 - Bull Escala E1-705 (Power 710 / 8231-E1C)
 - Bull Escala E2-700 / E2-700T (Power 720 / 8202-E4B)
 - Bull Escala E2-705 / E2-705T (Power 720 / 8202-E4C)
 - Bull Escala E3-700 (Power 730 / 8231-E2B)
 - Bull Escala E3-705 (Power 730 / 8231-E2C)
 - Bull Escala E4-700 / E4-700T (Power 740 / 8205-E6B)
 - Bull Escala E4-705 (Power 740 / 8205-E6C)
 - Bull Escala E5-700 (Power 750 / 8233-E8B)
 - Bull Escala M6-700 (Power 770 / 9117-MMB)
 - Bull Escala M6-705 (Power 770 / 9117-MMC)
 - Bull Escala M6-715 (Power 770 / 9117-MMD)
 - Bull Escala M7-700 (Power 780 / 9179-MHB)
 - Bull Escala M7-705 (Power 780 / 9179-MHC)
 - Bull Escala M7-715 (Power 780 / 9179-MHD)

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

Hardware

Trademarks and Acknowledgements

We acknowledge the rights of the proprietors of the trademarks mentioned in this manual.

All brand names and software and hardware product names are subject to trademark and/or patent protection.

Quoting of brand and product names is for information purposes only and does not represent trademark misuse.

Contents

Safety notices

Safety notices may be printed throughout this guide.

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

World Trade safety information

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

Laser safety information

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

Laser compliance

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

DANGER

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

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:
- **Connect power to this unit only with the provided power cord. Do not use the 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.**

  (D005a)

DANGER

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

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

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

CAUTION

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

(R001)

CAUTION:

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

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

(R002)

(L001)

(L002)

(L003)

or

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

CAUTION:
This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:
- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**

(C026)

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

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

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

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

Do Not:
- **___ Throw or immerse into water**
- **___ Heat to more than 100°C (212°F)**
- **___ Repair or disassemble**

Exchange only with the approved part. Recycle or discard the battery as instructed by local regulations. (C003a)

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

The following comments apply to the 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.

Installing, removing, and replacing PCI adapters

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

About this task

The following features are electromagnetic compatibility (EMC) Class B features. See the EMC Class B Notices in the Hardware Notices section.

Feature	Description
2728	4-Port USB PCIe Adapter
4807	PCIe Cryptographic Coprocessor
5717	4-Port 10/100/1000 Base-TX PCI Express Adapter
5732	10 Gigabit Ethernet-CX4 PCI Express Adapter
5748, 5269	POWER® GXT145 PCI Express Graphics Accelerator
5767	2-Port 10/100/1000 Base-TX Ethernet PCI Express Adapter
5768	2-Port Gigabit Ethernet-SX PCI Express Adapter
5769	10 Gigabit Ethernet-SR PCI Express Adapter
5772	10 Gigabit Ethernet-LR PCI Express Adapter
5785	4-Port Async EIA-232 PCIe Adapter

Related concepts:
"Safety notices" on page 114

Model 02E/4B, 02E/4C, 05F/6B, or 05E/6C PCI adapter

You can remove, replace, or install PCI adapters in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C system.

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

Installing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

Install a PCI adapter with the system power off.

Before you begin

Attention: If you are servicing a failing part, see the service procedures for "Removing a PCI adapter from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 8 and "Replacing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 14. This procedure is intended for installing a new or upgraded PCI adapter.

About this task

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system.

- To download firmware and software updates and fixes, see Fix Central.

- To download Hardware Management Console (HMC) updates and fixes, see Hardware Management Console Support and downloads.
- To download the Systems Director Management Console (SDMC) updates, see Updating the Systems Director Management Console.

If your system is managed by the HMC, use the HMC to install a feature in the server. For instructions, see Installing a feature using the Hardware Management Console.

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.

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

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

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Stop the system or logical partition. See Stop the system or logical partition.
4. If your system is a rack-mounted system, place the system into the service position. For instructions, see "Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position" on page 135.
5. Remove the service access cover.
   - For a rack-mounted system, see "Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 130.
   - For a stand-alone system, see "Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 131.
6. Reach behind the system and disconnect all power cords from the unit you are servicing.

Figure 1. Disconnecting the power cords

> **Note:** An optional power supply is available in the 02E/4B or 02E/4C server. The 05F/6B or 05E/6C server is equipped with a mandatory second power supply if two processor modules are installed. Before continuing with this procedure, ensure that the power source to the system has been disconnected.
>
> **(L003)**
>
>
>
> or

7. Attach the wrist strap.

   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 before 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.

8. Determine in which slot to place the PCI adapter. For system-specific adapter placement information, see the PCI adapter placement.

9. If necessary, remove the adapter from the antistatic package.

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

10. Place the adapter, component-side up, on a flat, antistatic surface.

    Note: Some PCI adapters are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.

    Attention: A pin on the tailstock of the adapter resembles a removable screw. Do not remove this pin. It is required for correct alignment and seating.

11. Ensure that the target slot is empty.

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

13. If necessary, remove the adapter slot filler.

14. If the target slot's adapter latch **(B)** is not already in the open position, pull the latch into the open position by pressing down on it from its clip on the back of the system.

    Note: If you are installing a PCI adapter on the expansion riser, there is no adapter latch.

15. Carefully grasp the adapter by its top edge or tailstock **(A)**, and align the adapter with the expansion slot and its connector on the system backplane, as shown in Figure 2.
16. Press the adapter firmly into its connector.
17. Pull the adapter latch **(B)** back into place, as shown in the following figure.
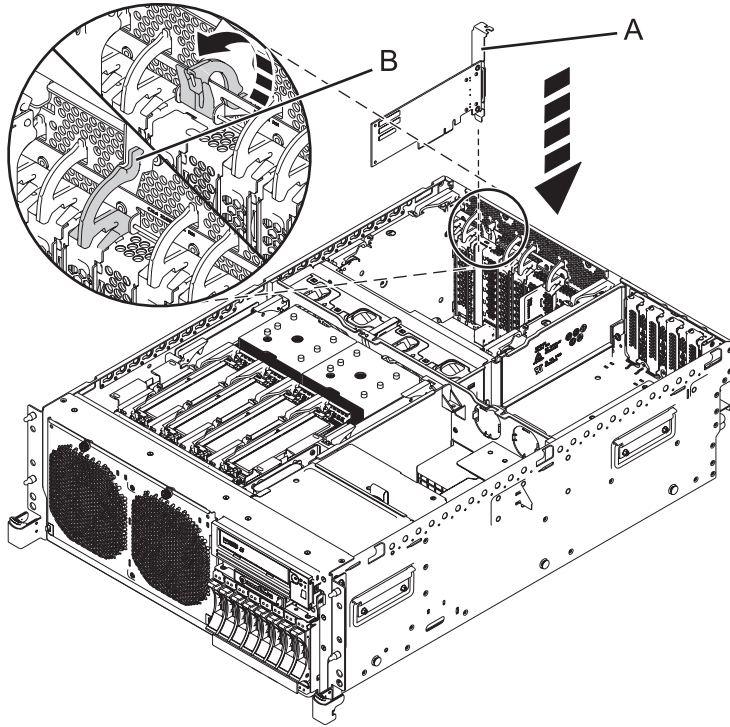
Figure 2. Installing a PCI adapter in a rack-mounted system unit
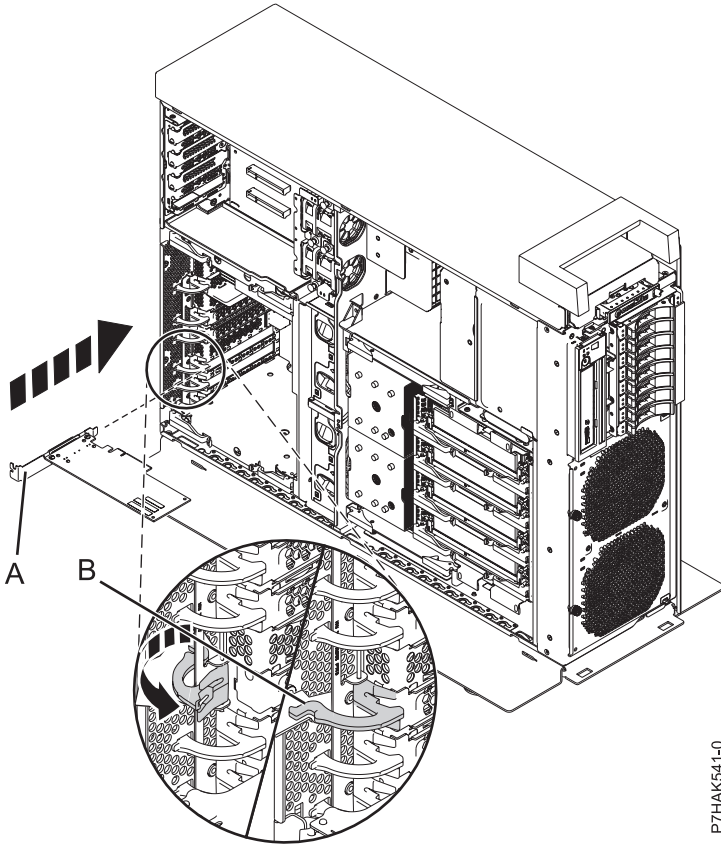
Figure 3. Installing a PCI adapter in a stand-alone system unit

18. If your system has an expansion riser, you can press the low profile PCI adapter into its slot by guiding it into position by its tailstock **(A)** and then pressing the adapter into its slot, as shown in the following figures.
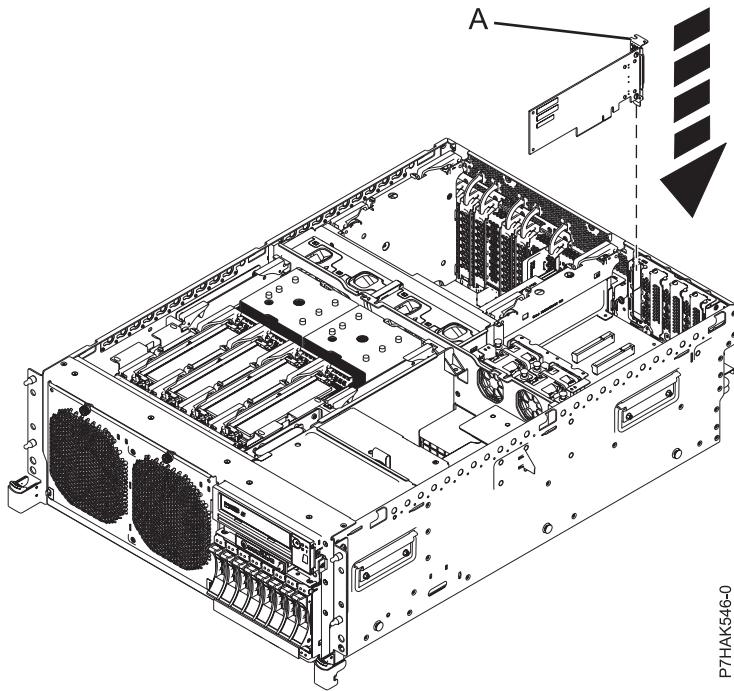
Figure 4. Installing a PCI adapter in a rack-mounted system unit's expansion riser
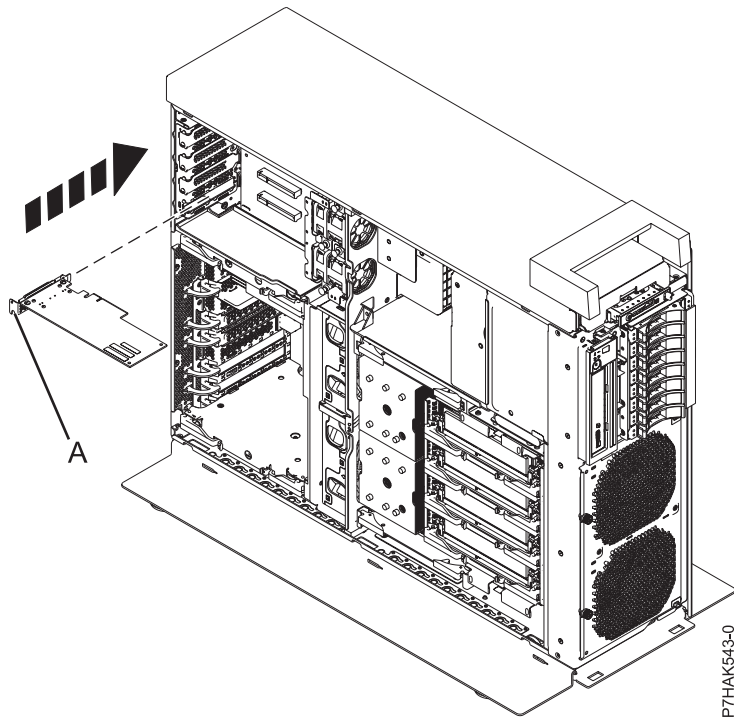
Figure 5. Installing a PCI adapter in a stand-alone system unit's expansion riser

19. Connect any adapter cables.
20. If you are servicing a rack-mounted system, route the cables through the cable-management arm.

21. Replace or close the service access cover.
    - For a rack-mounted system, see "Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 133.
    - For a stand-alone system, see "Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 133.
22. For a rack-mounted system, place the system into the operating position, as described in Placing a rack-mounted model into the operating position.
23. Reconnect the power source to the system.
24. Start the system or logical partition. See Start the system or logical partition.
25. Verify the installed part or repair:
    - If you installed the part for any other reason, verify the installed part as described in Verifying the installed part.

Related information:

➡ Identify a failing part

➡ Installing a feature using the Hardware Management Console

➡ Logical partitioning

➡ PCIe2 1.8 GB Cache RAID SAS Adapter Tri-port 6 Gb (FC 5913; CCIN 57B5)

Removing a PCI adapter from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

Remove a PCI adapter with the system power off.

Before you begin

Attention: If you are removing a PCI adapter in order to install a new or upgraded PCI adapter, see "Installing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 1 to obtain slot locations and required prerequisites. If you are removing a PCI adapter as part of a service procedure, continue to use the following procedure.

About this task

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove PCI adapters from the server. For instructions, see "Removing a part by using the HMC" on page 142.

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.

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

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

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.

3. Stop the system or logical partition. See Stop the system or logical partition.
4. If your system is a rack-mounted system, place the system into the service position. For instructions, see "Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position" on page 135.
5. Remove the service access cover.
   - For a rack-mounted system, see "Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 130.
   - For a stand-alone system, see "Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 131.
6. If you are removing a failing PCI adapter, use the service label on the service access cover to match the failing part with its location code. See 02E/4B, 02E/4C, 05F/6B, or 05E/6C locations. If you are removing the PCI adapter for other reasons, continue to the next step.
7. Reach behind the system and disconnect all power cords from the unit you are servicing.
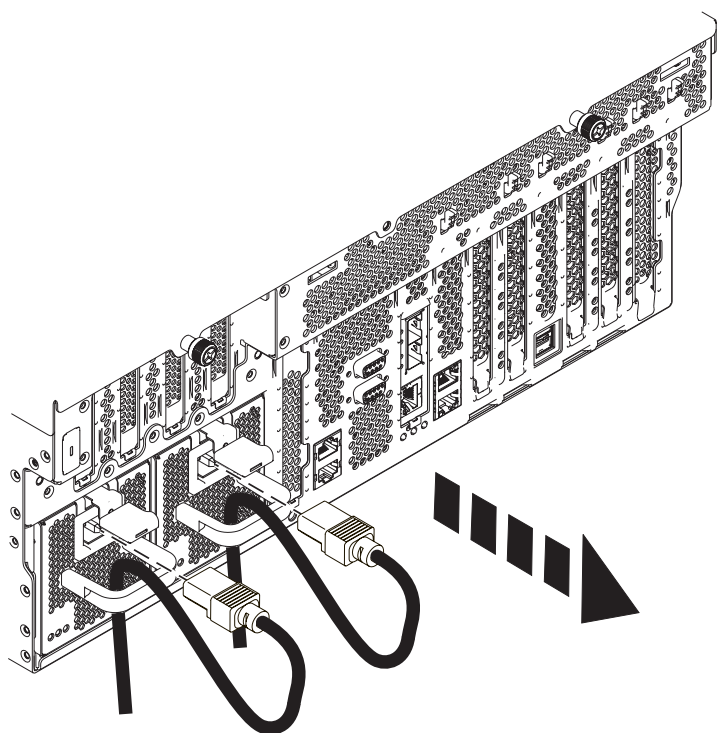
Figure 6. Disconnecting the power cords

> **Note:** An optional power supply is available in the 02E/4B or 02E/4C server. The 05F/6B or 05E/6C server is equipped with a mandatory second power supply if two processor modules are installed. Before continuing with this procedure, ensure that the power source to the system has been disconnected.
>
> **(L003)**

or

8. Attach the wrist strap.

   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 before 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.

9. Determine which adapter you plan to remove, and then label and disconnect all cables attached to that adapter.

10. Record the slot number and location of each adapter being removed.

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

11. If the adapter latch **(B)** is not already in the open position, pull the latch into the open position by pressing down on it from its clip on the back of the system, as shown in the following figure.
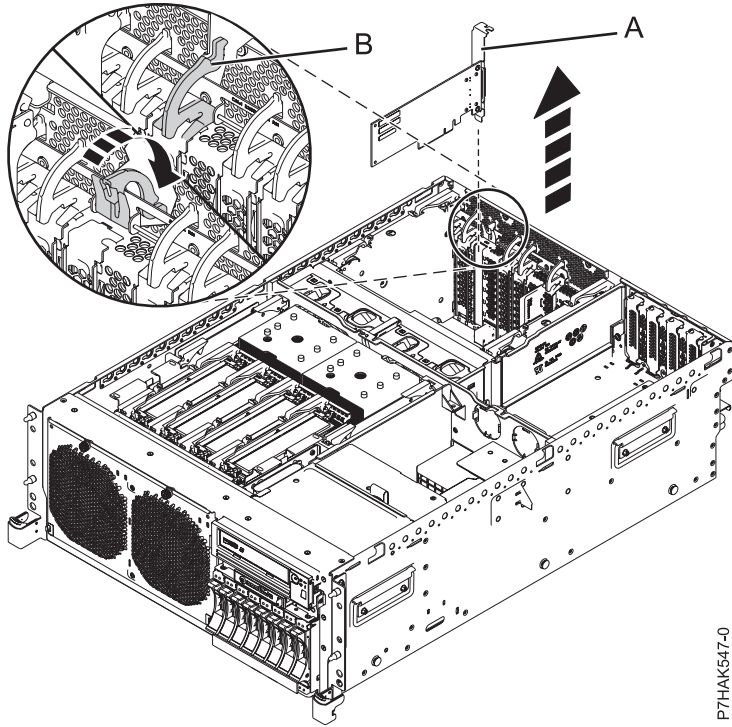
Figure 7. Removing a PCI adapter from a rack-mounted system unit
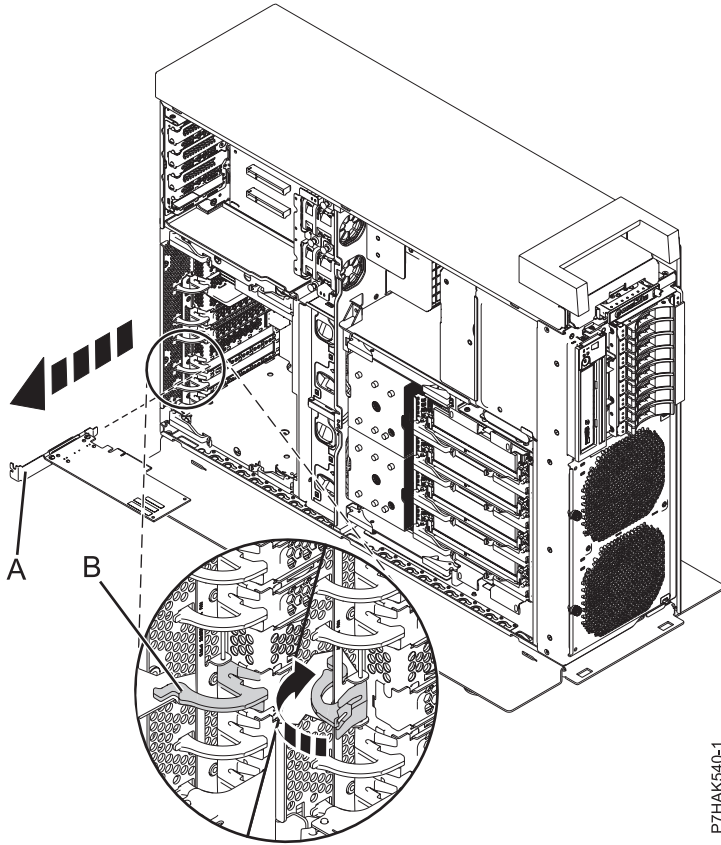
Figure 8. Removing a PCI adapter from a stand-alone system unit

12. Carefully grasp the PCI adapter by its top edge or tailstock **(A)**, and remove it from the system. Store the adapter in a safe place.

    Attention: A pin on the tailstock of the adapter resembles a removable screw. Do not remove this pin. It is required for correct alignment and seating.

13. If your system has an expansion riser, you can pull the low profile PCI adapter from its slot by its tailstock **(A)**, as shown in the following figures.
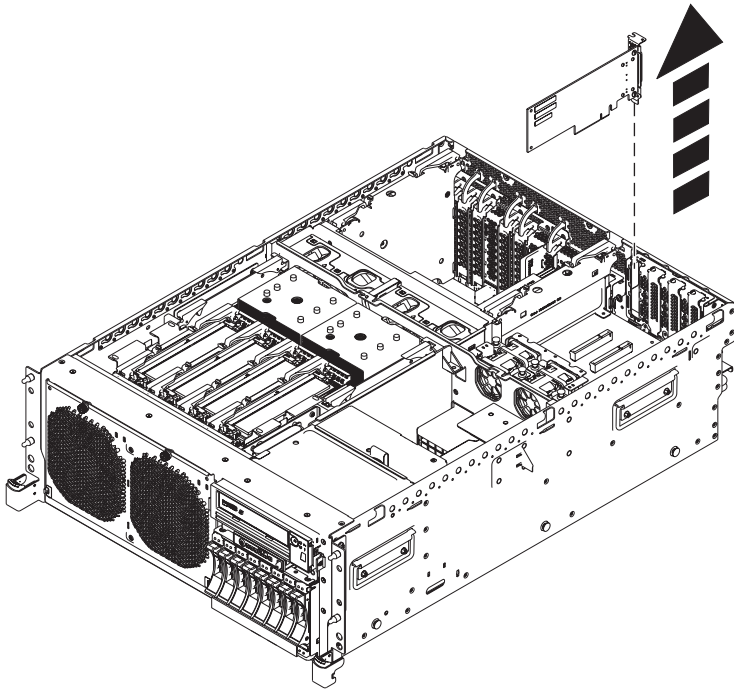
Figure 9. Removing a PCI adapter from an expansion riser in a rack-mounted system
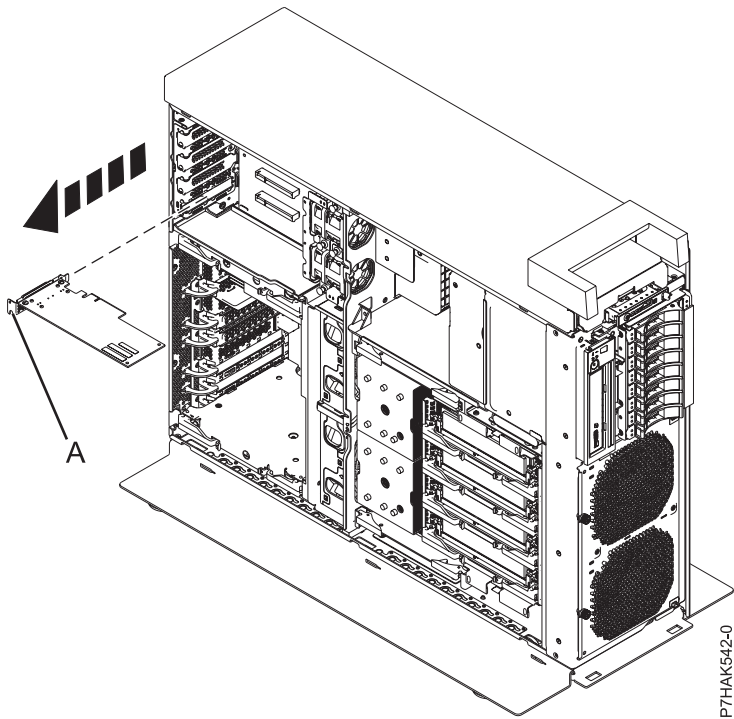
Figure 10. Removing a PCI adapter from an expansion riser in a stand-alone system

14. If you are removing a PCI adapter as part of another procedure, return to that procedure. If not, continue to the next step.

15. If you plan to install another adapter into the vacated slot, go to "Replacing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off"; otherwise, continue with the next step.

16. Install a tailstock filler in the newly vacated slot.

17. Replace or close the service access cover.
    - For a rack-mounted system, see "Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 133.
    - For a stand-alone system, see "Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 133.

18. For a rack-mounted system, place the system into the operating position, as described in Placing a rack-mounted model into the operating position.

19. Reconnect the power source to the system.

20. Start the system or logical partition. See Start the system or logical partition.

21. To replace the PCI adapter, see "Replacing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off."

Related information:

➥ Identify a failing part

➥ Installing a feature using the Hardware Management Console

➥ Logical partitioning

➥ PCIe2 1.8 GB Cache RAID SAS Adapter Tri-port 6 Gb (FC 5913; CCIN 57B5)

Replacing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

Replace a PCI adapter with the system power off.

Before you begin

Attention: If you are installing a new or upgraded PCI adapter, see "Installing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 1 to obtain slot locations and required prerequisites. If you are replacing a PCI adapter as part of a service procedure, continue to use the following procedure.

About this task

You must have already completed the procedure "Removing a PCI adapter from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 8 in order to have the slot powered off.

If your system is managed by the Hardware Management Console (HMC), you can use the HMC to replace a PCI adapter. For instructions, see "Replacing a part by using the HMC" on page 142.

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.

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

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

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Stop the system or logical partition. See Stop the system or logical partition.
4. If your system is a rack-mounted system, place the system into the service position. For instructions, see "Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position" on page 135.
5. Remove the service access cover.
   - For a rack-mounted system, see "Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 130.
   - For a stand-alone system, see "Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 131.
6. If you are replacing a failing PCI adapter, use the service label on the service access cover to match the failing part with its location code. See 02E/4B, 02E/4C, 05F/6B, or 05E/6C locations. Alternatively, use the Advanced System Management Interface (ASMI) to identify the failing part with its location code. See Setting up and accessing the ASMI. If you are replacing the PCI adapter for other reasons, continue to the next step.
7. Reach behind the system and disconnect all power cords from the unit you are servicing.
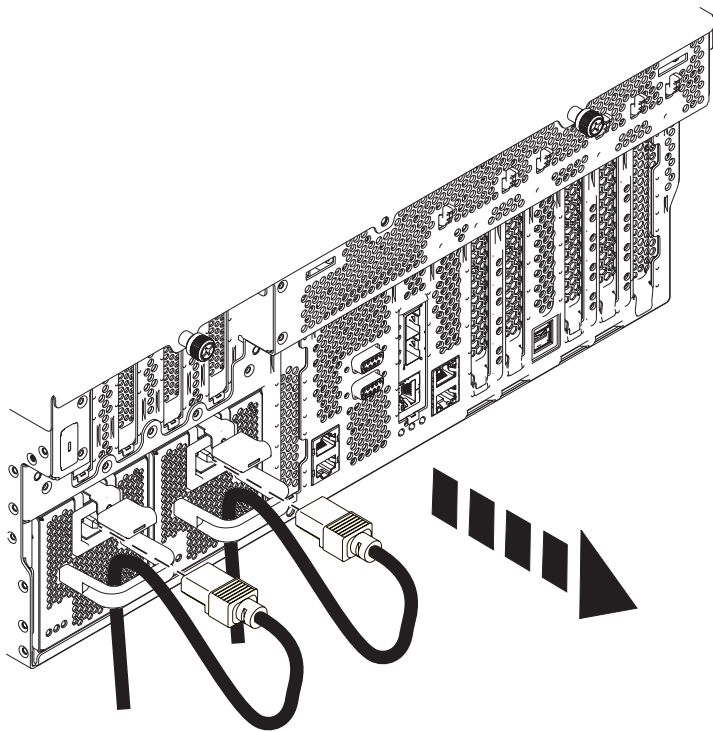
Figure 11. Disconnecting the power cords

> **Note:** An optional power supply is available in the 02E/4B or 02E/4C server. The 05F/6B or 05E/6C server is equipped with a mandatory second power supply if two processor modules are installed. Before continuing with this procedure, ensure that the power source to the system has been disconnected.
>
> **(L003)**

or

8. Attach the wrist strap.

    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 before 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.

9. If necessary, remove the new adapter from the antistatic package.

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

10. Place the adapter, component-side up, on a flat, static-protective surface.

    Note: Some PCI adapters are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.

    Attention: A pin on the tailstock of the adapter resembles a removable screw. Do not remove this pin. It is required for correct alignment and seating.

11. Remove the adapter that you want to replace. See "Removing a PCI adapter from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 8.

12. If necessary, remove the adapter expansion slot filler.

13. If the target slot's adapter latch **(B)** is not already in the open position, pull the latch into the open position by pressing down on it from its clip on the back of the system.

Note: If you are installing a PCI adapter on the expansion riser, there is no adapter latch.

14. Carefully grasp the new adapter by its tailstock **(A)**, and align the adapter with the expansion slot and its connector on the system backplane.

15. Press the adapter firmly into its connector.

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

16. Pull the adapter latch **(B)** back into place, as shown in the following figure.
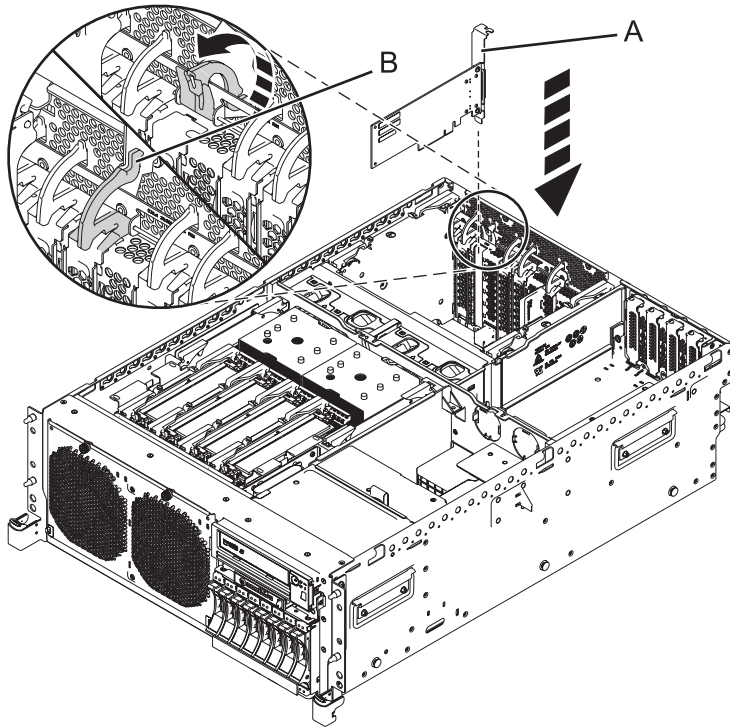
Figure 12. Replacing a PCI adapter in a rack-mounted system unit
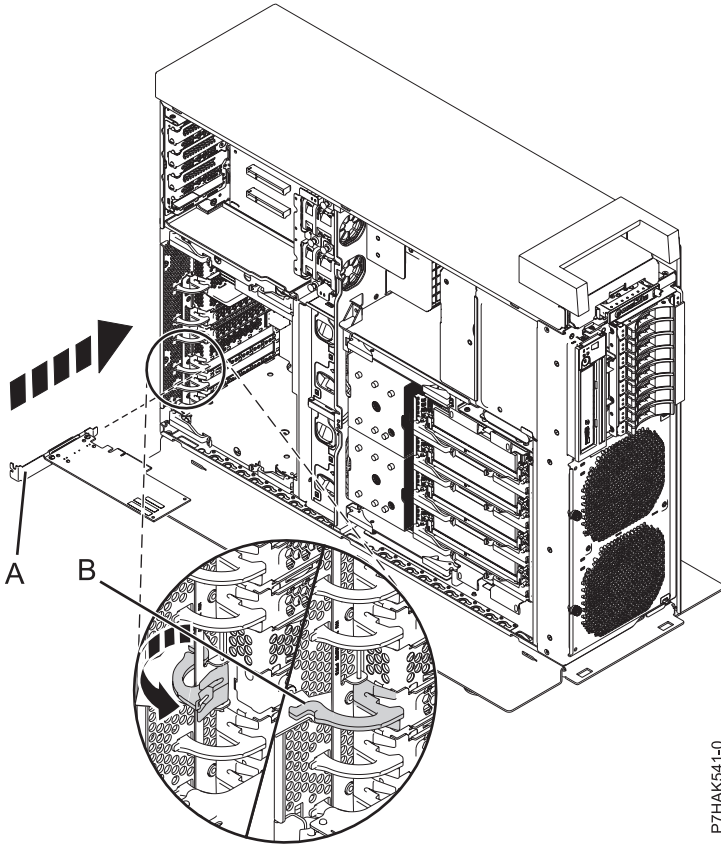
Figure 13. Replacing a PCI adapter in a stand-alone system unit

17. If your system has an expansion riser, you can press the low profile PCI adapter into its slot. Guide it into position by its tailstock **(A)** and then press the adapter into its slot, as shown in the following figures.
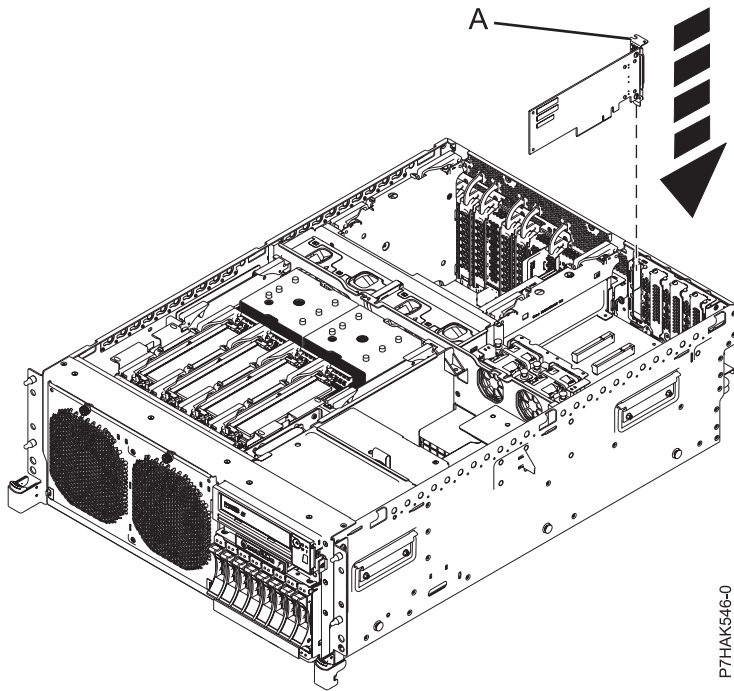
Figure 14. Replacing a PCI adapter in an expansion riser in a rack-mounted system
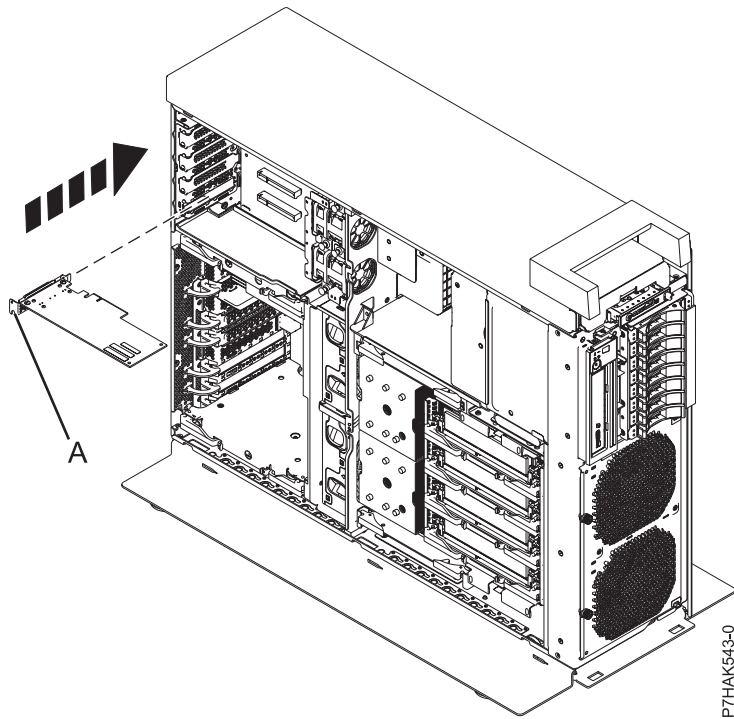
Figure 15. Replacing a PCI adapter in an expansion riser in a stand-alone system

18. Connect the adapter cables.
19. If you are servicing a rack-mounted system, route the cables through the cable-management arm.

20. Replace or close the service access cover.
    - For a rack-mounted system, see "Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 133.
    - For a stand-alone system, see "Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 133.
21. For a rack-mounted system, place the system into the operating position, as described in Placing a rack-mounted model into the operating position.
22. Reconnect the power source to the system.
23. Start the system or logical partition. See Start the system or logical partition.
24. Verify the installed part or repair:
    - If you installed the part for any other reason, verify the installed part as described in Verifying the installed part.

Related information:

⤷ Identify a failing part

⤷ Installing a feature using the Hardware Management Console

⤷ Logical partitioning

⤷ PCIe2 1.8 GB Cache RAID SAS Adapter Tri-port 6 Gb (FC 5913; CCIN 57B5)

Model 02E/4B, 02E/4C, 05F/6B, or 05E/6C PCIe RAID and SSD SAS adapters

You can remove, replace, or install PCI Express (PCIe) RAID and solid-state drive (SSD) serial-attached SCSI (SAS) adapters in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C system.

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

Related information:

⤷ SAS RAID enablement and cache battery pack

⤷ Identify a failing part

⤷ Installing a feature using the Hardware Management Console

⤷ Logical partitioning

⤷ PCIe2 1.8 GB Cache RAID SAS Adapter Tri-port 6 Gb (FC 5913; CCIN 57B5)

Installing a PCIe RAID and SSD SAS adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

Install a PCI Express (PCIe) RAID and solid-state drive (SSD) serial-attached SCSI (SAS) adapter with the system power off.

Before you begin

Attention: If you are servicing a failing part, see the service procedures for "Removing a PCIe RAID and SSD SAS adapter from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 27 and "Replacing a PCIe RAID and SSD SAS adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 33. This procedure is intended for installing a new or upgraded PCIe RAID and SSD SAS adapter.

About this task

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system.

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

If your system is managed by the HMC, use the HMC to install a feature in the server. For instructions, see Installing a feature using the Hardware Management Console

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.

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

The PCIe RAID and SSD SAS adapter is a double-wide adapter. Although it plugs into a single PCIe slot, two adjacent PCIe slots are required for installation.

If you do not have an HMC or SDMC, complete this procedure to install a PCIe RAID and SSD SAS adapter with the power off:

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Stop the system or logical partition. See Stop the system or logical partition.
4. If your system is a rack-mounted system, place the system into the service position. For instructions, see "Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position" on page 135.
5. Remove the service access cover.
    - For a rack-mounted system, see "Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 130.
    - For a stand-alone system, see "Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 131.
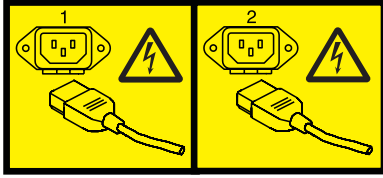6. Reach behind the system and disconnect all power cords from the unit you are servicing.

Figure 16. Disconnecting the power cords

Note: An optional power supply is available in the 02E/4B or 02E/4C server. The 05F/6B or 05E/6C server is equipped with a mandatory second power supply if two processor modules are installed. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)

or

7. Attach the wrist strap.

   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 before 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.

8. Determine in which slots to place the PCIe adapter. For system-specific adapter placement information, see the PCI adapter placement.

9. If necessary, remove the PCIe adapter from the antistatic package.

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

10. Place the PCIe adapter, component-side up, on a flat, antistatic surface.

    Note: Some PCI adapters are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.

11. If the target slot's adapter latch **(B)** is not already in the open position, pull the latch into the open position by pressing down on it from its clip on the back of the system.

    Note: If you are installing a PCI adapter on the expansion riser, there is no adapter latch.

12. Ensure that the two target slots are empty.

13. If necessary, remove the adapter slot filler.

14. Remove the solid expansion slot cover and install the perforated expansion slot cover included with your PCIe adapter. Facing the front of the system, press the expansion slot cover firmly into position in the adjacent slot to the left of the adapter slot.

15. Carefully grasp the adapter **(A)** by its top edge, and align the adapter with the expansion slot and its connector on the system backplane. See the following figures.

Figure 17. Installing a PCIe RAID and SSD SAS adapter in a rack-mounted system unit
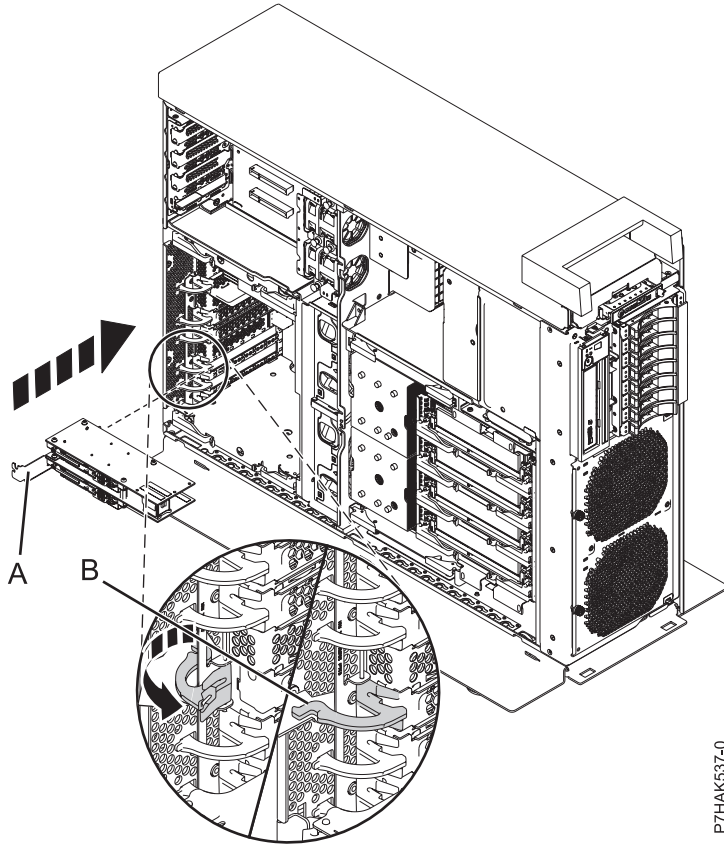
Figure 18. Installing a PCIe RAID and SSD SAS adapter in a stand-alone system unit

16. Press the adapter firmly into its connector.
17. Secure the PCIe adapter into its slot by moving the adapter latch **(B)** back into the closed position.
18. If your system has an expansion riser, you can press the low profile PCIe adapter into its slot by guiding it into position by its tailstock **(A)** and then pressing the adapter into its slot, as shown in the following figures.
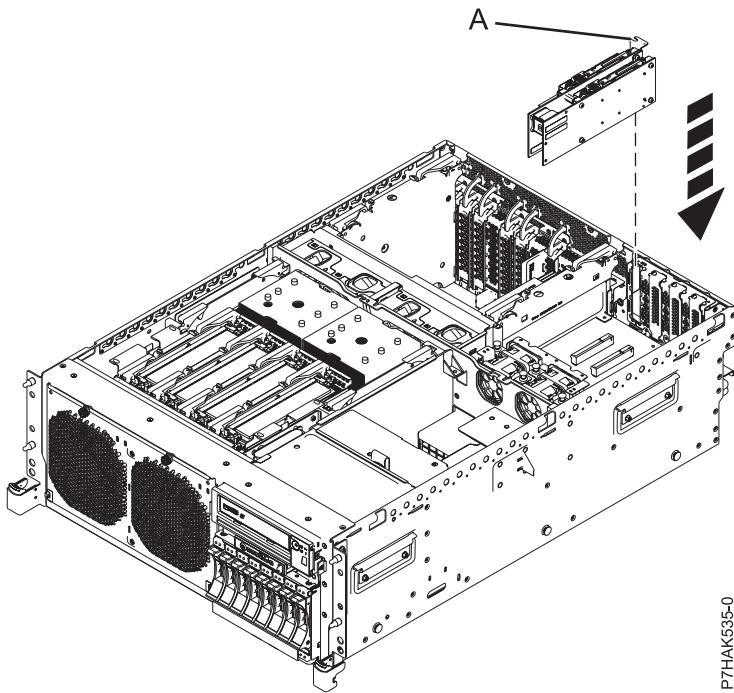
Figure 19. Installing a PCIe RAID and SSD SAS adapter in a rack-mounted system unit's expansion riser
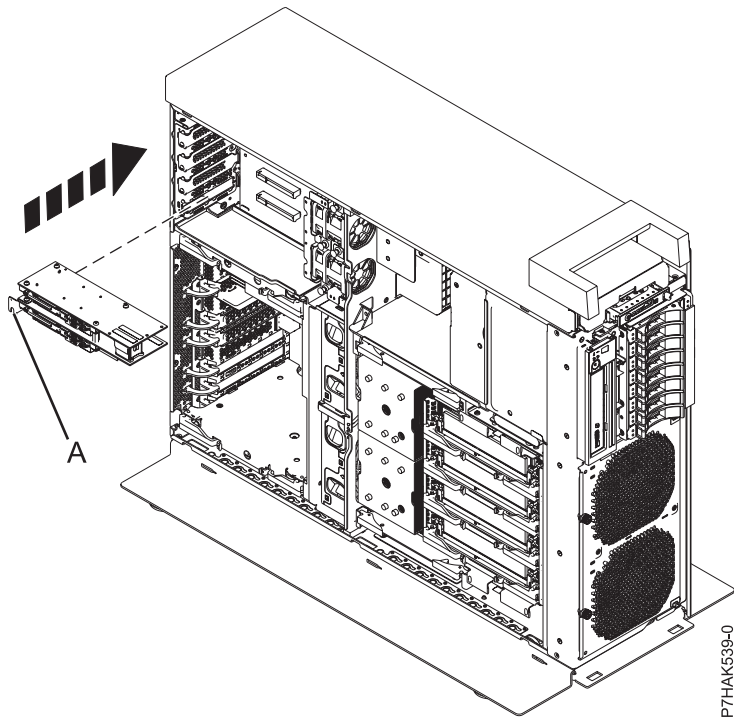
Figure 20. Installing a PCIe RAID and SSD SAS adapter in a stand-alone system unit's expansion riser

19. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
20. Replace or close the service access cover.

- For a rack-mounted system, see "Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 133.
- For a stand-alone system, see "Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 133.

21. For a rack-mounted system, place the system into the operating position, as described in Placing a rack-mounted model into the operating position.

22. Reconnect the power source to the system.

23. Start the system or logical partition. Refer to Start the system or logical partition.

24. Verify the installed part or repair:
    - If you installed the part for any other reason, verify the installed part as described in Verifying the installed part.

Related information:

➡ SAS RAID enablement and cache battery pack

➡ Identify a failing part

➡ Installing a feature using the Hardware Management Console

➡ Logical partitioning

➡ PCIe2 1.8 GB Cache RAID SAS Adapter Tri-port 6 Gb (FC 5913; CCIN 57B5)

Removing a PCIe RAID and SSD SAS adapter from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

Remove a PCI Express (PCIe) RAID and solid-state drive (SSD) serial-attached SCSI (SAS) adapter with the system power off.

Before you begin

Attention: If you are removing a PCIe adapter in order to install a new or upgraded PCIe adapter, see "Installing a PCIe RAID and SSD SAS adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 20 to obtain slot locations and required prerequisites. If you are removing a PCIe adapter as part of a service procedure, continue to use the following procedure.

About this task

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove PCIe RAID and SSD SAS adapters from the server. For instructions, see Removing a part using the Hardware Management Console.

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.
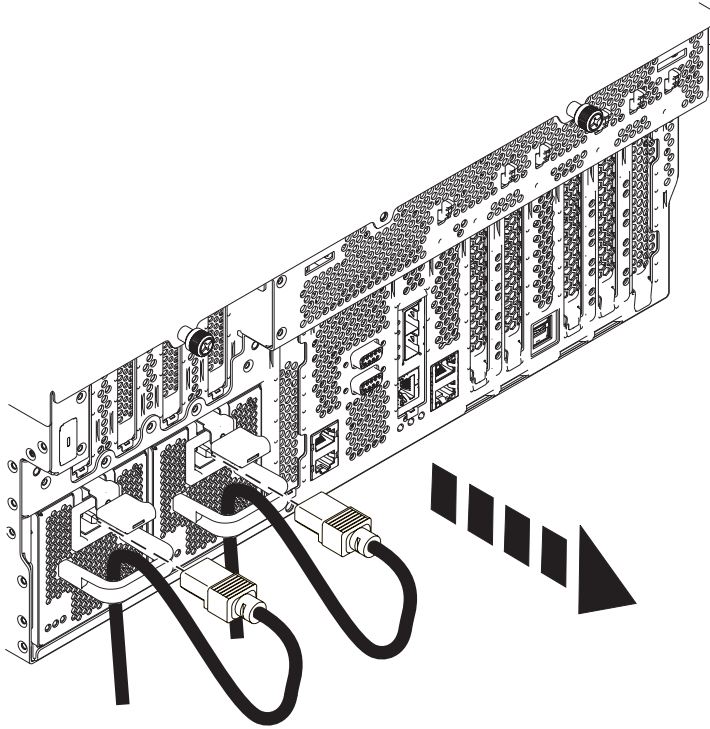
If your system is managed by the Systems Director Management Console (SDMC), use the SDMC to remove the PCIe RAID and SSD SAS adapter from the server. For instructions, see Removing a part by using the Systems Director Management Console.

When an SSD on the PCIe adapter fails, the entire adapter must be removed from the system before replacing the individual SSD. For information about replacing SSDs, see Replacing an SSD module on the PCIe RAID and SSD SAS adapter.

If you do not have an HMC or SDMC, complete the following steps to remove a PCIe RAID and SSD SAS adapter with the system power off:

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Stop the system or logical partition. See Stop the system or logical partition.
4. If your system is a rack-mounted system, place the system into the service position. For instructions, see "Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position" on page 135.
5. Remove the service access cover.
   - For a rack-mounted system, see "Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 130.
   - For a stand-alone system, see "Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 131.
6. If you are removing a failing PCIe adapter, use the service label on the service access cover to match the failing part with its location code. See 02E/4B, 02E/4C, 05F/6B, or 05E/6C locations. Alternatively, use the Advanced System Management Interface (ASMI) to identify the failing part with its location code. See Setting up and accessing the ASMI. If you are removing the adapter for other reasons, continue to the next step.
7. Reach behind the system and disconnect all power cords from the unit you are servicing.
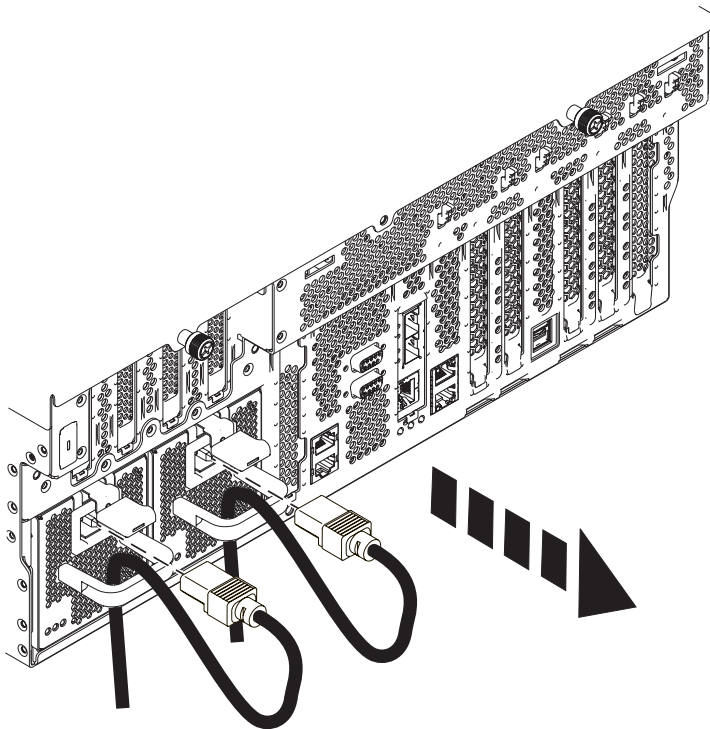
Figure 21. Disconnecting the power cords

> **Note:** An optional power supply is available in the 02E/4B or 02E/4C server. The 05F/6B or 05E/6C server is equipped with a mandatory second power supply if two processor modules are installed. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)

or

8. Attach the wrist strap.

   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 before 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.

9. Locate the PCIe adapter you plan to remove.

10. Record the slot number and location of each PCIe adapter being removed.

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

11. If the target slot's adapter latch **(B)** is not already in the open position, pull the latch into the open position by pressing down on it from its clip on the back of the system.

    Note: If you are removing a PCI adapter from the expansion riser, there is no adapter latch.

12. Carefully grasp the PCIe adapter by its tailstock **(A)**, and lift it from the system, as shown in the following figures. Store the adapter in a safe place.
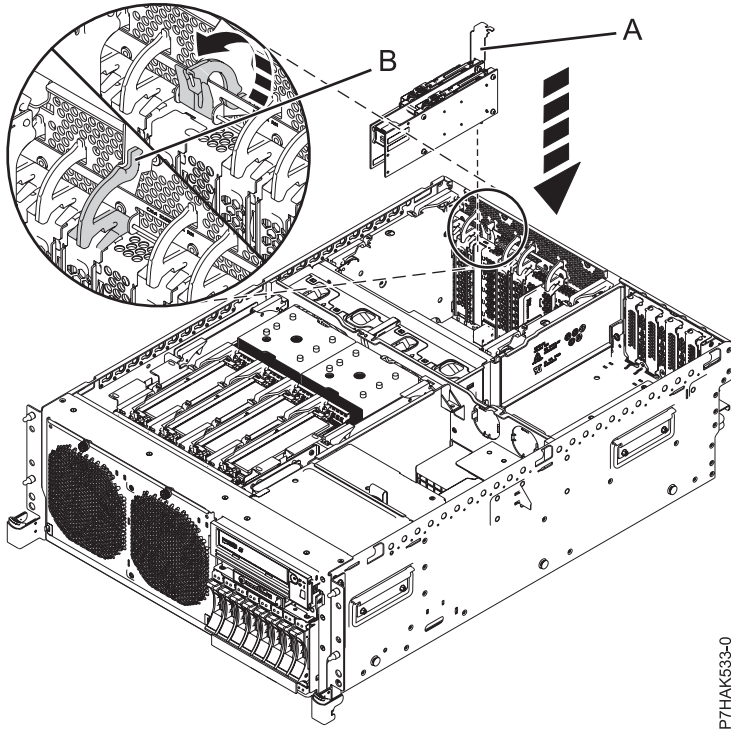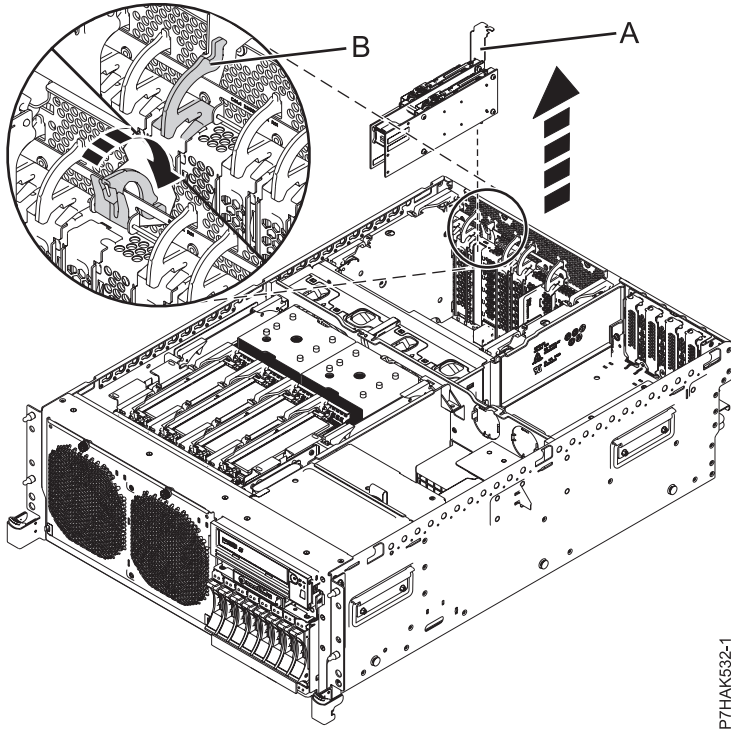
Figure 22. Removing a PCIe RAID and SSD SAS adapter from a rack-mounted system unit
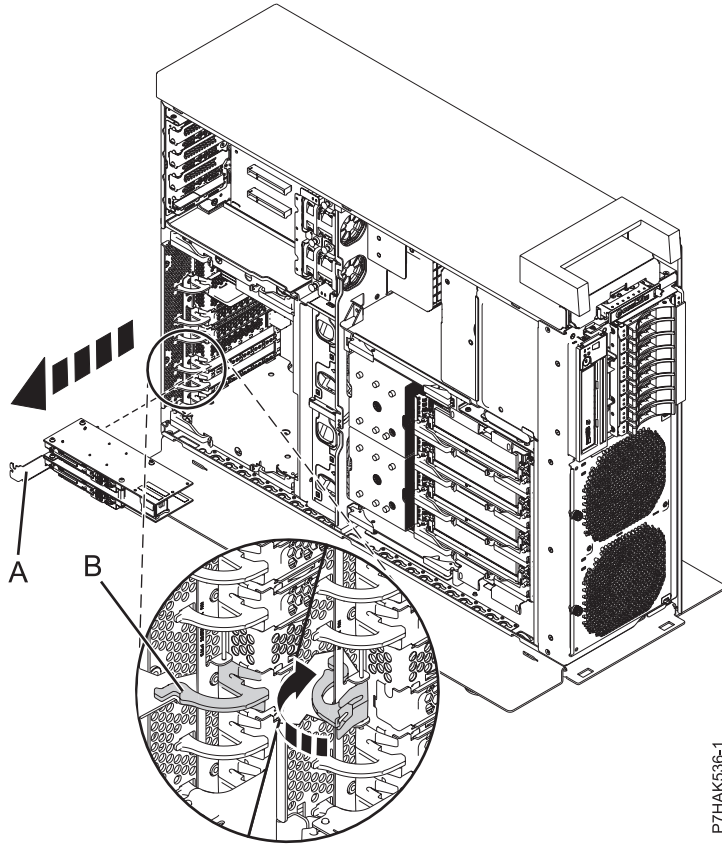
Figure 23. Removing a PCIe RAID and SSD SAS adapter from a stand-alone system unit

13. If your system has an expansion riser, you can pull the low profile PCIe adapter from its slot by its tailstock **(A)**, as shown in the following figures.
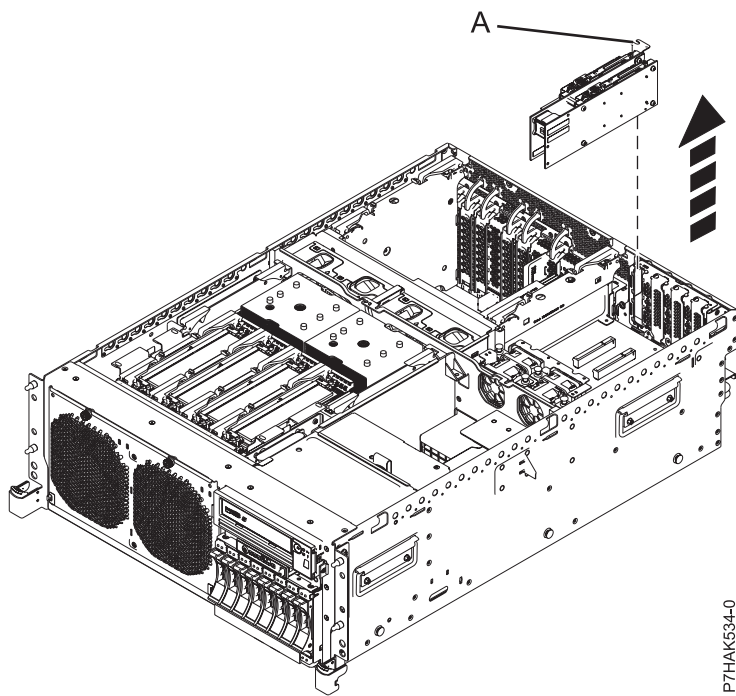
Figure 24. Removing a PCIe RAID and SSD SAS adapter from an expansion riser in a rack-mounted system
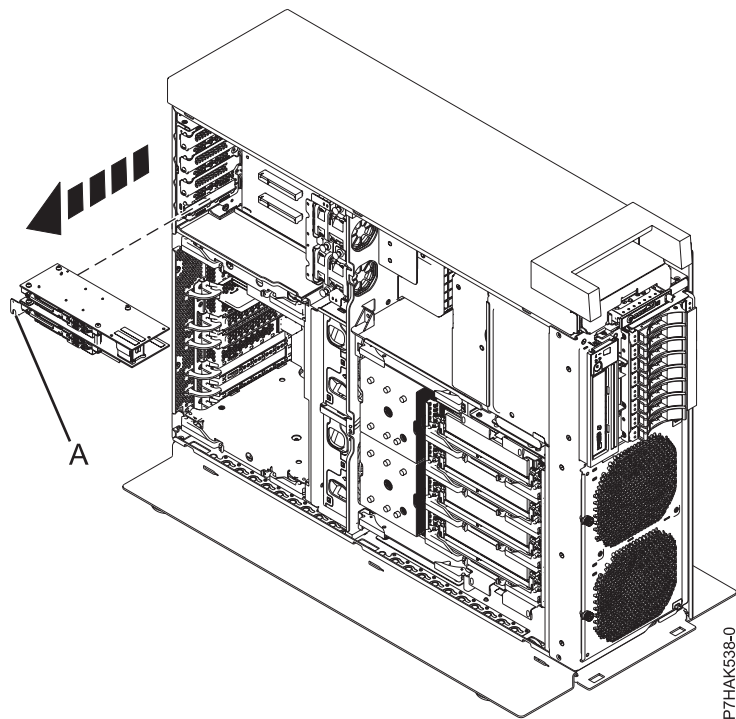
Figure 25. Removing a PCIe RAID and SSD SAS adapter from an expansion riser in a stand-alone system

14. If you are removing a PCIe adapter as part of another procedure, return to that procedure. If not, continue to the next step.

15. If you plan to install another adapter into the vacated slot, go to "Replacing a PCIe RAID and SSD SAS adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off"; otherwise, continue with the next step.

16. Seal the expansion slot by using an expansion-slot cover.

17. Replace or close the service access cover.
    - For a rack-mounted system, see "Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 133.
    - For a stand-alone system, see "Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 133.

18. For a rack-mounted system, place the system into the operating position, as described in Placing a rack-mounted model into the operating position.

19. Reconnect the power source to the system.

20. Start the system or logical partition. See Start the system or logical partition.

Related information:

↪ SAS RAID enablement and cache battery pack

↪ Identify a failing part

↪ Installing a feature using the Hardware Management Console

↪ Logical partitioning

↪ PCIe2 1.8 GB Cache RAID SAS Adapter Tri-port 6 Gb (FC 5913; CCIN 57B5)

Replacing a PCIe RAID and SSD SAS adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

Replace a PCI-Express (PCIe) RAID and solid-state drive (SSD) serial-attached SCSI (SAS) adapter with the system power off.

Before you begin

Attention: If you are installing a new or upgraded adapter, see "Installing a PCIe RAID and SSD SAS adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 20 to obtain slot locations and required prerequisites. If you are replacing an adapter as part of a service procedure, continue to use the following procedure.

About this task

You must have already completed the procedure "Removing a PCIe RAID and SSD SAS adapter from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 27 in order to have the slot powered off.

If your system is managed by the HMC, use the HMC to install a feature in the server. For instructions, see Exchanging a part using the Hardware Management Console.

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.

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

The PCIe RAID and SSD SAS adapter is a double-wide adapter. Although it plugs into a single PCIe slot, two adjacent PCIe slots are required for installation.

If you do not have an HMC or SDMC, complete the following steps to replace a PCIe RAID and SSD SAS adapter with the system power off:

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Stop the system or logical partition. See Stop the system or logical partition.
4. If your system is a rack-mounted system, place the system into the service position. For instructions, see "Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position" on page 135.
5. Remove the service access cover.
   - For a rack-mounted system, see "Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 130.
   - For a stand-alone system, see "Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 131.
6. If you are replacing a failing PCIe adapter, use the service label on the service access cover to match the failing part with its location code. See 02E/4B, 02E/4C, 05F/6B, or 05E/6C locations. Alternatively, use the Advanced System Management Interface (ASMI) to identify the failing part with its location code. See Setting up and accessing the ASMI. If you are replacing the adapter for other reasons, continue to the next step.
7. Reach behind the system and disconnect all power cords from the unit you are servicing.
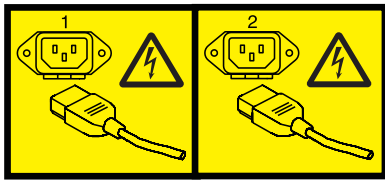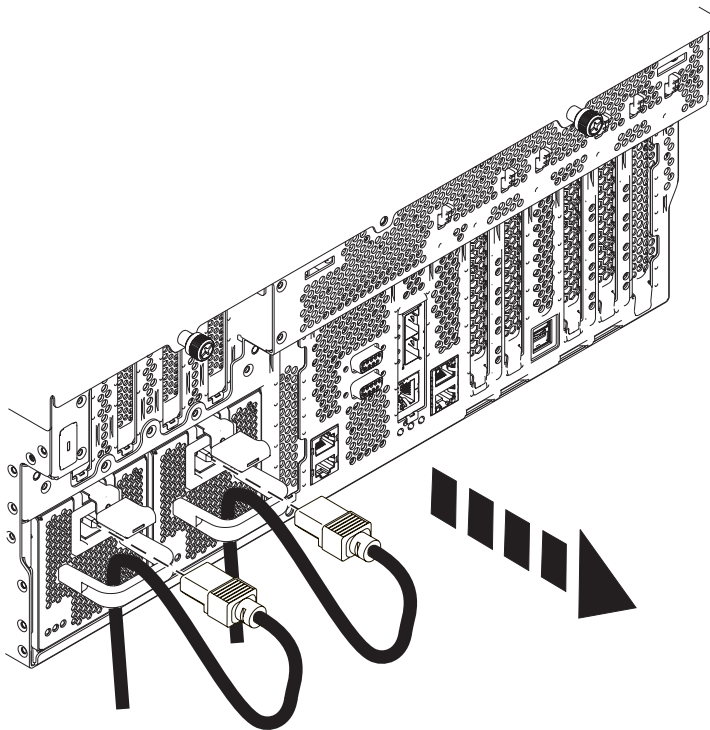

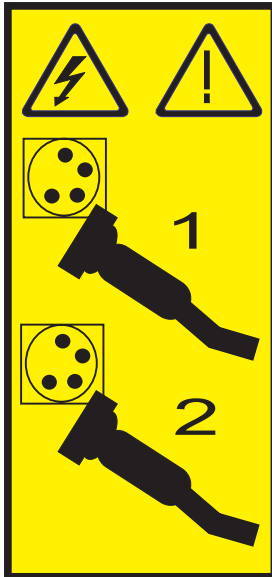*Figure 26. Disconnecting the power cords*

Note: An optional power supply is available in the 02E/4B or 02E/4C server. The 05F/6B or 05E/6C server is equipped with a mandatory second power supply if two processor modules are installed. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)

or

8. Attach the wrist strap.

   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 before 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.

9. Determine in which slots to place the new PCIe adapter. For system-specific adapter placement information, see the PCI adapter placement.

10. If necessary, remove the new PCIe adapter from the antistatic package.

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

11. Place the new PCIe adapter, component-side up, on a flat, static-protective surface.

    Note: Some PCI adapters are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.

12. Label the location of each SSD as you transfer the SSDs from the replaced adapter to the same location on the new adapter you are installing. For information about replacing SSDs, see Replacing an SSD module on the PCIe RAID and SSD SAS adapter. Repeat this step for each SSD.

13. If the target slot's adapter latch **(B)** is not already in the open position, pull the latch into the open position by pressing down on it from its clip on the back of the system.

    Note: If you are installing a PCI adapter on the expansion riser, there is no adapter latch.

14. Ensure that the two target slots are empty.

15. If necessary, remove the adapter slot filler.

16. Remove the solid expansion slot cover and install the perforated expansion slot cover included with your PCIe adapter. Facing the front of the system, press the expansion slot cover firmly into position in the adjacent slot to the left of the adapter slot.

17. Carefully grasp the adapter **(A)** by its top edge, and align the adapter with the expansion slot and its connector on the system backplane. See the following figures.
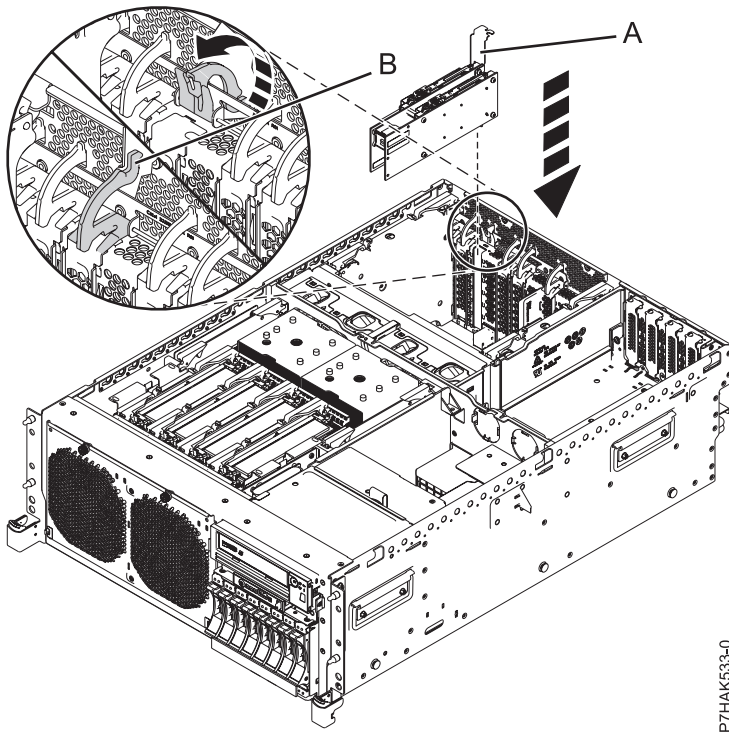
Figure 27. Replacing a PCIe RAID and SSD SAS adapter in a rack-mounted system unit
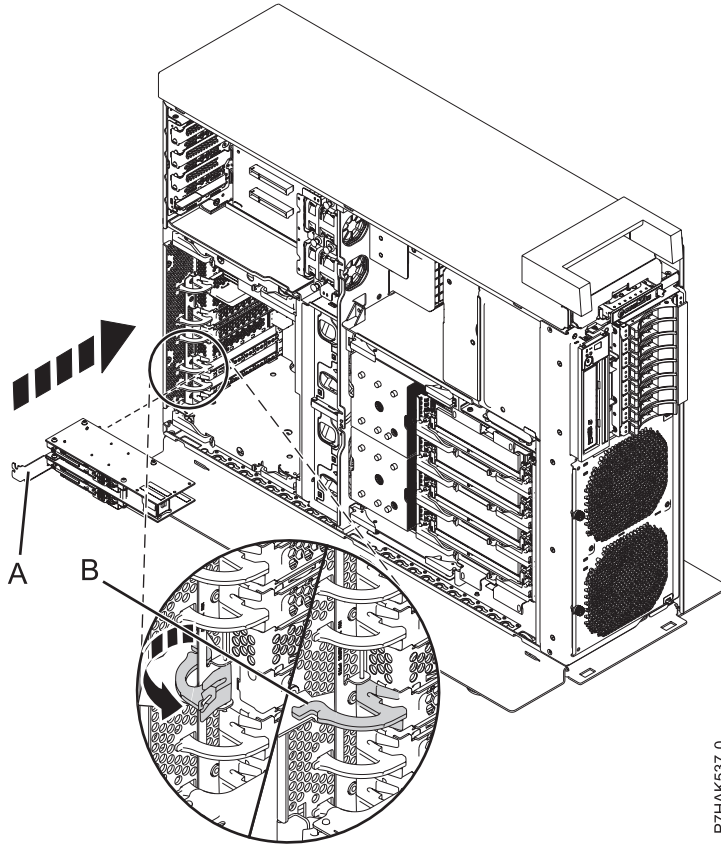
Figure 28. Replacing a PCIe RAID and SSD SAS adapter in a stand-alone system unit

18. Press the adapter firmly into its connector.

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

19. Secure the PCIe adapter into its slot by moving the adapter latch **(B)** back into the closed position.

20. If your system has an expansion riser, you can press the low profile PCIe adapter into its slot. Guide it into position by its tailstock **(A)** and then press the adapter into its slot, as shown in the following figures.
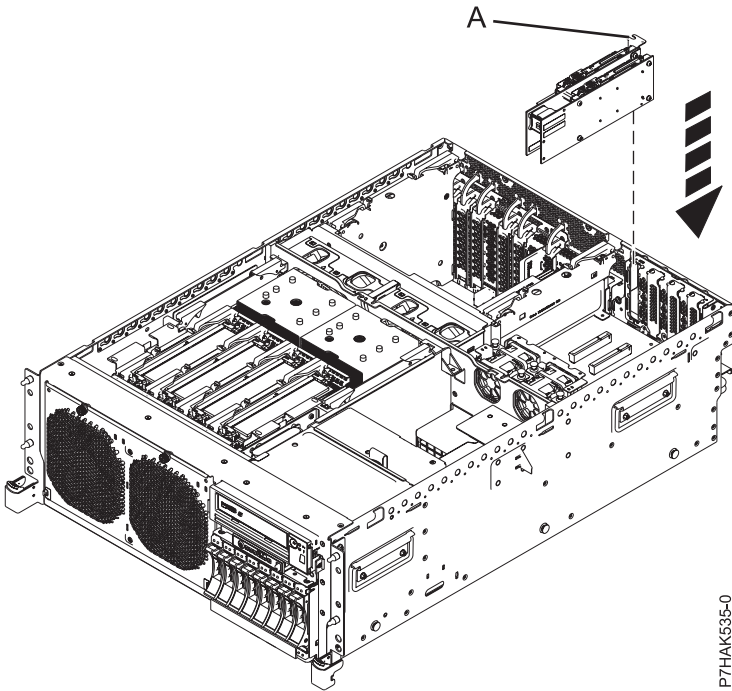
Figure 29. Replacing a PCIe RAID and SSD SAS adapter in an expansion riser in a rack-mounted system
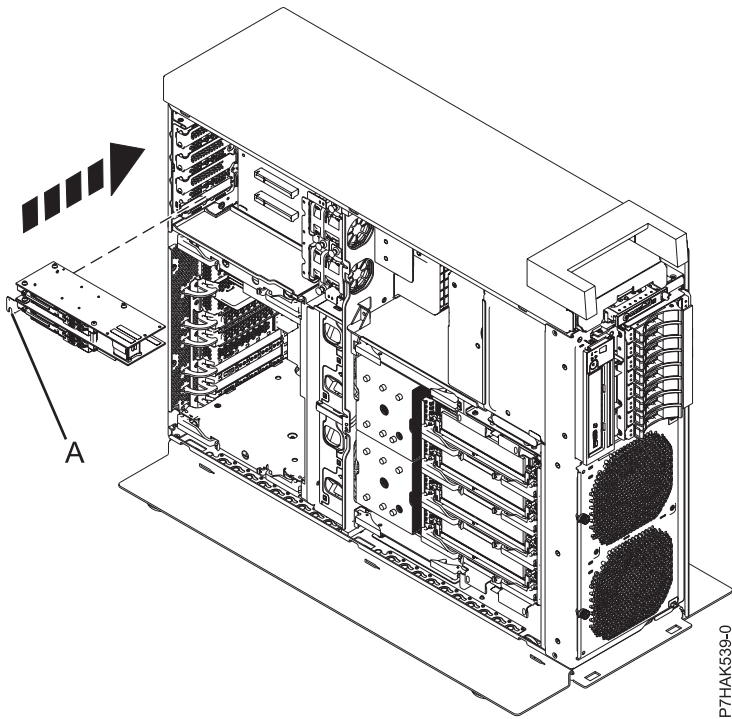
Figure 30. Replacing a PCIe RAID and SSD SAS adapter in an expansion riser in a stand-alone system

21. If you are servicing a rack-mounted system, route the cables through the cable-management arm.
22. Replace or close the service access cover.

- For a rack-mounted system, see "Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 133.
- For a stand-alone system, see "Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 133.

23. For a rack-mounted system, place the system into the operating position, as described in Placing a rack-mounted model into the operating position.

24. Reconnect the power source to the system.

25. Start the system or logical partition. Refer to Start the system or logical partition.

26. Verify the installed part or repair:
   - If you installed the part for any other reason, verify the installed part as described in Verifying the installed part.

Related information:

➡ SAS RAID enablement and cache battery pack

➡ Identify a failing part

➡ Installing a feature using the Hardware Management Console

➡ Logical partitioning

➡ PCIe2 1.8 GB Cache RAID SAS Adapter Tri-port 6 Gb (FC 5913; CCIN 57B5)

Removing and replacing the tailstock on a PCI adapter

You can remove and replace the tailstock on a PCI adapter with the system power off.

Before you begin

You must have already completed the procedure for removing a PCI adapter from your system in order to have the slot powered off. For more information, refer to the PCI adapter topic for your system.

About this task

The tailstock for individual PCI adapters can be either tall (high profile) or short (low profile). New systems ship with the correct tailstock on the cards already installed. Through unique feature codes, a miscellaneous equipment specification (MES) also ships with the correct sized tailstock. For repairs, however, replacement parts usually ship with high-profile tailstock. If your system is a 2U system or has an expansion riser, you must swap the tall tailstock that was shipped on the replacement card with the low-profile tailstock from the failed card.

Note: A Phillips screwdriver is required to complete the procedure.

To remove and replace a PCI adapter tailstock with the system power off, do the following steps:

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.

2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.

3. Remove the PCI adapter that must have the tailstock replaced. For more information, see Removing a PCI adapter from the 8202-E4B, 8202-E4C, 8205-E6B, or 8205-E6C server with the power off or Removing a PCI adapter from the 31E/2B, 31E/1C, or 31E/2C server with the power off.

4. Using a Phillips screwdriver, unscrew the two screws **(A)** that attach the tailstock **(B)** to the failed PCI adapter, as shown in the following figure.
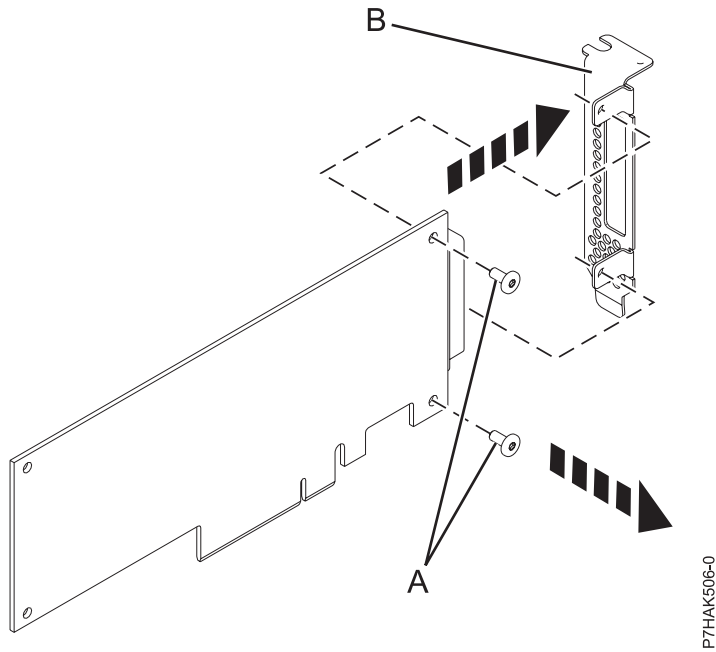
Figure 31. Removing the low-profile tailstock from a failed PCI adapter

5. Detach the tailstock from the failed PCI adapter and place it and the screws on a flat, static-protective surface.

   Note: If the failed adapter is a 4-Port 10/100/1000 Base-TX PCI Express Adapter, there is only one screw to remove. After removing the screw, disengage the tabs from the card hardware and remove the tailstock.

   Note: Some Ethernet or Fiber Channel adapter FRUs require the removal of the small form-factor pluggable (SFP) transceivers (if present) in order to remove the tailstock. With the card lying flat on a static-protective surface, open the latch **(A)** by rotating it down and away from the card as shown in the following figure. Slide the transceiver **(B)** out of the adapter hardware. Repeat for the other transceiver.
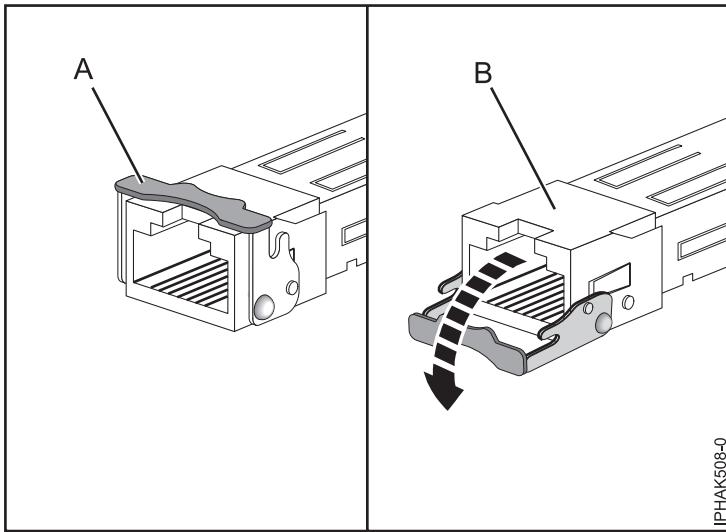
Figure 32. Removing SFP transceivers from adapters

6. If necessary, remove the new adapter from the antistatic package.

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

7. Using a Phillips screwdriver, unscrew the two retaining screws **(A)** that attach the tailstock **(B)** to the new PCI adapter, as shown in the following figure.
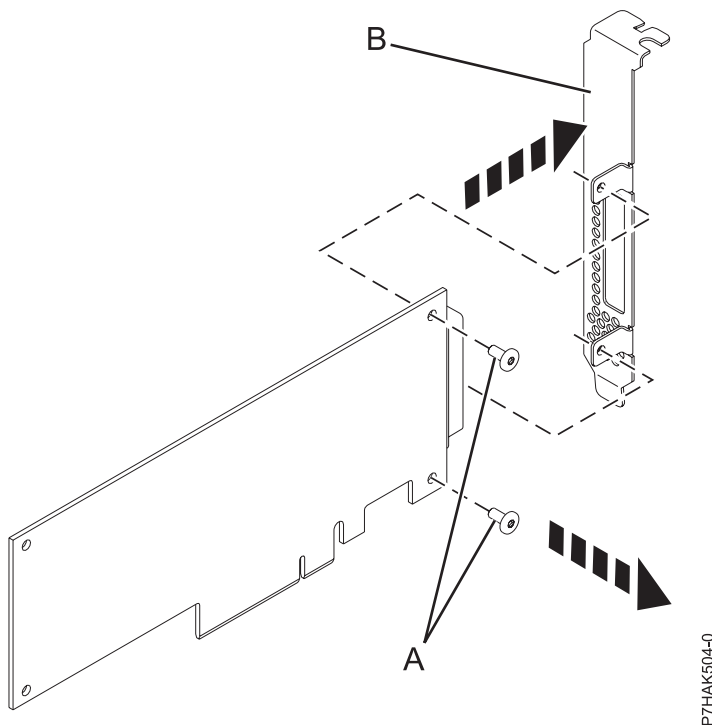
Figure 33. Removing the high-profile tailstock from a new PCI adapter

8. Detach the tailstock from the new PCI adapter and store the tailstock and its screws in the antistatic package that the new adapter shipped in.

Note: Some Ethernet or Fiber Channel adapter FRUs require the removal of the small form-factor pluggable (SFP) transceivers (if present) in order to remove the tailstock. With the card lying flat on a static-protective surface, open the latch **(A)** by rotating it down and away from the card as shown in Figure 32 on page 41. Slide the transceiver **(B)** out of the adapter hardware. Repeat for the other transceiver.

9. Place the new adapter, component-side up, on the flat, static-protective surface.

   Note: Some PCI adapters are shipped from the manufacturer with a blue handle or support bracket along the back edge of the card. To use adapters of this type in this system, you must remove the blue handle or support bracket from the card.

10. Put the failed PCI adapter in the shipping material and return it.

11. Using a Phillips screwdriver and the two retaining screws **(B)**, attach the tailstock **(A)** from the failed PCI adapter onto the new PCI adapter.
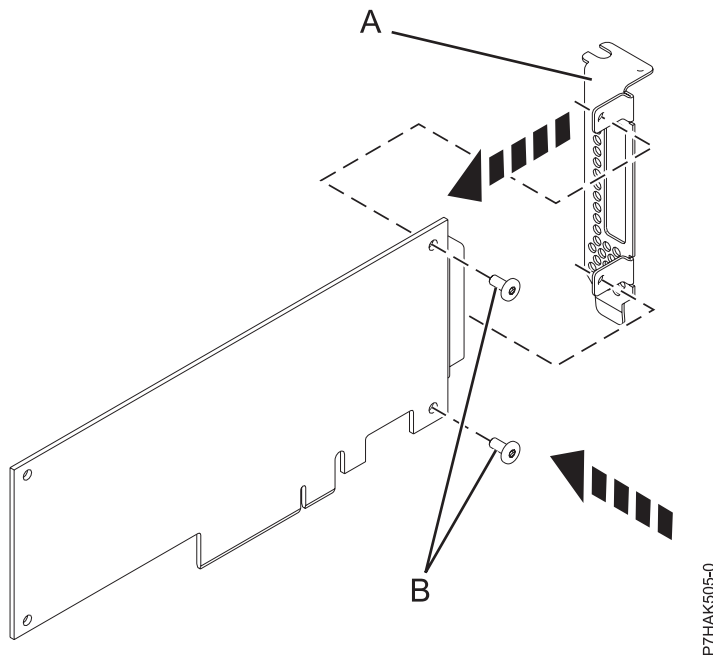
Figure 34. Attaching the low-profile tailstock to a PCI adapter

   Note: If the new adapter is a 4-Port 10/100/1000 Base-TX PCI Express Adapter, first engage the tailstock with the tabs on the card hardware. After the tailstock is attached, secure it with its screw.

12. Install the new PCI adapter into its slot. See Replacing a PCI adapter from the 8202-E4B, 8202-E4C, 8205-E6B, or 8205-E6C server with the power off or Replacing a PCI adapter from the 831E/2B, 31E/1C, or 31E/2C server with the power off.

Model 02E/4B, 02E/4C, 05F/6B, or 05E/6C expansion riser

You can remove and replace the optional expansion riser feature to add up to four low-profile PCI adapters to your 02E/4B, 02E/4C, 05F/6B, or 05E/6C system.

Installing an expansion riser in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

You can install an optional expansion riser that provides four additional PCI adapter slots to your system.

Before you begin

Attention: If you are servicing a failing part, see the service procedures for "Removing an expansion riser from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 47 and "Replacing an expansion riser in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 52. The following procedure is intended for installing a new or upgraded PCI adapter.

About this task

Before installing or replacing a feature, ensure that the software required to support the feature is installed on your system.

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

If your system is managed by the HMC, use the HMC to complete the steps for installing a feature in the server. For instructions, see Installing a feature using the Hardware Management Console.

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.

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

If you do not have an HMC or SDMC, complete this procedure to install an expansion riser with the power off:

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Stop the system or logical partition. See Stop the system or logical partition.
4. If your system is a rack-mounted system, place the system into the service position. For instructions, see "Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position" on page 135.
5. Remove the service access cover:
   - For a rack-mounted system, see "Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 130.
   - For a stand-alone system, see "Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 131.
6. Reach behind the system and disconnect all power cords from the unit you are servicing.

Figure 35. Disconnecting the power cords

Note: An optional power supply is available in the 02E/4B or 02E/4C server. The 05F/6B or 05E/6C server is equipped with a mandatory second power supply if two processor modules are installed. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)

or

7. Attach the wrist strap.

   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 before 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.

8. If a GX adapter is present, remove it. See Removing GX adapters for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C.

   Note: In 02E/4B or 05F/6B systems with more than one processor chip module unit, you can move the GX adapter from slot P1-C2 to slot P1-C8. In , 02E/4C, or , or 05E/6C systems with more than one processor chip module units, you can move the GX adapter from slot P1-C1 to slot P1-C8.
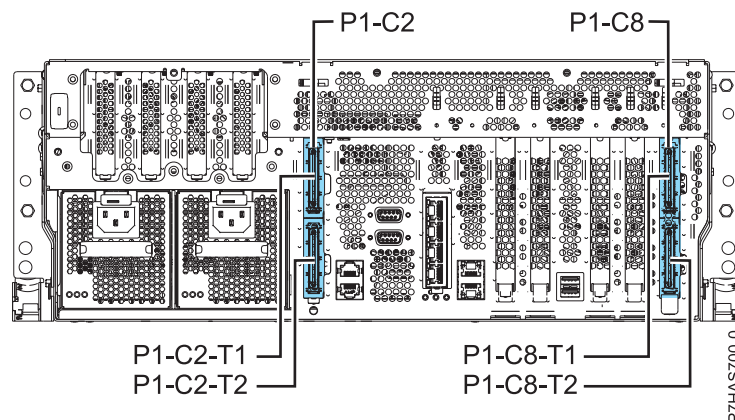
Figure 36. Rear view showing slots P1-C2 and P1-C8
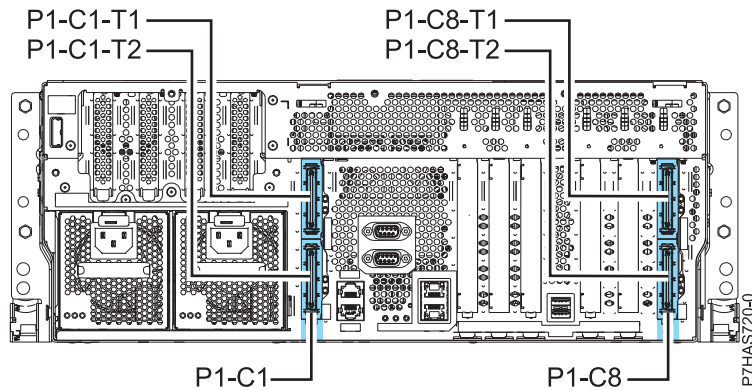
Figure 37. Rear view showing slots P1-C1 and P1-C8

For instructions about replacing a GX adapter in its slot, see Replacing GX adapters for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C.

9. If necessary, remove the new expansion riser from the antistatic package.

10. Grasp and remove the black plastic air baffle **(B)** that separates the expansion riser bay from seated PCI adapters. See the following figure.

11. Remove the metal PCI card airflow insert from slot C1. Otherwise, the riser cannot be properly inserted.

12. Grasp and remove the black plastic air baffle **(A)** that blocks air flow from the PCI expansion fans.
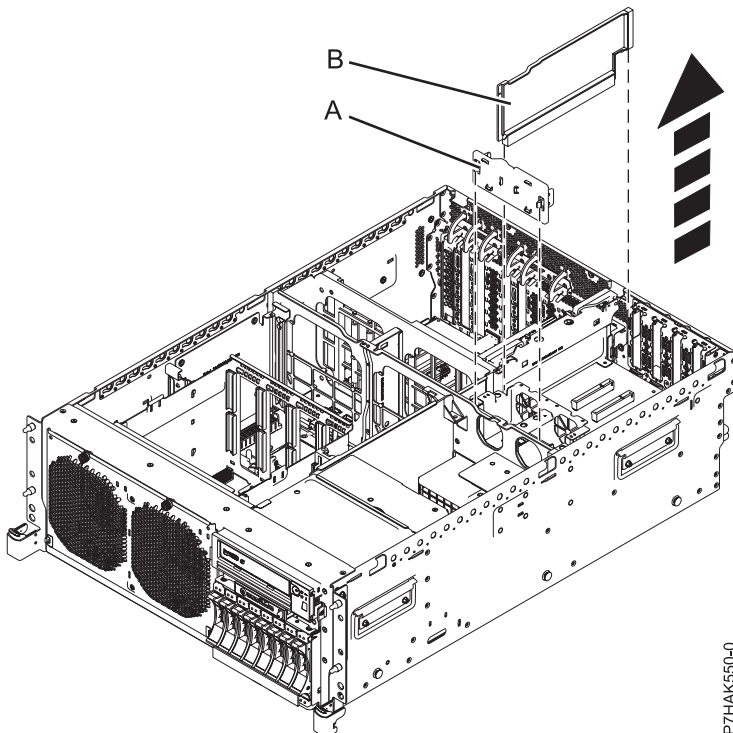
Figure 38. Removing expansion riser air baffles in a rack-mounted system unit

13. Carefully align the expansion riser hole **(C)** with its male counterpart **(B)** on the system board and lower it down until the riser rests flatly on the system board. See the following figure.

14. Press the latch mechanism down flush with the expansion riser.

15. Press the expansion riser latches **(A)** down into the closed position.

16. Tighten the securing knobs **(D)** on the expansion riser by turning them clockwise.

Figure 39. Installing an expansion riser in a rack-mounted system unit

17. Install the plastic shield between the blue latch **(A)** and the first PCIe slot.
18. If you plan to install PCI cards into the adapter slots, see "Installing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 1; otherwise, continue with the next step.
19. Replace or close the service access cover and, if applicable, return the system to the operating position.
20. Reconnect the power source to the system.
21. Start the system or logical partition. See Start the system or logical partition.
22. Verify the installed part or repair:
    - If you installed the part for any other reason, verify the installed part as described in Verifying the installed part.

Removing an expansion riser from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

You can remove the optional expansion riser that provides four additional PCI adapter slots to your system.

About this task

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

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.

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

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

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Stop the system or logical partition. See Stop the system or logical partition.
4. If your system is a rack-mounted system, place the system into the service position. For instructions, see "Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position" on page 135.
5. Remove the service access cover.
   - For a rack-mounted system, see "Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 130.
   - For a stand-alone system, see "Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 131.
6. Reach behind the system and disconnect all power cords from the unit you are servicing.

Figure 40. Disconnecting the power cords

Note: An optional power supply is available in the 02E/4B or 02E/4C server. The 05F/6B or 05E/6C server is equipped with a mandatory second power supply if two processor modules are installed. Before continuing with this procedure, ensure that the power source to the system has been disconnected.

(L003)

or

7. Attach the wrist strap.

   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 before 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.

8. Remove any PCI adapters seated in the expansion riser. See "Removing a PCI adapter from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 8.

9. Loosen the securing knobs **(A)** on the expansion riser by turning them counterclockwise.
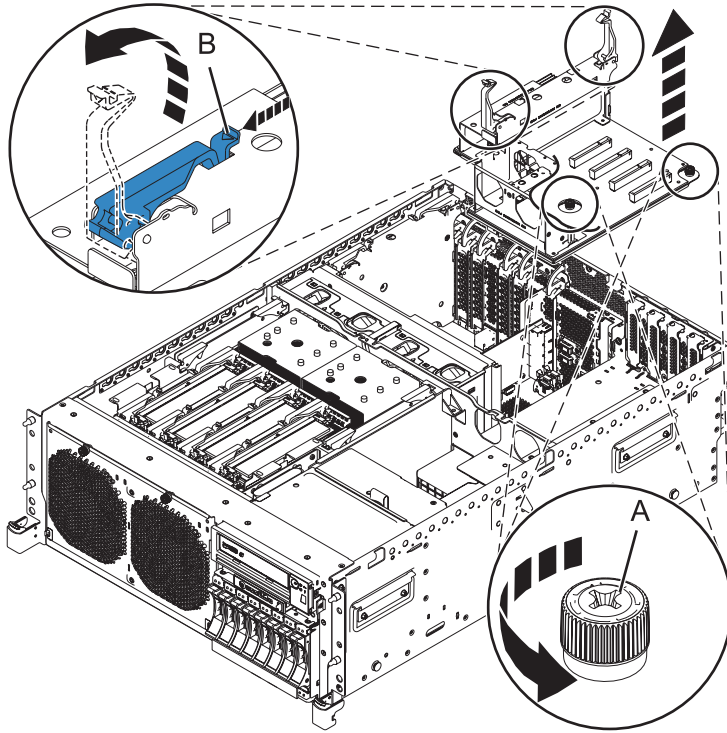
Figure 41. Removing an expansion riser in a rack-mounted system unit

10. Pinch the expansion riser latch **(B)** and lift the latch into the open position.
11. Pull the latch mechanism up to unlock the expansion riser.
12. Carefully lift the expansion riser out of the system.
13. If you are removing an expansion riser as part of another procedure, return to that procedure. If not, continue to the next step.
14. If you plan to install another expansion riser into the vacated slot, go to "Replacing an expansion riser in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 52; otherwise, continue with the next step.
15. If you do not plan to install another expansion riser into the vacated slot, insert the metal PCI filler in slot C1. A PCI filler must be in every PCI slot that does not have an adapter installed.
16. If you do not plan to install another expansion riser into the vacated slot, insert a black plastic air baffle as shown in the following figure.
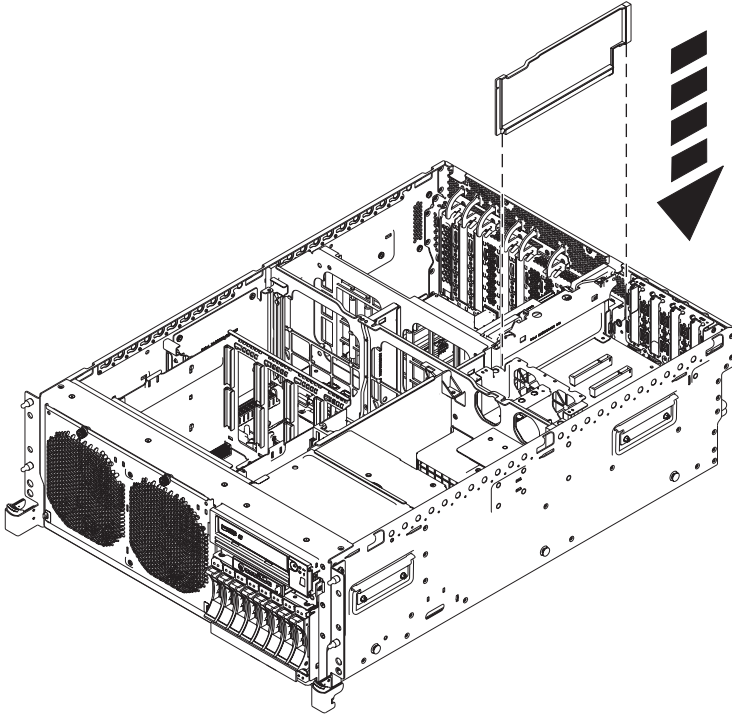
Figure 42. Installing an expansion riser air baffle in a rack-mounted system unit

17. Replace or close the service access cover.
    - For a rack-mounted system, see "Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 133.
    - For a stand-alone system, see "Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 133.
18. For a rack-mounted system, place the system into the operating position, as described in Placing a rack-mounted model into the operating position.
19. Reconnect the power source to the system.
20. Start the system or logical partition. Refer to Start the system or logical partition.

Replacing an expansion riser in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off

You can replace the optional expansion riser that provides four additional PCI adapter slots to your system.

About this task

If your system is managed by the HMC, use the HMC to replace a feature in the server. For instructions, see Exchanging a part using the Hardware Management Console.

Note: Check the display on your control panel to see if your system is managed by the HMC. If you do not see HMC displayed, your system has *never* been connected to the HMC. A display of HMC=0 indicates that your system does not *currently* have the HMC. If the HMC display equals a number greater than 0, your system has the HMC.

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

You must have already removed an expansion riser as described in the procedure "Removing an expansion riser from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 47 in order to have the slot powered off.

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

Procedure

1. If necessary, remove the new expansion riser from the antistatic package.
2. Open the expansion riser latches **(A)** by pulling them up.
3. Guide the expansion riser downward along the track that plugs the riser into the backplane.
4. Carefully align the expansion riser hole **(C)** with its male counterpart **(B)** on the system board and lower it down until the riser rests flatly on the system board.
5. Press the latch mechanism down flush with the expansion riser.
6. Press the expansion riser latches **(A)** down into the closed position.
7. Tighten the securing knobs **(D)** on the expansion riser by turning them clockwise.
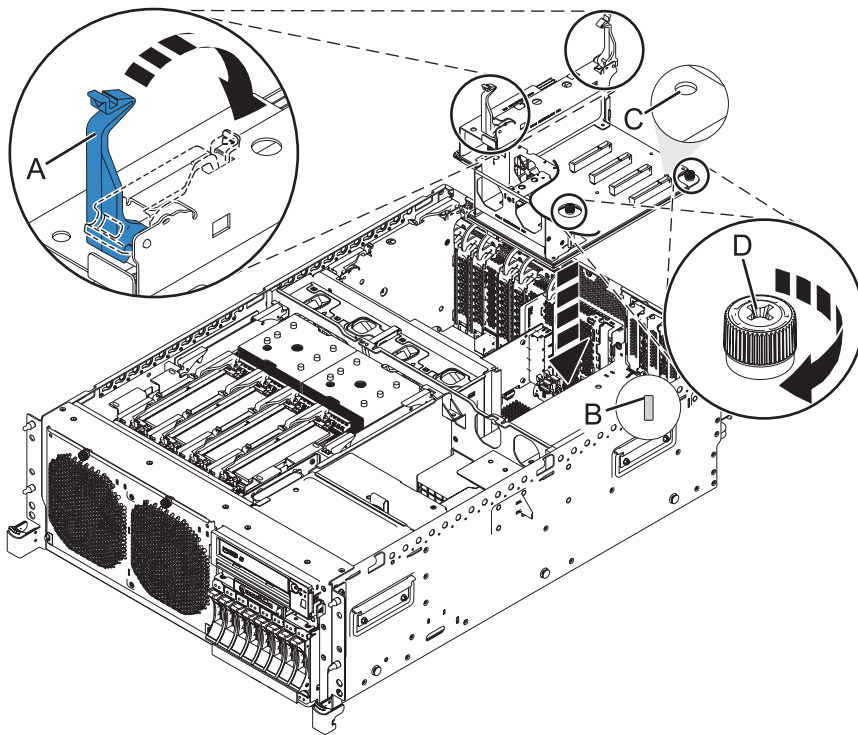
Figure 43. Replacing an expansion riser in a rack-mounted system unit

8. Install the plastic shield (PN 46K5417) between the blue latch and the first PCIe slot, as shown in the following figure.
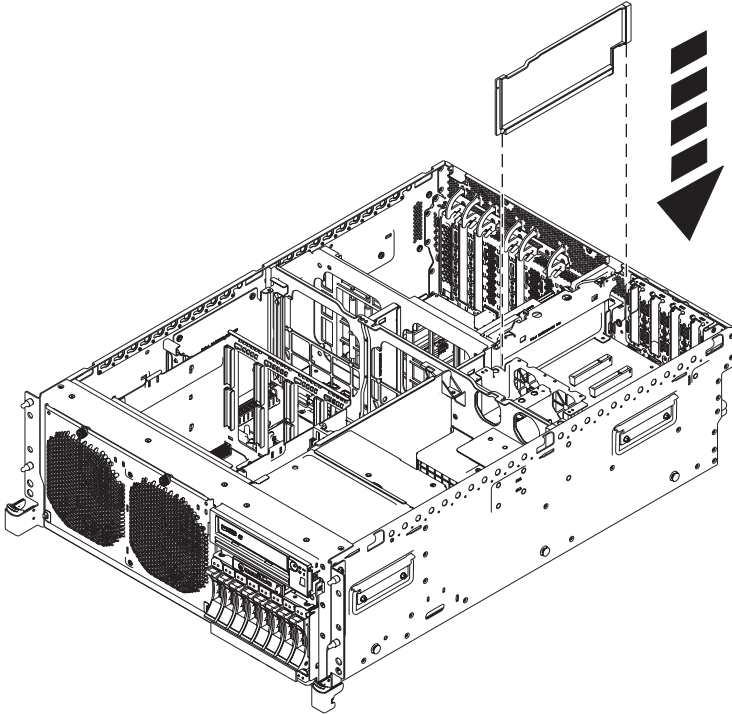
Figure 44. Installing an expansion riser air baffle in a rack-mounted system unit

9. If you plan to install PCI cards into the adapter slots, see "Installing a PCI adapter in the 02E/4B, 02E/4C, 05F/6B, or 05E/6C server with the power off" on page 1; otherwise, continue with the next step.
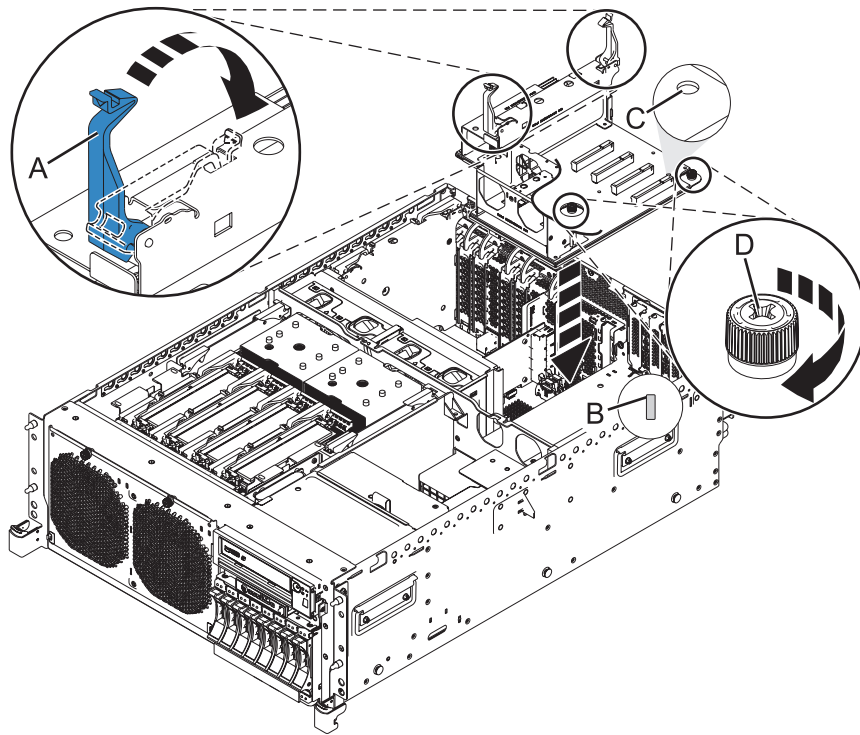
10. Replace or close the service access cover.
   - For a rack-mounted system, see "Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system" on page 133.
   - For a stand-alone system, see "Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system" on page 133.

11. For a rack-mounted system, place the system into the operating position, as described in Placing a rack-mounted model into the operating position.

12. Reconnect the power source to the system.

13. Start the system or logical partition. See Start the system or logical partition.

Model 5796 expansion units, PCI adapters and cassettes for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C

You can remove, replace, or install PCI adapter cassettes.

Important:

- Fibre Channel Adapters (2766, 2787, 280E, 5735, 576B, or 5774) installed in OS logical partitions will post errors at initial program load (IPL) if there is no device or wrap plug attached to each of the adapter's ports. Make sure that every Fibre Channel Adapter (2766, 2787, 280E, 5735, 576B, or 5774) that is installed in OS logical partition has either a wrap plug or a device attached to each of the adapter's ports. If you are exchanging a 2766, 2787, 280E, 5735, 576B, or 5774 Fibre Channel IOA, the external storage subsystem must be updated to use the worldwide port name of the new 2766, 2787, 280E, 5735, 576B, or 5774 IOA. For instructions, see "Updating the worldwide port name for a new 2766, 2787, 280E, 5735, 576B, or 5774 IOA." on page 121

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

Installing a PCI adapter contained in a cassette with the power off

You can install a PCI adapter.

About this task

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

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

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

Procedure

1. Perform prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. To determine in which slot to place the PCI adapter, refer to the placement guide for information regarding slot restrictions for the adapters that can be used in this system.
4. Stop the system or logical partition. See Stop the system or logical partition.
5. Disconnect the power source from the system by unplugging the system.
6. Determine the location of PCI adapter in the system.
7. Remove the PCI adapter cassette as described in the following substeps.
   a. Remove the PCI adapter EMC shield **(A)** as shown in the following figure.
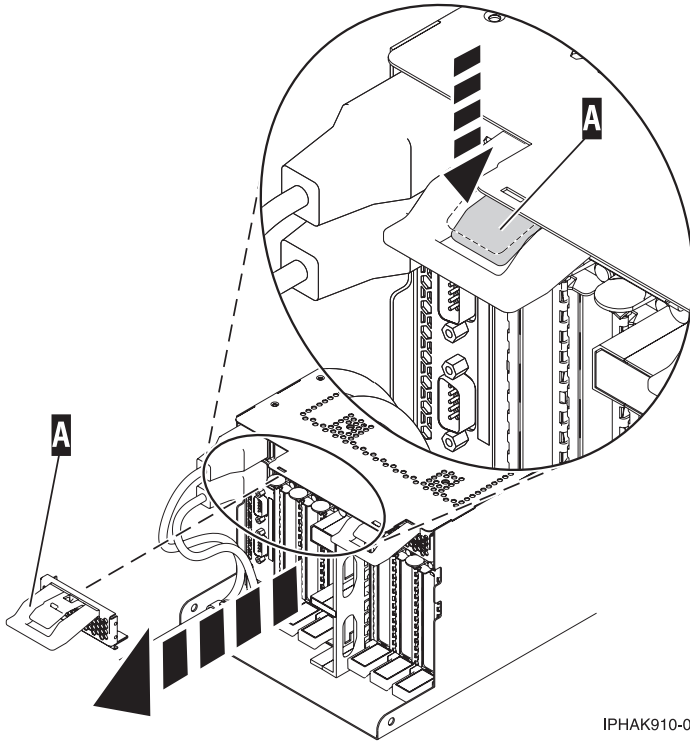
IPHAK910-0

Figure 45. Remove the EMC shield

   b. Lift up the lower cassette handle **(B)** as shown in the following figure. Pull the PCI cassette **(C)** out of the system.
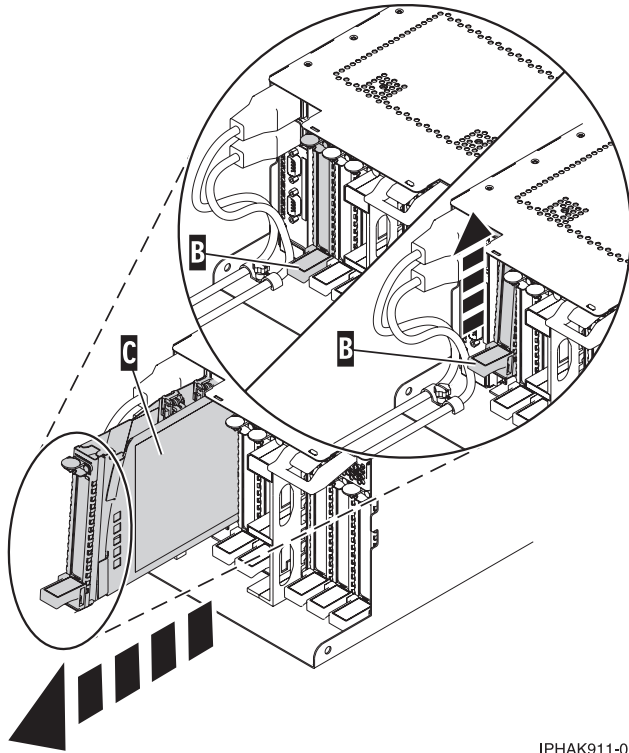
Figure 46. PCI adapter cassette removed from the system unit

8. Install the adapter into the PCI adapter cassette. See the following topics:
   - "PCI adapter single-width, third generation cassette" on page 64
   - "PCI adapter double-wide cassette" on page 76

9. Ensure the lower cassette handle is pressed up toward the retainer clip. This places the adapter in the correct position to be locked in the system.

10. Install the PCI adapter cassette as described in the following substeps:

    a. Slide the cassette **(B)** into the cassette slot as shown in the following figure. 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.
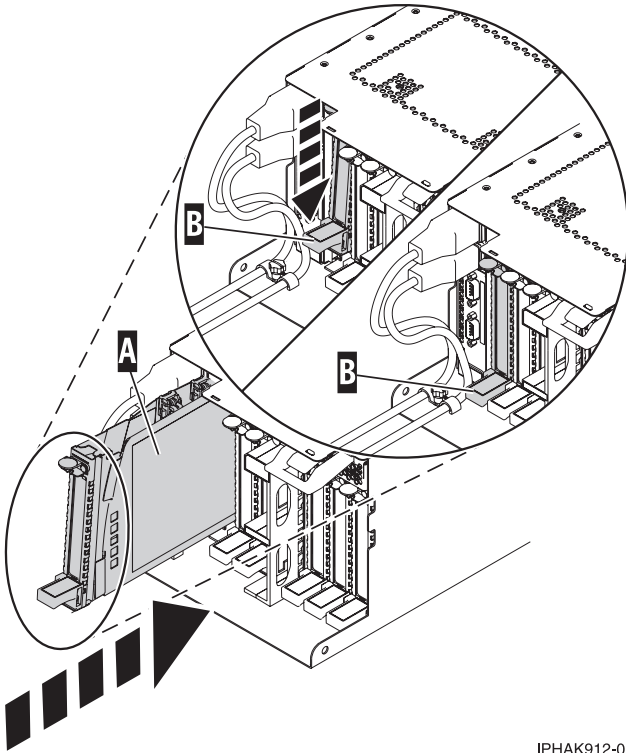
IPHAK912-0

Figure 47. PCI adapter cassette installed in the system unit

  b. Replace the EMC shield **(C)** as shown in the following figure.
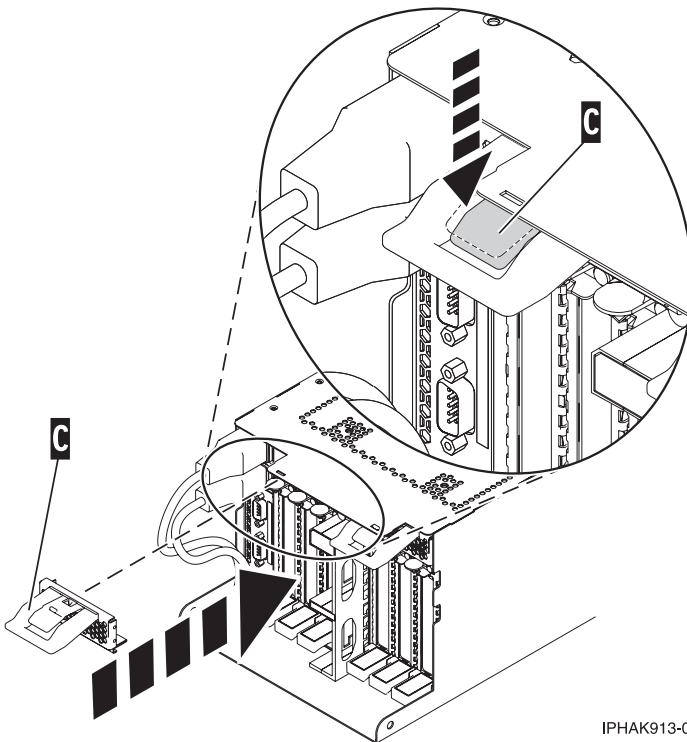
IPHAK913-0

Figure 48. PCI adapter EMC shield in the closed position

11. Start the system or logical partition. Refer to Start the system or logical partition.
12. Verify that the new resource is functional. See Verify the installed part.

Removing a PCI adapter contained in a cassette from the system with the power off

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

About this task

If your system is managed by the Hardware Management Console (HMC), use the HMC to remove a PCI adapter. For instructions, see "Removing a part by using the HMC" on page 142.

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

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

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Stop the system or logical partition. See Stop the system or logical partition.
4. Disconnect the power source from the system by unplugging the system.
5. Determine the location of PCI adapter in the system.
6. Remove the PCI adapter cassette from the system. Follow these substeps:
   a. Remove the PCI adapter EMC shield **(A)** as shown in the following figure.
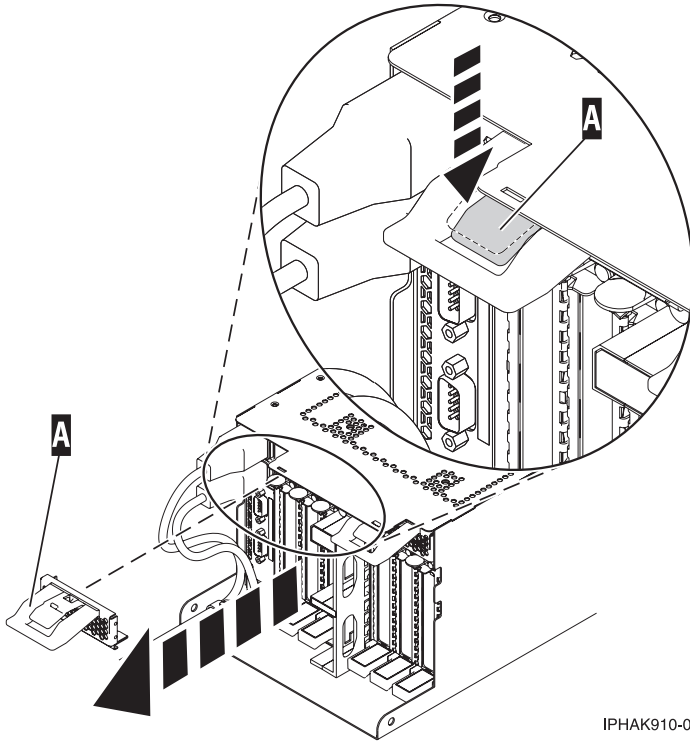
IPHAK910-0

Figure 49. Remove the EMC shield

b. Lift up the lower cassette handle **(B)** as shown in the following figure. Pull the PCI cassette **(C)** out of the system.
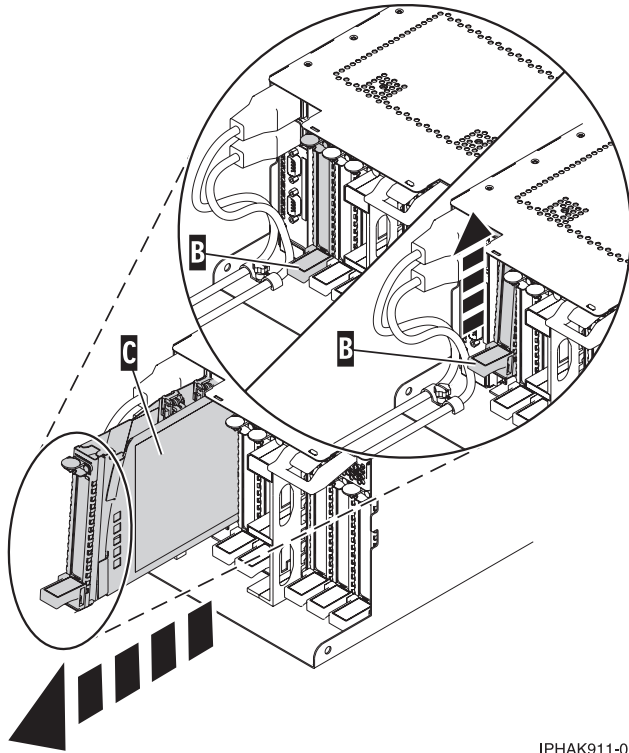
IPHAK911-0

Figure 50. PCI adapter cassette removed from the system unit

7. Place the cassette with the cover facing up on an approved ESD surface.

   Note: The cover will have a label on it.

8. To remove the adapter from the cassette, refer to "PCI adapter single-width and double-width cassettes" on page 89.

Replacing a PCI adapter contained in a cassette in the system with the power off

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

About this task

Attention: You must have already completed the procedure "Removing a PCI adapter contained in a cassette from the system with the power off" on page 59 in order to have the slot powered off.

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

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

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

Procedure

1. Perform prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. If the adapter needs to be placed in a PCI adapter cassette, see one of the following topics:
   - "PCI adapter single-width, third generation cassette" on page 64
   - "PCI adapter double-wide cassette" on page 76
4. At the back of the system, identify the cassette slot you want to use.
5. 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.
6. Replace the PCI adapter cassette in the system. Follow these substeps:

   a. Remove the PCI adapter EMC shield **(A)** as shown in the following figure.
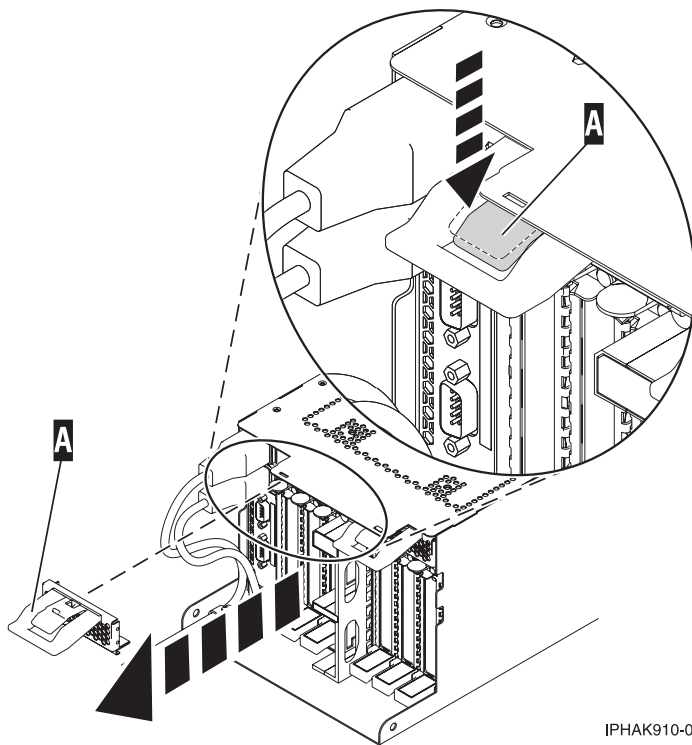
Figure 51. Remove the EMC shield

   b. Slide the cassette **(B)** into the cassette slot as shown in the following figure. 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.
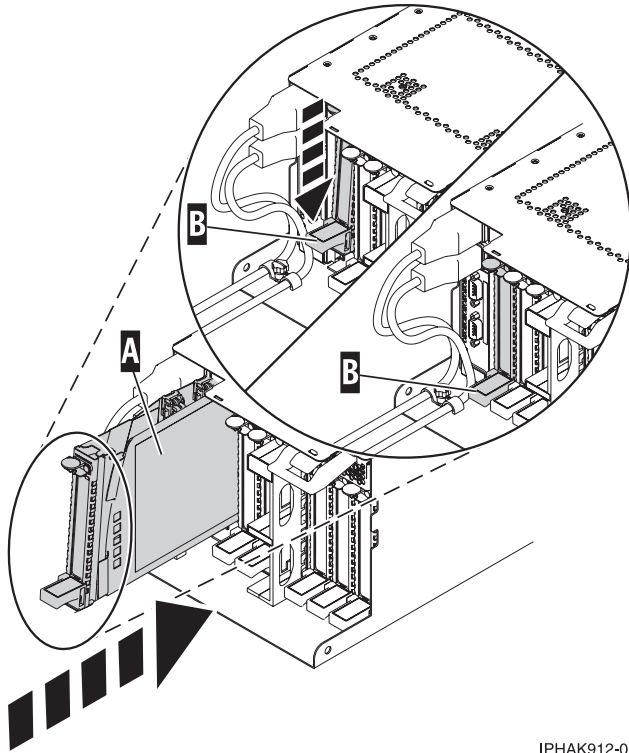
IPHAK912-0

Figure 52. PCI adapter cassette installed in the system unit

    c. Replace the EMC shield **(C)** as shown in the following figure.
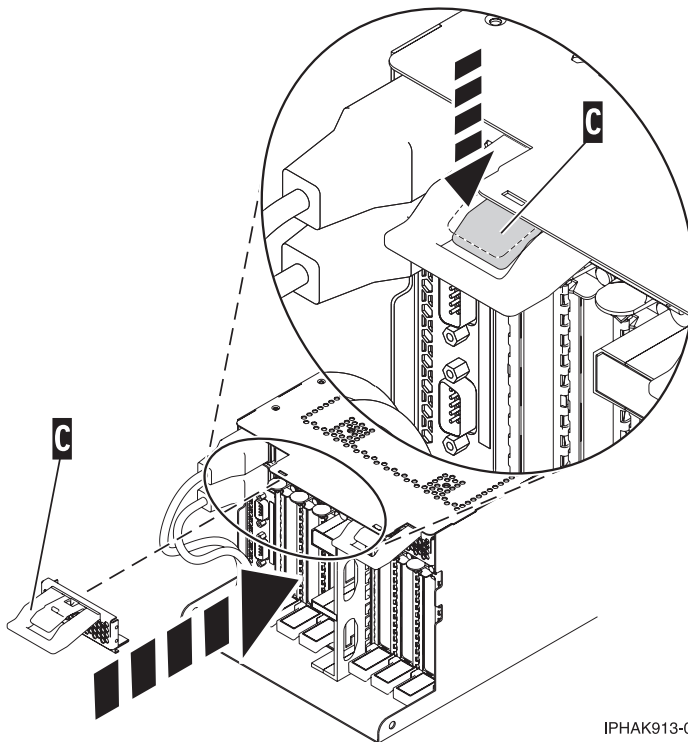
IPHAK913-0

Figure 53. PCI adapter EMC shield in the closed position

7. Reconnect the system to the power source.
8. Start the system or logical partition. Refer to Start the system or logical partition.
9. Verify that the new resource is functional. See Verify the installed part.

PCI adapter single-width, third generation cassette

You might need to remove, replace, or install PCI adapters in a single-width cassette. Use the procedures in this section to perform these tasks.

Placing a PCI adapter in a single-width, third generation cassette

You can place a PCI adapter in a single-width cassette.

About this task

To place a PCI adapter in a cassette, do the following steps:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Remove any shipping handles or brackets attached to the adapter.
4. Remove the cassette cover by doing the following:
   a. Slide the cover latch **(A)** to disengage it from the pivot pin **(C)** as shown in the following figure.
   b. Lift the cover **(B)** off of the pivot pin.
   c. Slide the cover off of the cassette.

IPHAK520-0

Figure 54. PCI adapter single-width cassette cover removed

5. Ensure the cassette is prepared to receive an adapter by doing the following:
   a. Ensure the cassette is empty by doing one of the following:

- "Removing an adapter from the PCI adapter single-width, third generation cassette" on page 73.
- Remove the adapter filler panel from the cassette.

b. Ensure that all of the adapter retainers **(A)** have been pushed out to the edges of the cassette to allow the placement of the adapter. See Figure 55.
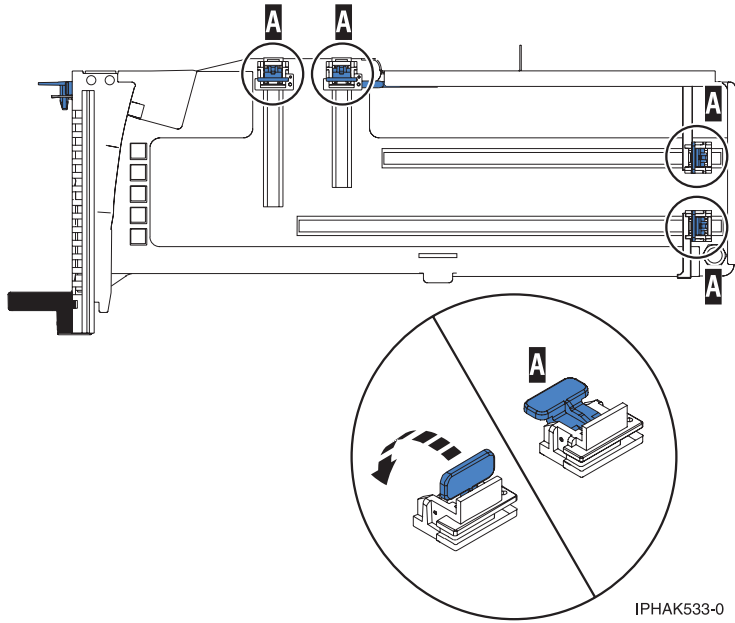
Figure 55. Adapter retainers

c. Rotate the tailstock clamp into the open position.
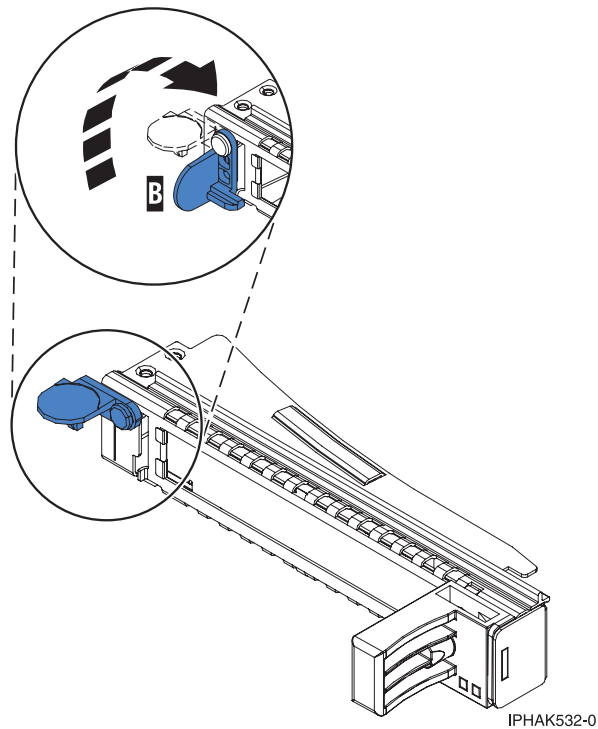
Figure 56. Tailstock clamp in the open position

6. Place the adapter in the cassette by doing the following:
   a. With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **(A)**. See Figure 57.
   b. Rotate the adapter toward the top of the cassette and into place.
   c. Close the tailstock clamp **(B)**. See Figure 57.
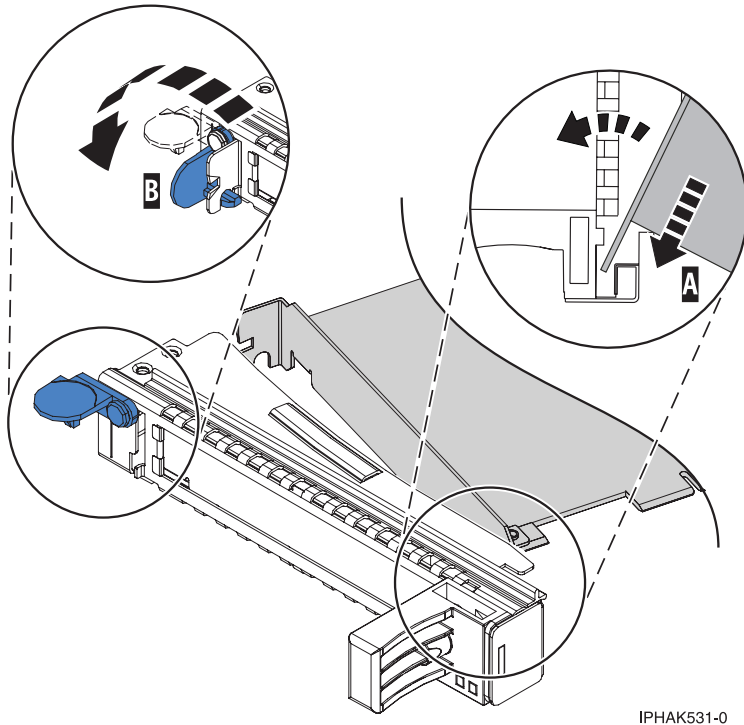
IPHAK531-0

Figure 57. Adapter removed from the PCI adapter single-width cassette

   d. Position the adapter retainers to support the adapter, and then rotate the retainer clip into the closed position.

   Notes:
   1) 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.
   2) When the adapter retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide toward the adapter.
   3) 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
   a) Place and lock the retainers **(B)**. See Figure 58 on page 67.
      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.
   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.
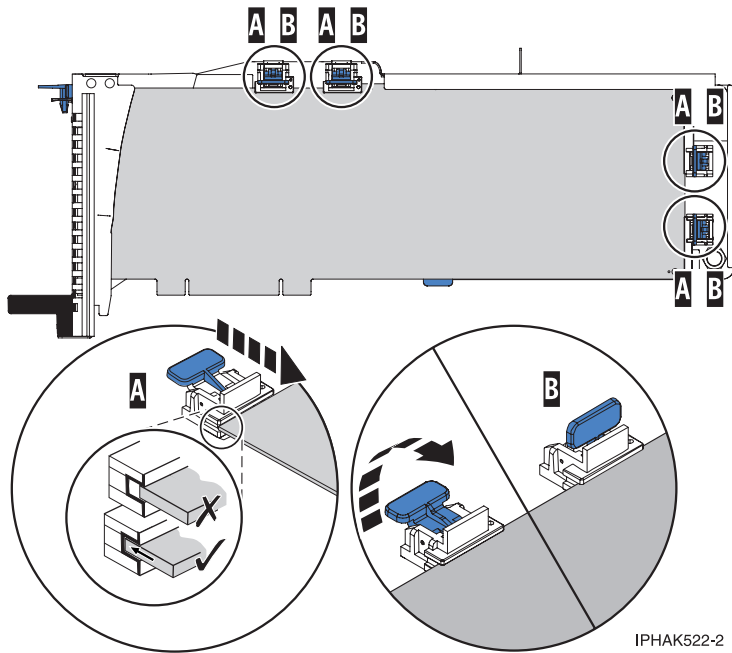
Figure 58. Large adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for medium-length adapters

a) Remove the adapter stabilizer **(C)**. See Figure 59 on page 68.

b) Place and lock the retainers **(B)**.

c) 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.
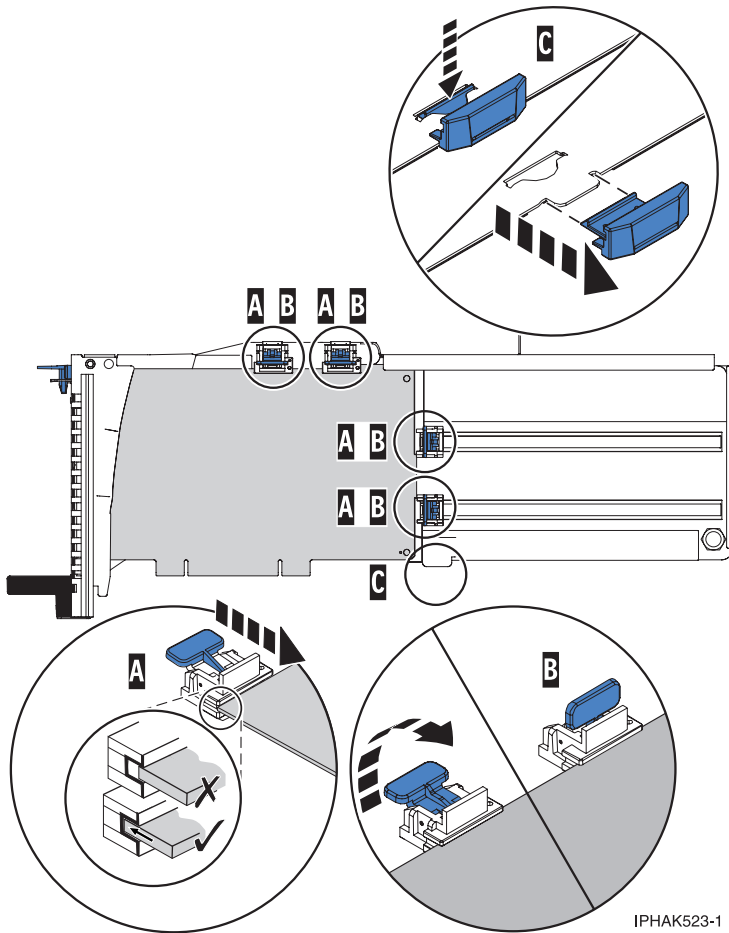
Figure 59. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for small adapters

a) Remove the adapter stabilizer **(C)**. See Figure 60 on page 69.

b) 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.

c) Place and lock the retainers **(B)**.

d) 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.
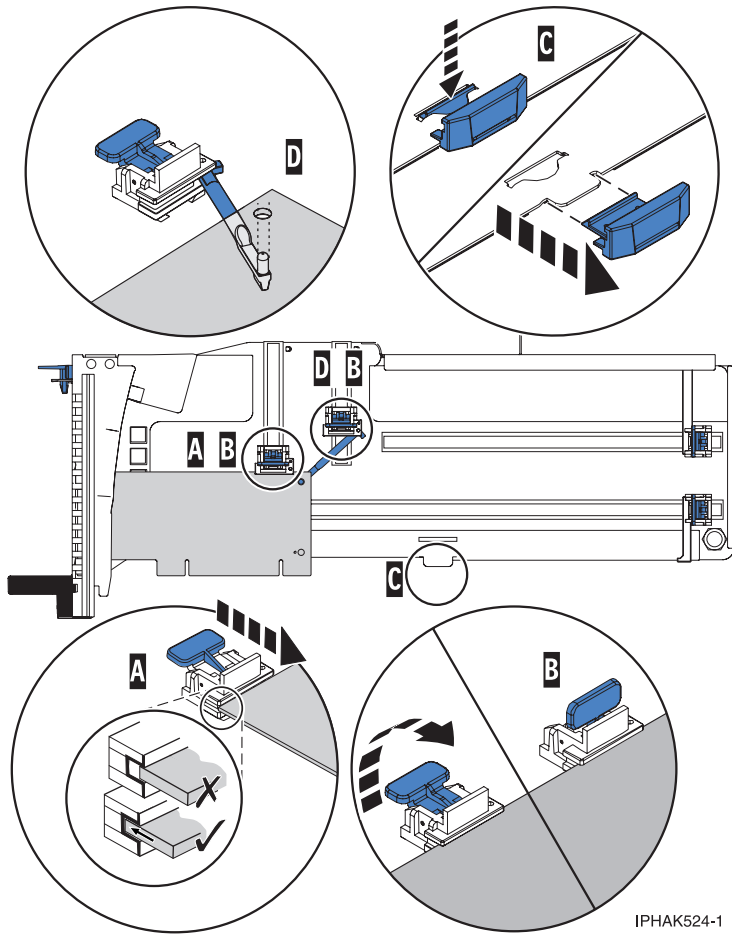
Figure 60. Small adapter in the PCI adapter cassette with the supports and the hookarm in place

7. Replace the cassette cover by doing the following:

   a. Slide the cover **(B)** into position on the cassette as shown in the following figure.

   b. While holding the cover latch **(A)** in the open position, place the cover over the pivot pin **(C)**.

   c. Release the cover latch to lock the cover into place.
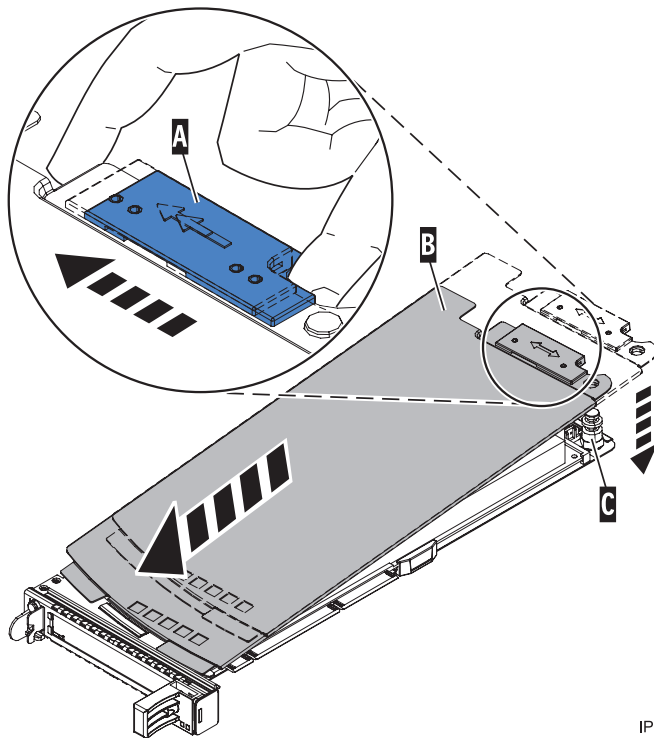
Figure 61. PCI adapter cassette cover replaced

Placing a 4-Port USB PCI Express Adapter in a single-width, third generation cassette

You can place a 4-Port USB PCI Express Adapter (FC 2728; CCIN 57D1) in a single-width cassette.

About this task

To place a PCI adapter in a cassette, do the following steps:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Remove the cassette from the system.
4. Remove the cassette cover by doing the following steps:
   a. Slide the cover latch **(A)** to disengage it from the pivot pin **(C)** as shown in the following figure.
   b. Lift the cover **(B)** off of the pivot pin.
   c. Slide the cover off of the cassette.

Figure 62. PCI adapter single-width cassette cover removed

5. Ensure that the cassette is empty.
6. Place the adapter in the cassette by doing the following steps:
    a. With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **(A)**. See Figure 63 on page 72.
    b. Rotate the adapter toward the top of the cassette and into place.
    c. Close the tailstock clamp **(B)**. See Figure 63 on page 72.
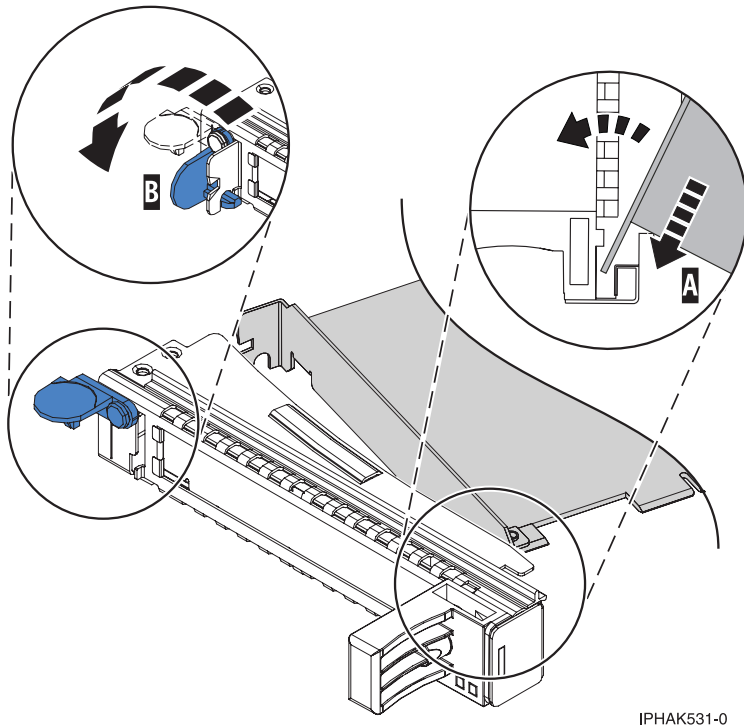
Figure 63. Placing the PCI adapter single-width cassette

    d. Position the adapter retainer to support the adapter.
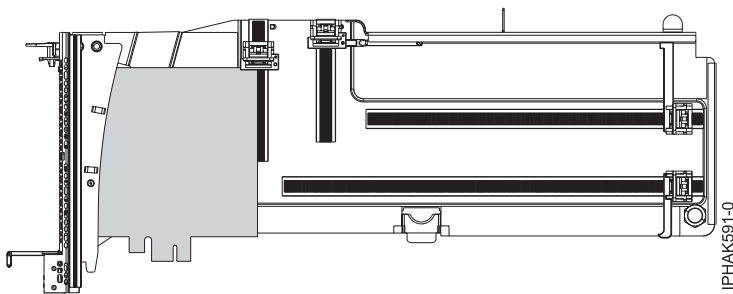
Figure 64. Side view of adapter in cassette

7. Replace the cassette cover by doing the following steps:
   a. Slide the cover **(B)** into position on the cassette as shown in the following figure.
   b. While holding the cover latch **(A)** in the open position, place the cover over the pivot pin **(C)**.
   c. Release the cover latch to lock the cover into place.
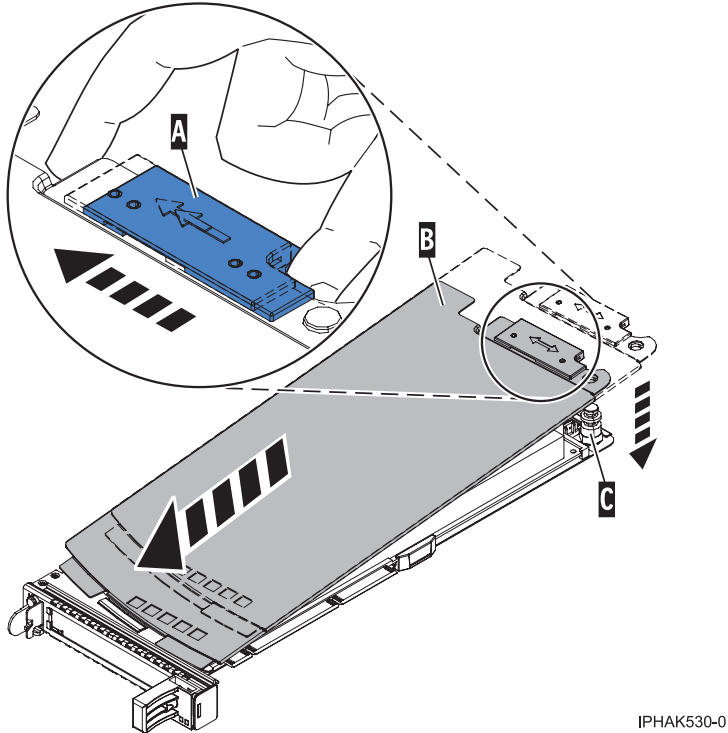
Figure 65. PCI adapter cassette cover replaced

8. Replace the PCI adapter cassette **(B)** in the system. See the following figure.
9. Install the EMC grill **(A)**.
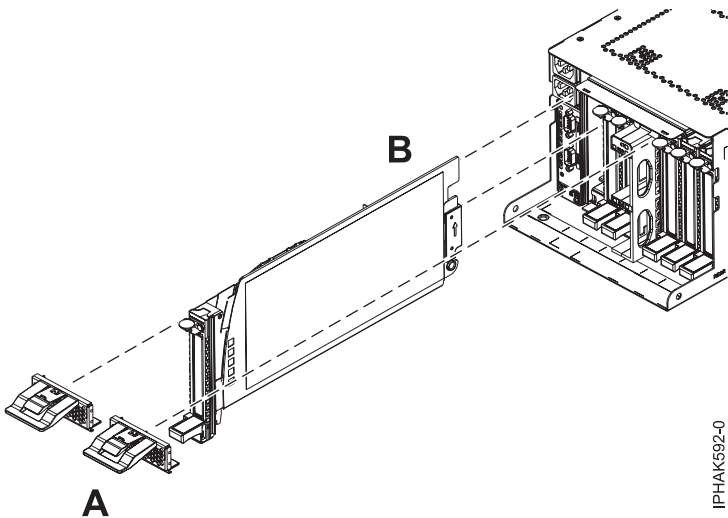
Figure 66. Replace the cassette and install the EMC grill

Removing an adapter from the PCI adapter single-width, third generation cassette

You can remove a PCI adapter from a single-width cassette.

About this task

To remove an adapter from the single-width cassette, do the following steps:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.

2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.

3. Remove the cassette from the system.

4. Remove the cassette cover by doing the following:

    a. Slide the cover latch **(A)** to disengage it from the pivot pin **(C)** as shown in the following figure.

    b. Lift the cover **(B)** off the pivot pin.

    c. Slide the cover off the cassette.

IPHAK520-0

Figure 67. PCI adapter cassette cover removed

5. Remove the adapter from the cassette by doing the following:

    a. Unlock the adapter retainers by rotating the retainer clip **(A)** into the horizontal position. See Figure 68 on page 75.

    Notes:

    1) The edge of the adapter located at the end of the cassette that contains the cassette handles is called the adapter **tailstock**.

    2) 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.

    3) When the retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide away from the card.

    4) If the corner support retainer is used, unlock it, and then slide the corner support retainer away from the card.

    b. Push the adapter retainers **(B)** away from the adapter.

    c. Unlock the adapter tailstock clamp **(C)**.

d. 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.

e. Lift the adapter out of the tailstock retaining channel.

Figure 68. Adapter removed from the PCI adapter cassette

f. Put the adapter in a safe place.

   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.

g. Place a PCI adapter or filler panel in the cassette. See "Placing a PCI adapter in a single-width, third generation cassette" on page 64.

h. Replace the cassette cover by doing the following:

   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.
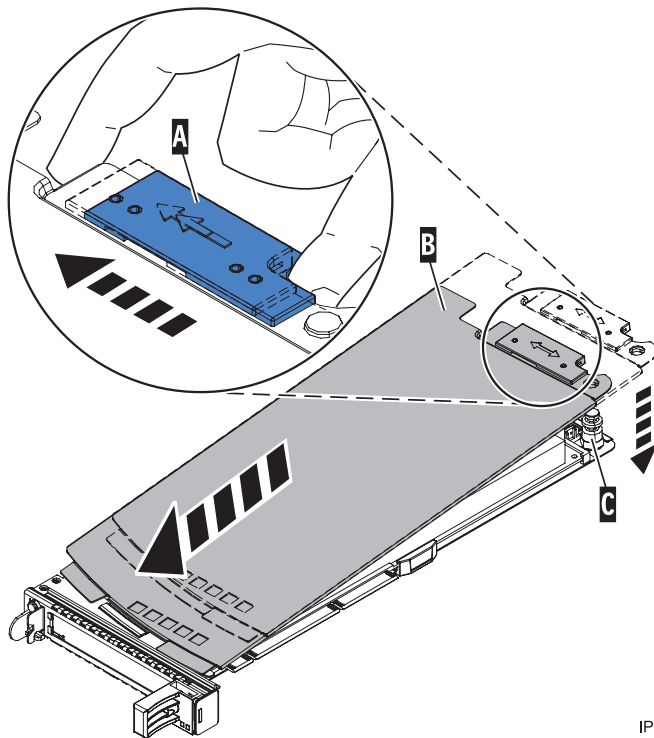
Figure 69. PCI adapter cassette cover replaced

Results

PCI adapter double-wide cassette

You might need to remove, replace, or install PCI adapters in a double-wide cassette. Use the procedures in this section to perform these tasks.

Removing an adapter from the PCI adapter double-wide cassette

You might need to remove a PCI adapter from a double-wide cassette.

About this task

To remove an adapter from the cassette, do the following:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Remove the PCI adapter contained in a cassette from the system.
4. Remove any shipping handles or brackets attached to the adapter.
5. Remove the cassette cover by doing the following:
   a. Slide the cover latch **A** to disengage it from the pivot pin **C** as shown in the following figure.
   b. Lift the cover **B** off of the pivot pin.
   c. Slide the cover off of the cassette.

Figure 70. PCI adapter cassette cover removed

    d. Unscrew pivot pin **C** and put it in a safe place

6. Remove the adapter from the cassette by doing the following:

    a. Unlock the adapter retainers by rotating the retainer clip **A** into the horizontal position. See Figure 71 on page 78.

      Notes:

      1) The edge of the adapter located at the end of the cassette that contains the cassette handles is called the adapter *tailstock*.

      2) 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.

      3) When the retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide away from the card.

      4) If the corner support retainer is used, unlock it, and then slide the corner support retainer away from the card.

    b. Push the adapter retainers **B** away from the adapter.

    c. Unlock the adapter tailstock clamp **C**.

    d. Rotate the adapter out of the cassette by grasping the edge of the adapter opposite the tailstock and then firmly rotating the adapter toward the bottom of the cassette.

    e. Lift the adapter out of the tailstock retaining channel.
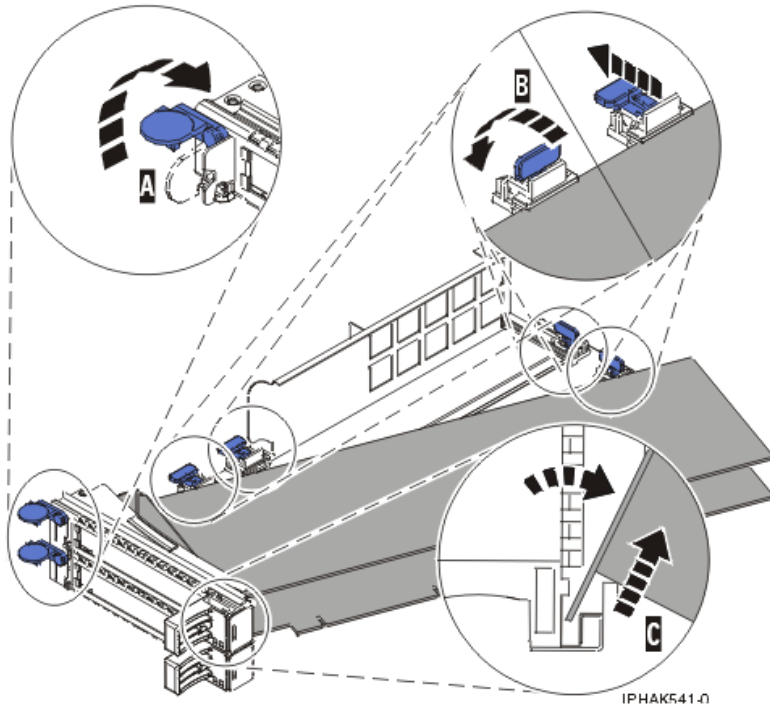
Figure 71. Adapter removed from the PCI adapter cassette

 f. Put the adapter in a safe place.

  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.

 g. Place the adapter in the PCI adapter double-wide cassette. For information, see "Placing an adapter in the PCI adapter double-wide cassette" on page 79.

  Note: If the cassette is not going to contain a PCI adapter, use this same procedure to place an adapter filler panel in the cassette.

 h. Replace the cassette cover by doing the following:

  1) Screw pivot pin **C** into place.

  2) Slide the cover **B** into position on the cassette.

  3) While holding the cover latch **A** in the open position, place the cover over the pivot pin **C**.

  4) Release the cover latch to lock the cover into place.

Figure 72. PCI adapter cassette cover replaced

Placing an adapter in the PCI adapter double-wide cassette

You might need to place a PCI adapter in a double-wide cassette.

About this task

To place an adapter in a cassette, do the following:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.
2. Remove the PCI adapter contained in a cassette from the system.
3. Remove the cassette cover by doing the following:
   a. Slide the cover latch **A** to disengage it from the pivot pin **C** as shown in the following figure.
   b. Lift the cover **B** off of the pivot pin.
   c. Slide the cover off of the cassette.
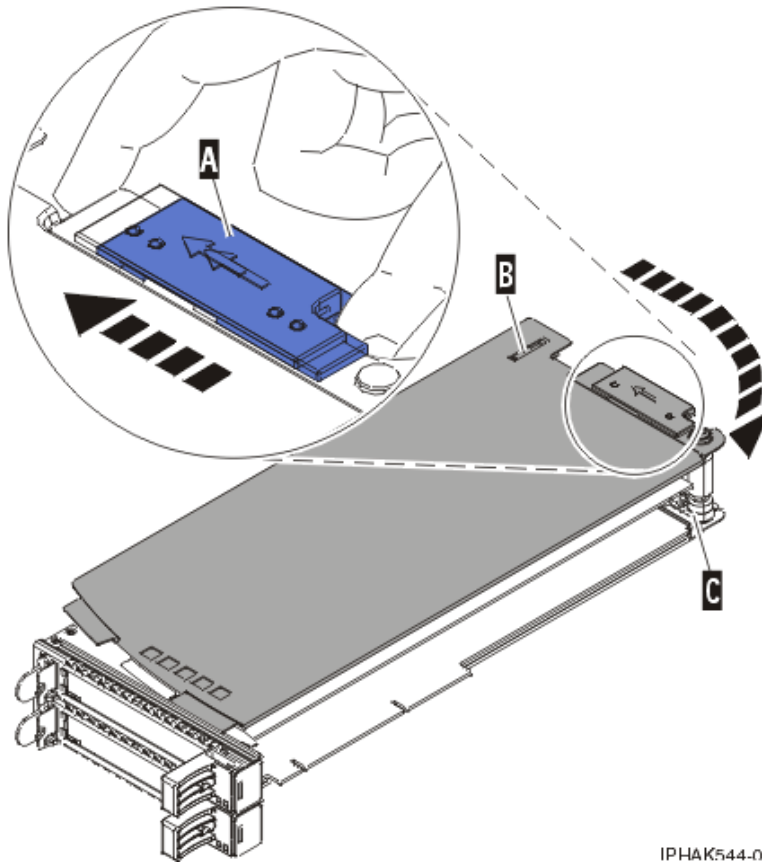
Figure 73. PCI adapter cassette cover removed

    d. Unscrew pivot pin **C** and put it in a safe place

4. Ensure the cassette is prepared to receive an adapter by doing the following:

    a. Ensure the cassette is empty by doing one of the following:

- Remove the adapter from the PCI adapter double-wide cassette. For information, see "Removing an adapter from the PCI adapter double-wide cassette" on page 76.
- Remove the adapter filler panel from the cassette.

    b. Ensure that all of the adapter retainers have been pushed out to the edges of the cassette to allow the placement of the adapter.

    c. Place the tailstock clamp in the open position by pressing the cassette handle towards the retainer clip.

5. Place the adapter in the cassette by doing the following:

    a. With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **A**. See Figure 74 on page 81.

    b. Rotate the adapter toward the top of the cassette and into place.

    c. Close the tailstock clamp.
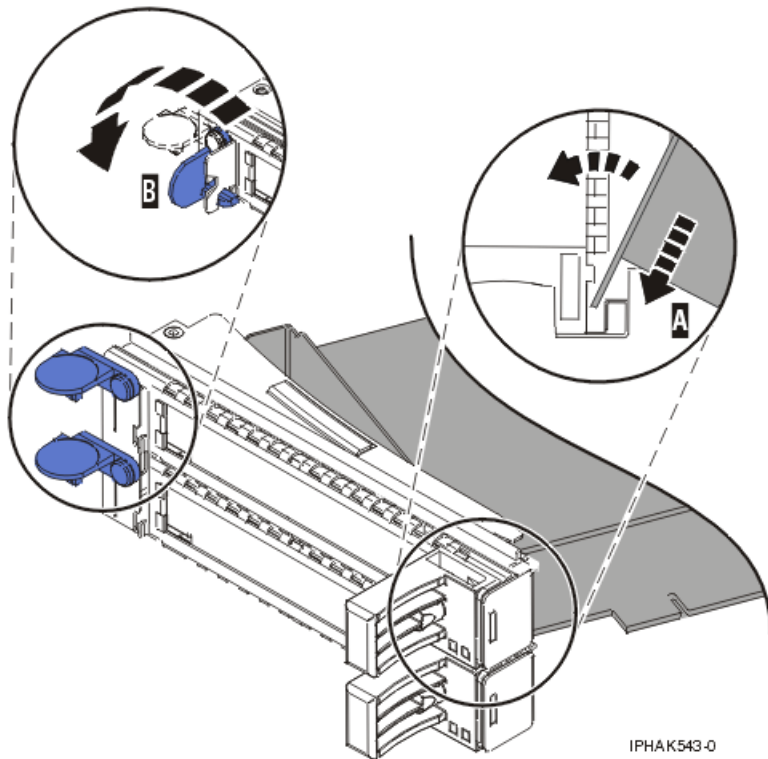
Figure 74. Adapter replaced in the PCI adapter cassette

d. Position the adapter retainers to support the adapter, and then rotate the retainer clip **B** into the closed position. See Figure 74.

   Notes:

   1) 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.

   2) When the adapter retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide toward the adapter.

   3) Place and lock the retainers **B**. See Figure 75 on page 82.

      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.

   4) 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.
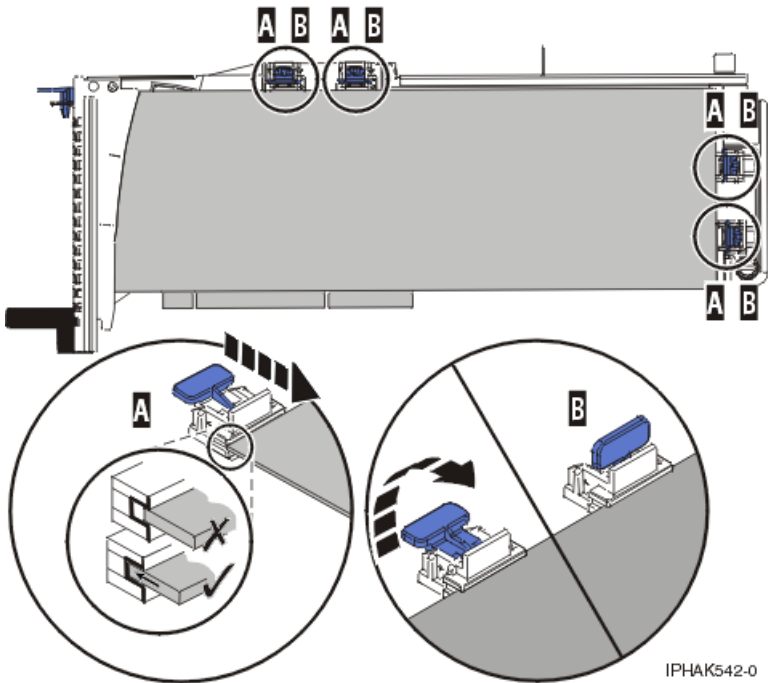
Figure 75. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

6. After the retainers are placed, replace the cassette cover by doing the following:
   a. Screw pivot pin **C** into place.
   b. Slide the cover **B** into position on the cassette as shown in the following figure.
   c. While holding the cover latch **A** in the open position, place the cover over the pivot pin **C**.
   d. Release the cover latch to lock the cover into place.
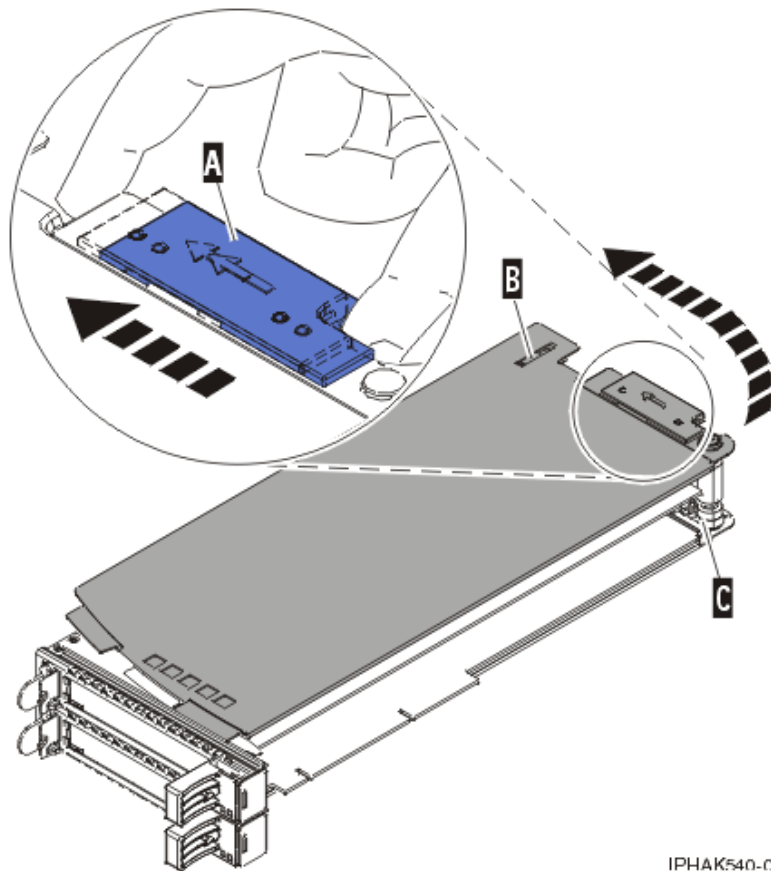
Figure 76. PCI adapter cassette cover replaced

7. Replace the PCI adapter contained in a cassette in 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.

Model 58/02 and 58/77 expansion units, PCI adapters, and cassettes

You can install, remove, replace PCI adapter cassettes in the 58/02 and 58/77 expansion units.

Preparing to install, remove, or replace a PCI adapter cassette

Learn about steps you must do before you install, remove, or replace a PCI adapter cassette in a 58/02 or 58/77 expansion unit.

About this task

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

If your system is managed by the Systems Director Management Console (SDMC), use the SDMC to install, remove, and replace features. For information about using the SDMC, see Installing a feature by using the Systems Director Management Console, Removing a part by using the Systems Director Management Console, or Replacing a part by using the Systems Director Management Console.

Notes:

- If the system is partitioned, you must determine the partition owning the I/O slot. Once the adapter is installed, the I/O slot must be powered on in the operating system.
- If an I/O slot on a partitioned system is not owned by a partition, then the I/O slot cannot be powered on.
- Adding an I/O slot to a partition using dynamic logical partitioning (DLPAR) will power on the I/O slot as part of the DLPAR add. For information about DLPAR, see Dynamic Logical Partitioning.
- To learn more about working in a partitioned environment, see Logical partitioning.

If you do not have an HMC or SDMC, complete the following steps to install, remove or replace a PCI adapter:

Procedure
1. Perform prerequisite tasks as described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. If you are installing a new adapter, determine in which slot to place the new adapter. See the PCI adapter placement.
4. If you are removing a failing PCI adapter, see Identifying a failing part.
5. If you are installing a PCI adapter in a rack-mounted system or expansion unit, open the rear rack door.
6. Determine the location of PCI adapter cassette in the system.

Installing a PCI adapter contained in a cassette
You can install a PCI adapter cassette in a 58/02 or 58/77 expansion unit.

Installing a PCI adapter cassette
You can install a PCI adapter cassette in a 58/02 or 58/77 expansion unit.

About this task

Procedure
1. Ensure that the lower cassette handle **(C)** is pressed up toward the retainer clip. This places the adapter in the correct position to be docked in the system. See the following figure.
2. Slide the cassette into the cassette slot.
3. When the cassette is fully inserted into the system, firmly press downward on the lower cassette handle **(C)** to lock the adapter in its connector.
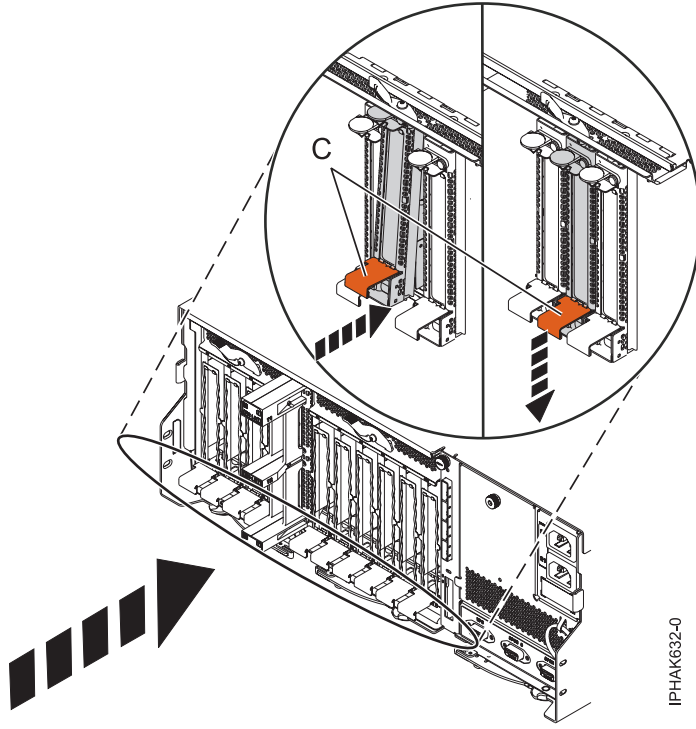
Figure 77. Installing the PCI adapter cassette

4. Lower the access door **(B)** into the closed position. Latch **(A)** automatically latches to hold the access door closed.
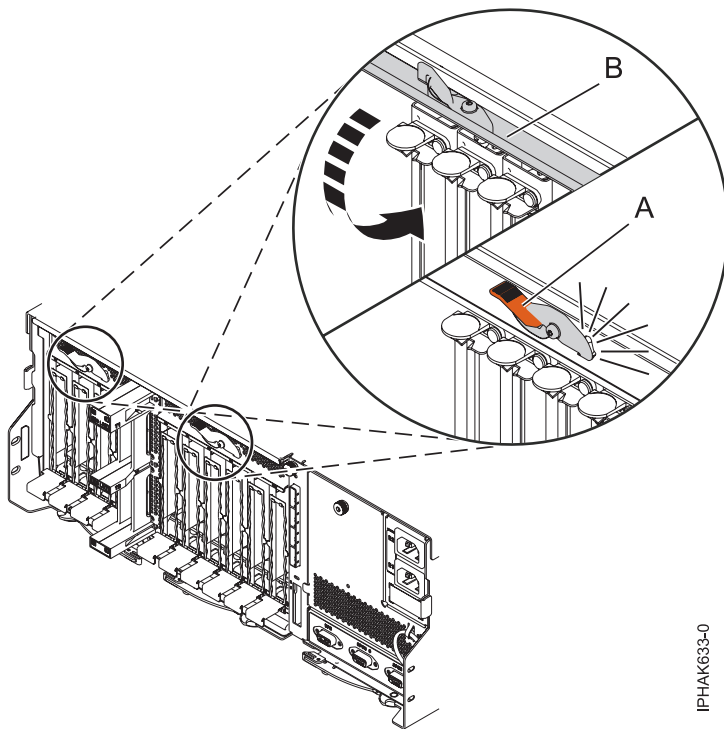
Figure 78. Closing the access door

5. Return to the procedure that sent you here.

Installing a PCI adapter cassette with the power off

You can install a PCI adapter cassette in a 58/02 or 58/77 expansion unit with the power off.

Before you begin

Before you begin: Prepare to install a PCI adapter cassette. See "Preparing to install, remove, or replace a PCI adapter cassette" on page 83.

About this task

To install an adapter with the system power off, do the following steps:

Procedure

1. Stop the system or logical partition. See Stop the system or logical partition.
2. Disconnect the power source from the system by unplugging the system.
3. Remove the PCI adapter cassette from the system. Refer to "Removing a PCI adapter cassette from the expansion unit" on page 87.
4. Install the adapter into the PCI adapter cassette. Refer to "PCI adapter single-width and double-width cassettes" on page 89.
5. Install the PCI adapter cassette in the system. Refer to "Installing a PCI adapter contained in a cassette" on page 84.
6. Start the system or logical partition. Refer to Start the system or logical partition.
7. Verify that the new resource is functional. See Verify the installed part.

Removing a PCI adapter contained in a cassette from the expansion unit

You can remove a PCI adapter cassette from the 58/02 or 58/77 expansion unit.

Removing a PCI adapter contained in a cassette from the expansion unit with the system power off

You can remove a PCI adapter cassette from the 58/02 or 58/77 expansion unit with the system power off.

Before you begin

Before you begin: Prepare to remove a PCI adapter cassette. See "Preparing to install, remove, or replace a PCI adapter cassette" on page 83.

About this task

To remove an adapter, do the following steps:

Procedure

1. Stop the system or logical partition. See Stop the system or logical partition.
2. Disconnect the power source from the system by unplugging the system.
3. Determine the location of PCI adapter in the system.
4. Remove the PCI adapter cassette from the system. Refer to "Removing a PCI adapter cassette from the expansion unit" on page 87.
5. Place the cassette with the cover facing up on an approved ESD surface.

6. To remove the adapter from the cassette, refer to "PCI adapter single-width and double-width cassettes" on page 89.

Removing a PCI adapter cassette from the expansion unit

You can remove a PCI adapter cassette from the 58/02 or 58/77 expansion unit.

About this task

To remove a PCI adapter cassette, do the following steps:

Procedure

1. Press down on latch **(A)** to release the access door. The access door is spring loaded, which causes it to rotate up into the open position **(B)**.
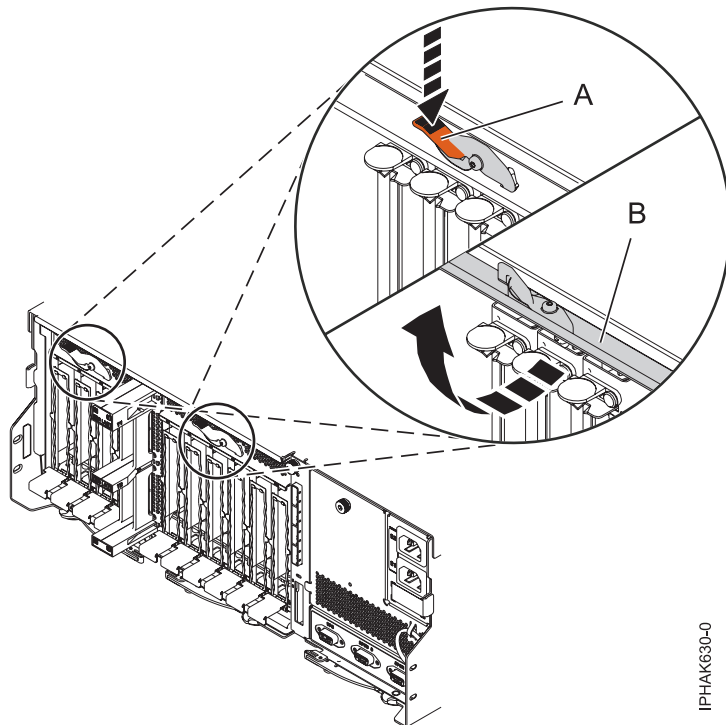
Figure 79. Opening the access door

2. Lift up the lower cassette handle **(C)** and pull the cassette out of the unit.
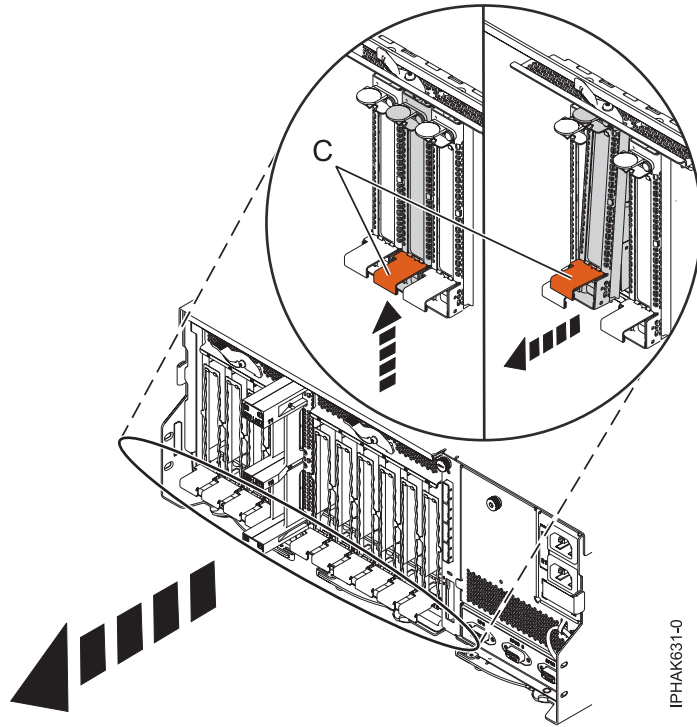
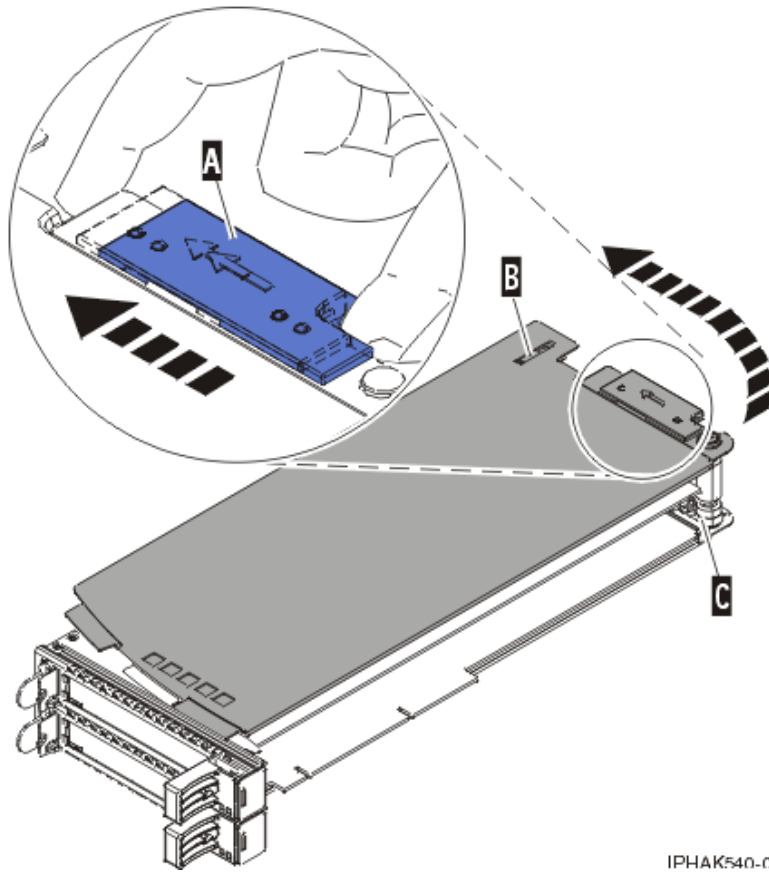*Figure 80. Removing a PCI adapter cassette*

> **Attention:** A cassette that contains 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.

3. Return to the procedure that sent you here.

Replacing a PCI adapter contained in a cassette from the expansion unit with the power off

You can replace a PCI adapter cassette from the 58/02 or 58/77 expansion unit with the system power off.

Before you begin

You must have already completed the procedure "Removing a PCI adapter contained in a cassette from the expansion unit with the system power off" on page 86 to have the slot powered off.

About this task

To replace an adapter with the system power off, do the following steps:

Procedure

1. If the adapter needs to be placed in a PCI adapter cassette, see "PCI adapter single-width and double-width cassettes" on page 89.
2. At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
3. 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.
4. Install the PCI adapter cassette in the system. Refer to "Installing a PCI adapter contained in a cassette" on page 84.
5. Reconnect the system to the power source.

6. Start the system or logical partition. Refer to Start the system or logical partition.

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

PCI adapter single-width and double-width cassettes

You can remove, replace, or install PCI adapters in a cassette.

Removing an adapter from the PCI adapter single-width cassette

You can remove a PCI adapter from a single-width cassette.

About this task

To remove an adapter from the single-width cassette, do the following steps:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.

2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.

3. Remove the cassette from the system.

4. Remove the cassette cover by doing the following steps:

    a. Slide the cover latch **(A)** to disengage the lug and pivot pin **(C)** as shown in the following figure.

    b. Lift the cover **(B)** off the pivot pin.

    c. Slide the cover off the cassette.

Figure 81. PCI adapter cassette cover removed

5. Remove the adapter from the cassette by doing the following steps:

    a. Unlock the adapter retainers by rotating the retainer clip **(A)** into the horizontal position. See Figure 82 on page 90.

Notes:

1) The edge of the adapter located at the end of the cassette that contains the cassette handles is called the adapter **tailstock**.

2) 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.

3) When the retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide away from the card.

4) If the corner support retainer is used, unlock it, and then slide the corner support retainer away from the card.

b. Push the adapter retainers **(B)** away from the adapter.

c. Unlock the adapter tailstock clamp **(C)**.

d. 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.

e. Lift the adapter out of the tailstock retaining channel.

Figure 82. Adapter removed from the PCI adapter cassette

f. Put the adapter in a safe place.

   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.

g. Place a PCI adapter or filler panel in the cassette. See "Placing a PCI adapter in a single-width cassette" on page 91.

h. 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.
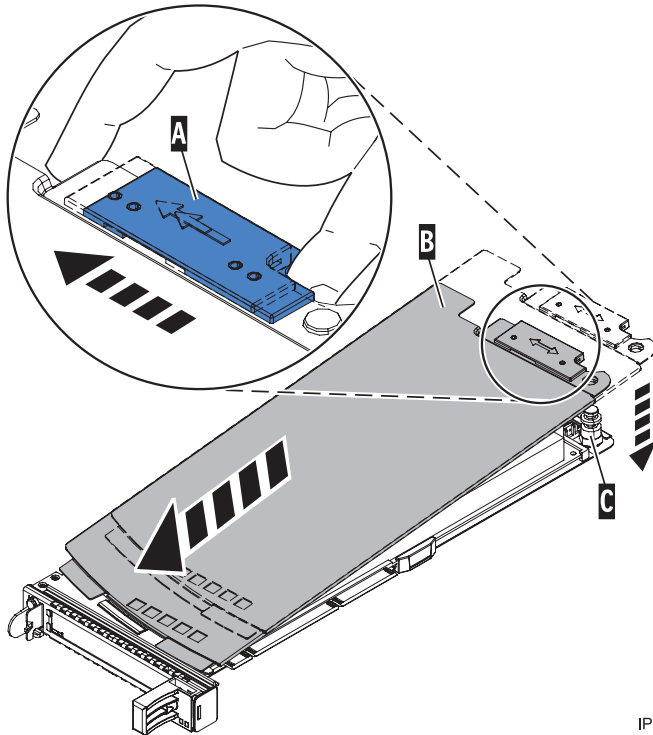
Figure 83. PCI adapter cassette cover replaced

Placing a PCI adapter in a single-width cassette

You can place a PCI adapter in a single-width cassette.

About this task

To place a PCI adapter in a cassette, do the following steps:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Remove any shipping handles or brackets attached to the adapter.
4. Remove the cassette cover by doing the following steps:
   a. Slide the cover latch **(A)** to disengage the lug and pivot pin **(C)** as shown in the following figure.
   b. Lift the cover **(B)** off of the pivot pin.
   c. Slide the cover off of the cassette.

Figure 84. PCI adapter single-width cassette cover removed

5. Ensure the cassette is prepared to receive an adapter by doing the following steps:
   a. Ensure the cassette is empty by doing one of the following steps:
      - "Removing an adapter from the PCI adapter single-width cassette" on page 89.
      - Remove the adapter filler panel from the cassette.
   b. Ensure that all of the adapter retainers **(A)** have been pushed out to the edges of the cassette to allow the placement of the adapter. See Figure 85 on page 93.
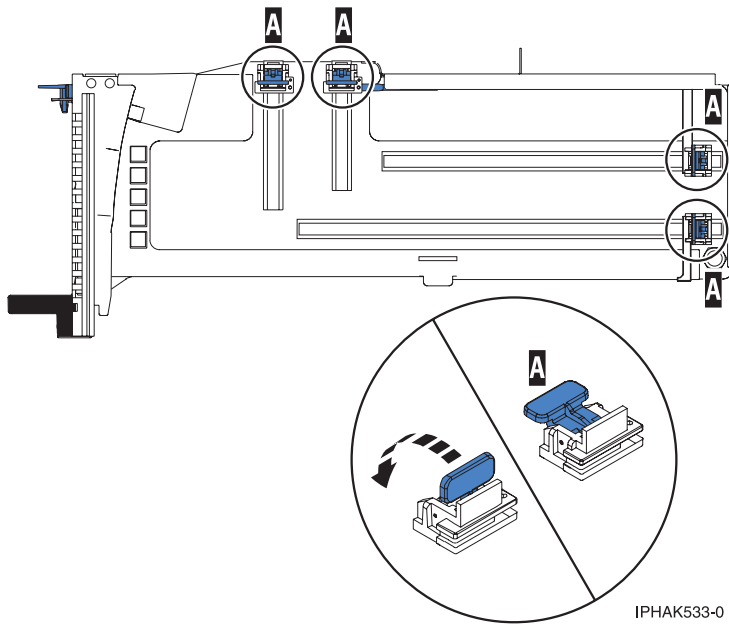
Figure 85. Adapter retainers

    c. Rotate the tailstock clamp into the open position.
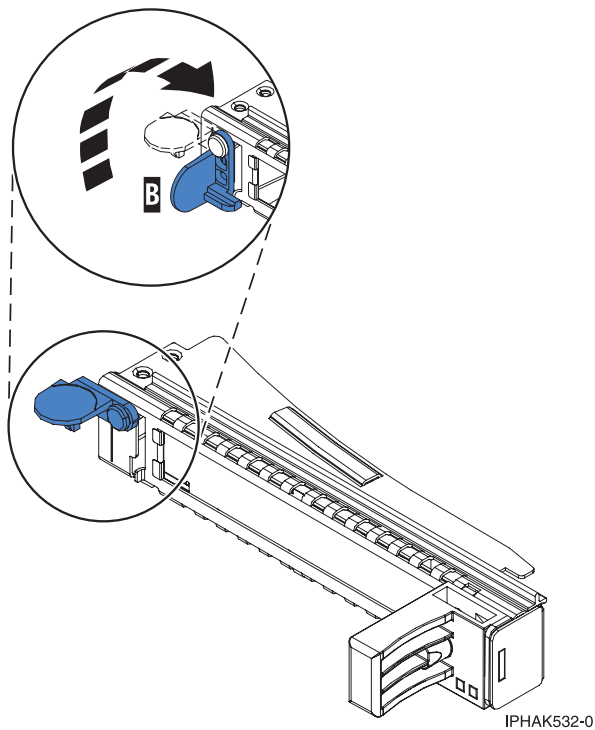
Figure 86. Tailstock clamp in the open position

6. Place the adapter in the cassette by doing the following steps:

    a. With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **(A)**. See Figure 87 on page 94.

    b. Rotate the adapter toward the top of the cassette and into place.

c. Close the tailstock clamp **(B)**. See Figure 87.

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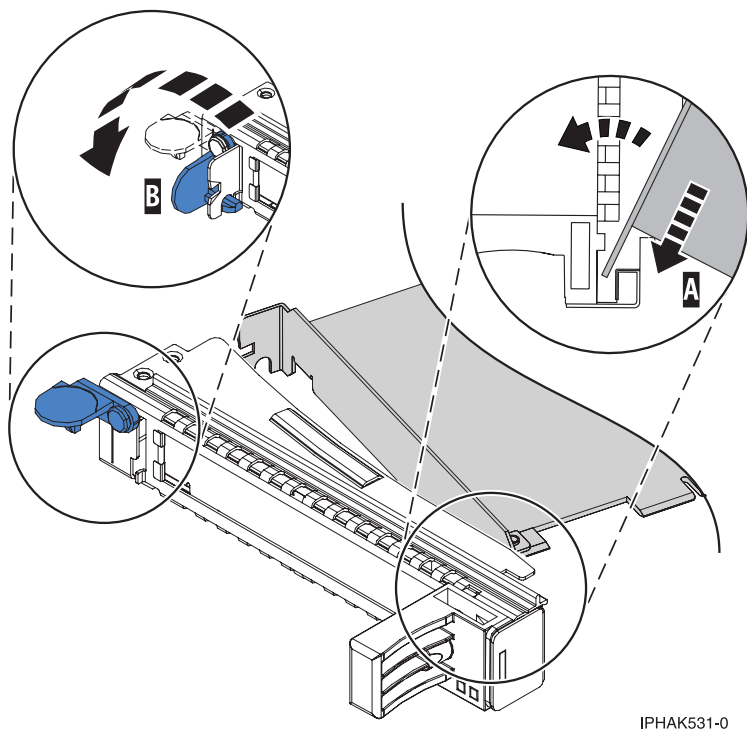
Figure 87. Adapter removed from the PCI adapter single-width cassette

d. Position the adapter retainers to support the adapter, and then rotate the retainer clip into the closed position.

Notes:

1) 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.

2) When the adapter retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide toward the adapter.

3) 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

a) Place and lock the retainers **(B)**. See Figure 88 on page 95.

   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.

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.
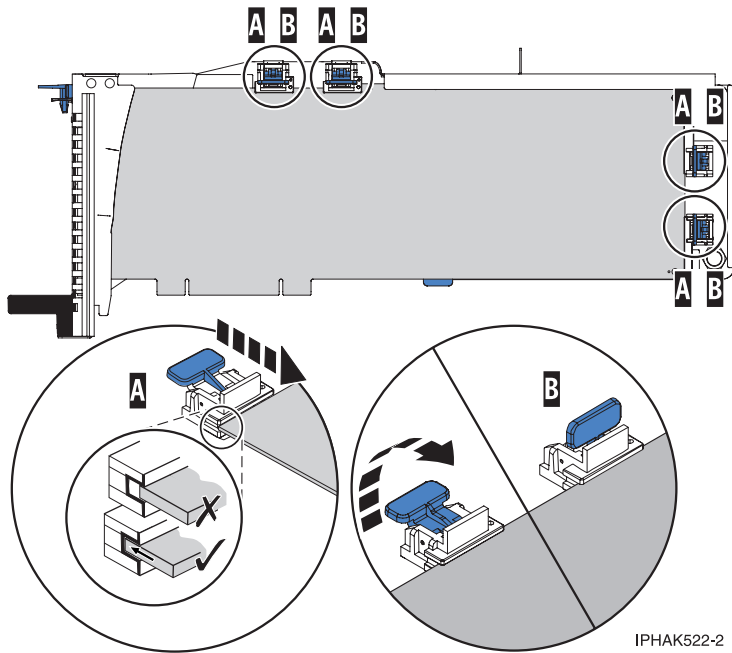
Figure 88. Large adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for medium-length adapters

a) Remove the adapter stabilizer **(C)**. See Figure 89 on page 96.

b) Place and lock the retainers **(B)**.

c) 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.
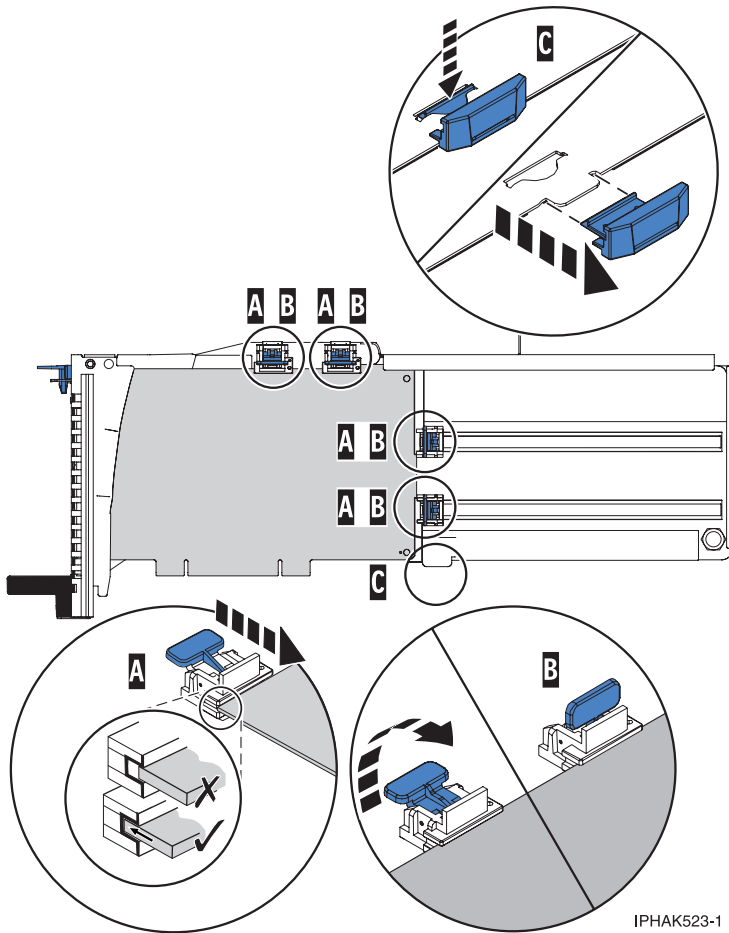
Figure 89. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for small adapters

a) Remove the adapter stabilizer **(C)**. See Figure 90 on page 97.

b) 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.

c) Place and lock the retainers **(B)**.

d) 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.
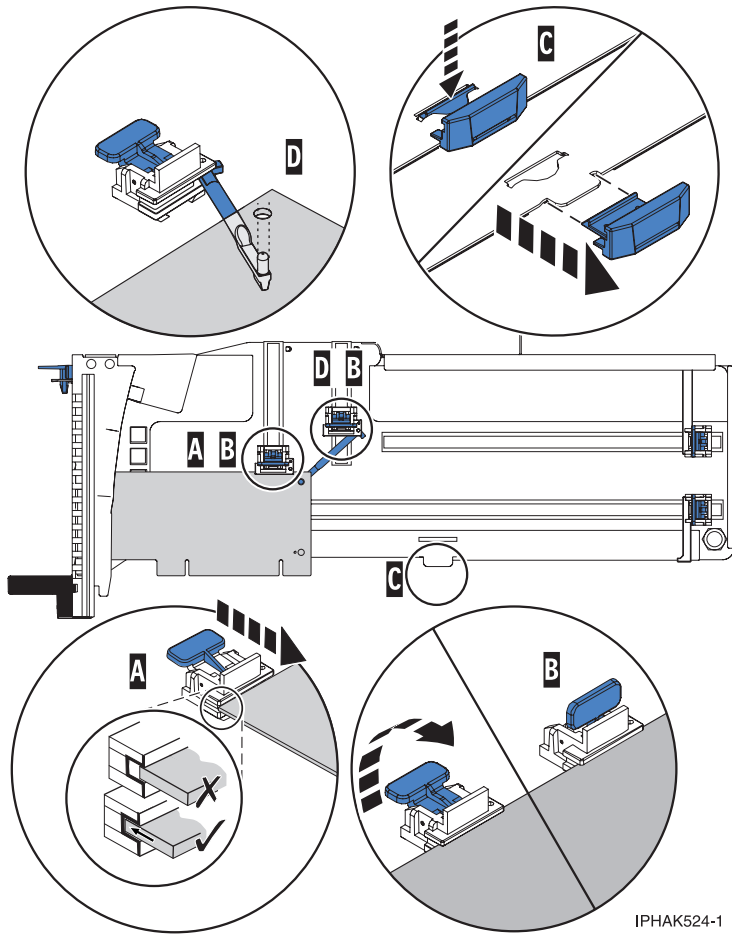
Figure 90. Small adapter in the PCI adapter cassette with the supports and the hookarm in place

7. Replace the cassette cover by doing the following steps:

   a. Slide the cover **(B)** into position on the cassette as shown in the following figure.

   b. While holding the cover latch **(A)** in the open position, place the cover over the pivot pin **(C)**.

   c. Release the cover latch to lock the cover into place.
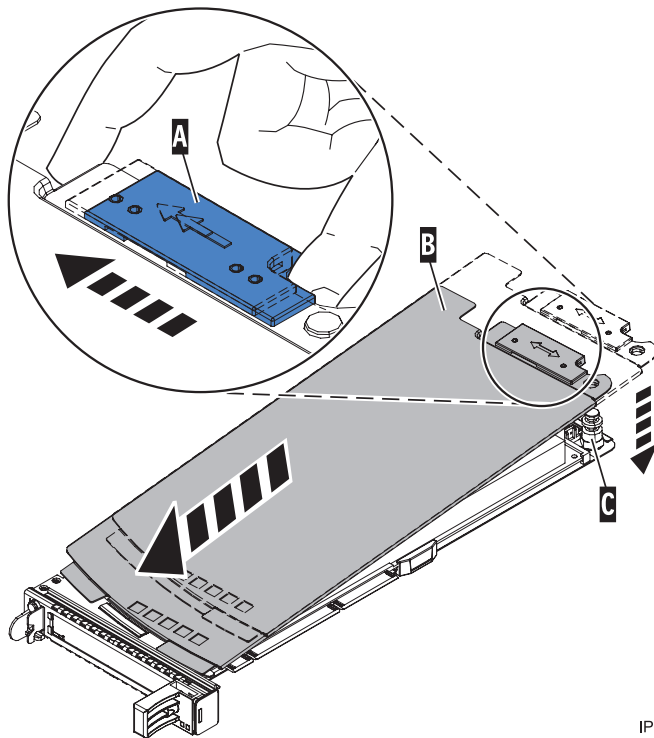
Figure 91. PCI adapter cassette cover replaced

Removing an adapter from the PCI adapter double-wide cassette

You can remove a PCI adapter from a double-wide cassette.

About this task

To remove an adapter from the cassette, do the following steps:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 114 and "Handling static-sensitive devices" on page 120.
3. Remove the PCI adapter contained in a cassette from the system.
4. Remove any shipping handles or brackets attached to the adapter.
5. Remove the cassette cover by doing the following steps:
   a. Slide the cover latch **(A)** to disengage it from the pivot pin **(C)** as shown in the following figure.
   b. Lift the cover **(B)** off of the pivot pin.
   c. Slide the cover off of the cassette.

Figure 92. PCI adapter cassette cover removed

    d. Unscrew pivot pin **(C)** and put it in a safe place

6. Remove the adapter from the cassette by doing the following steps:

    a. Unlock the adapter retainers **(B)** by rotating the retainer clips **(A)** into the horizontal position. See Figure 93 on page 100. If you are removing a PCIe RAID and SSD SAS adapter, see Figure 94 on page 100.

    Notes:

    1) The edge of the adapter located at the end of the cassette that contains the cassette handles is called the adapter *tailstock*.

    2) 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.

    3) When the retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide away from the card.

    4) If the corner support retainer is used, unlock it, and then slide the corner support retainer away from the card.

    b. Push the adapter retainers **(B)** away from the adapter.

    c. Unlock the adapter tailstock clamp **(A)**.

    d. 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.

    e. Lift the adapter out of the tailstock retaining channel **(C)**.
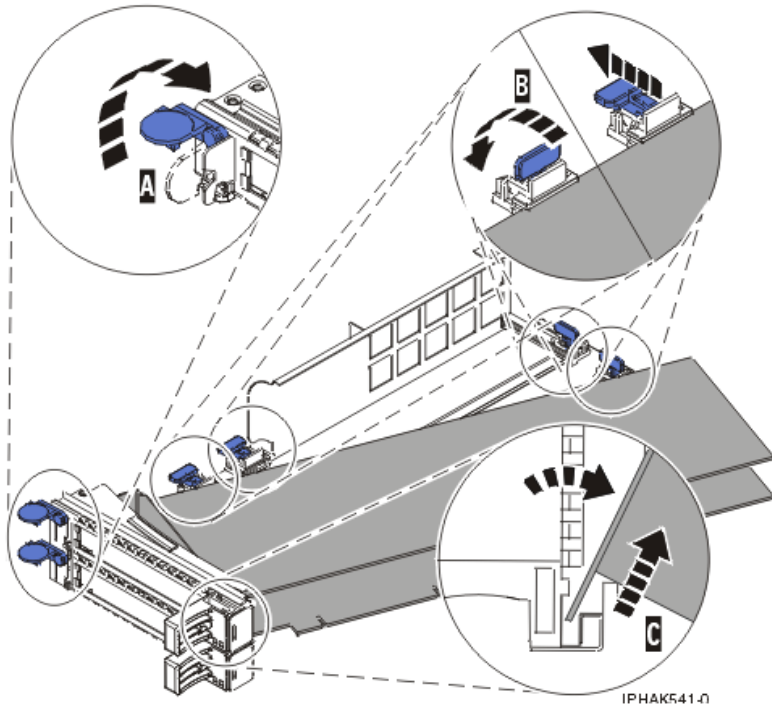
Figure 93. Adapter removed from the PCI adapter cassette
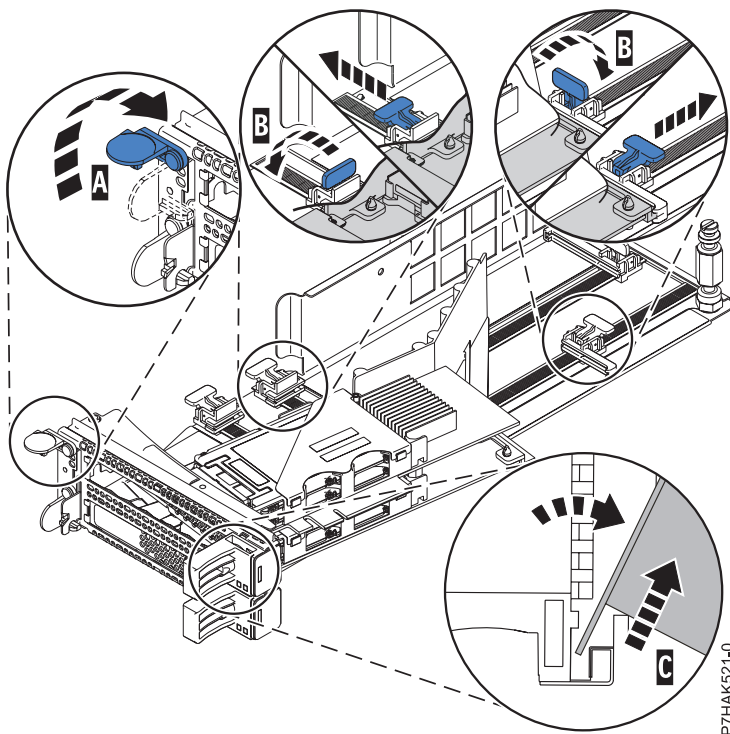
Figure 94. PCIe RAID and SSD SAS adapter removed from the PCI adapter cassette

    f. Put the adapter in a safe place.

    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.

g. Place the adapter in the PCI adapter double-wide cassette. For information, see "Placing an adapter in the PCI adapter double-wide cassette."

   Note: If the cassette is not going to contain a PCI adapter, use this same procedure to place an adapter filler panel in the cassette.

h. Replace the cassette cover by doing the following steps:

   1) Screw pivot pin **(C)** into place.
   2) Slide the cover **(B)** into position on the cassette.
   3) While holding the cover latch **(A)** in the open position, place the cover over the pivot pin **(C)**.
   4) Release the cover latch to lock the cover into place.
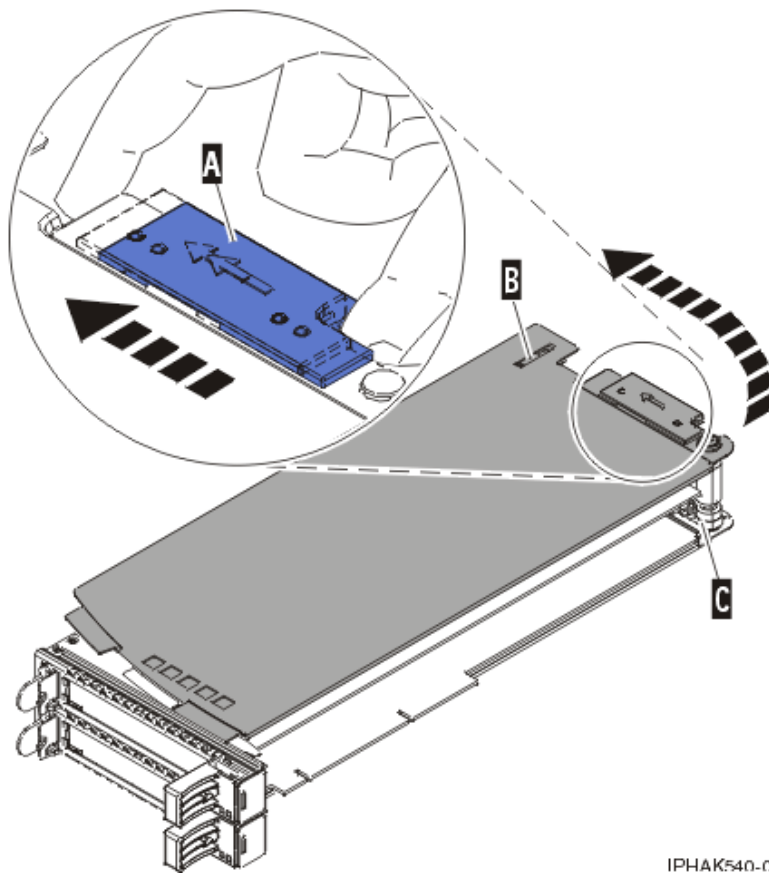
Figure 95. PCI adapter cassette cover replaced

Placing an adapter in the PCI adapter double-wide cassette

You can place a PCI adapter in a double-wide cassette.

About this task

To place an adapter in a cassette, do the following steps:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 106.
2. Remove the PCI adapter contained in a cassette from the system.
3. Remove the cassette cover by doing the following steps:

   a. Slide the cover latch **(A)** to disengage it from the pivot pin **(C)** as shown in the following figure.

b. Lift the cover **(B)** off of the pivot pin.
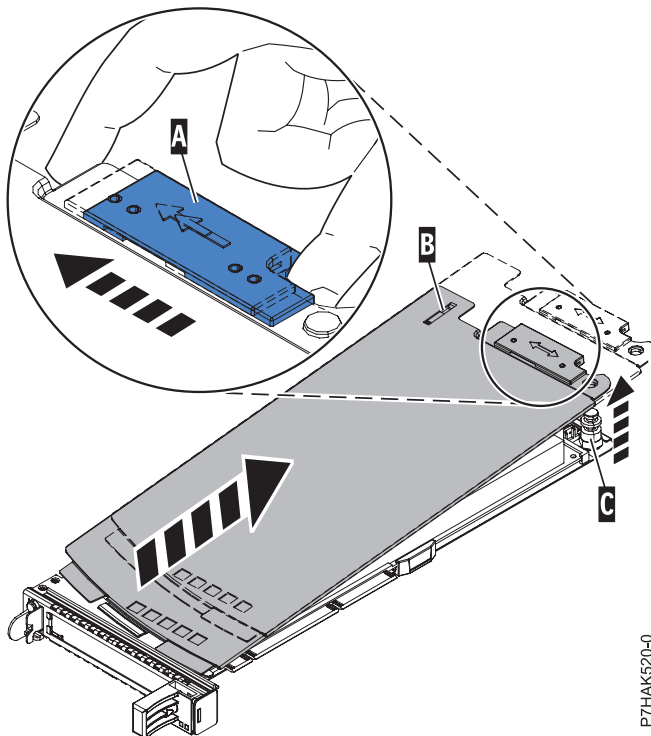
c. Slide the cover off of the cassette.
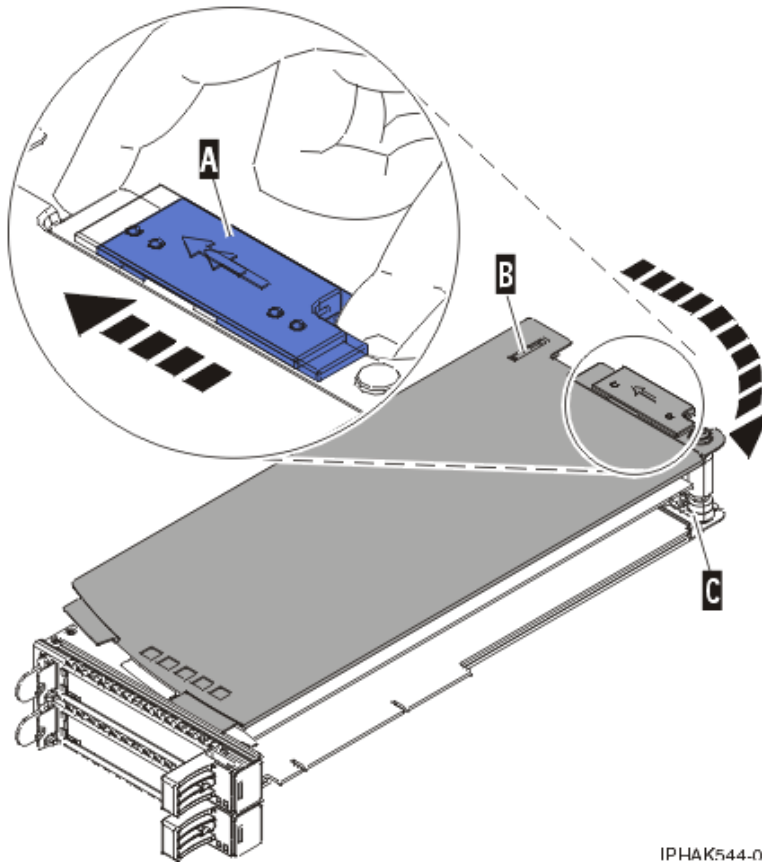
Figure 96. PCI adapter cassette cover removed

d. Unscrew pivot pin **(C)** and put it in a safe place.

4. Ensure the cassette is prepared to receive an adapter by doing the following steps:

   a. Ensure the cassette is empty by doing one of the following steps:

      • Remove the adapter from the PCI adapter double-wide cassette. For information, see "Removing an adapter from the PCI adapter double-wide cassette" on page 98.

      • Remove the adapter filler panel from the cassette.

   b. Ensure that all of the adapter retainers have been pushed out to the edges of the cassette to allow the placement of the adapter.

   c. Place the tailstock clamp in the open position by pressing the cassette handle towards the retainer clip.

5. If necessary, remove the new adapter from the antistatic package.

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

6. Place the new adapter, component-side up, on a flat, static-protective surface.

7. For PCIe RAID and SSD SAS adapters, install the new air dam onto the new adapter.

   a. Slide the air dam **(A)** between the two cards and align the three holes in the air dam with the three holes on the card edges. See the following figure.

   b. Insert the three plastic rivets **(B)** into the card and air dam holes.

   c. Insert the three plastic push pins **(C)** into the three plastic rivets.

d. Label the location of each solid state disk (SSD) while you transfer the SSDs from the replaced adapter to the same location on the new adapter you are installing. For information about replacing SSDs, see Replacing an SSD module on the PCIe RAID and SSD SAS adapter. Repeat this step for each SSD.
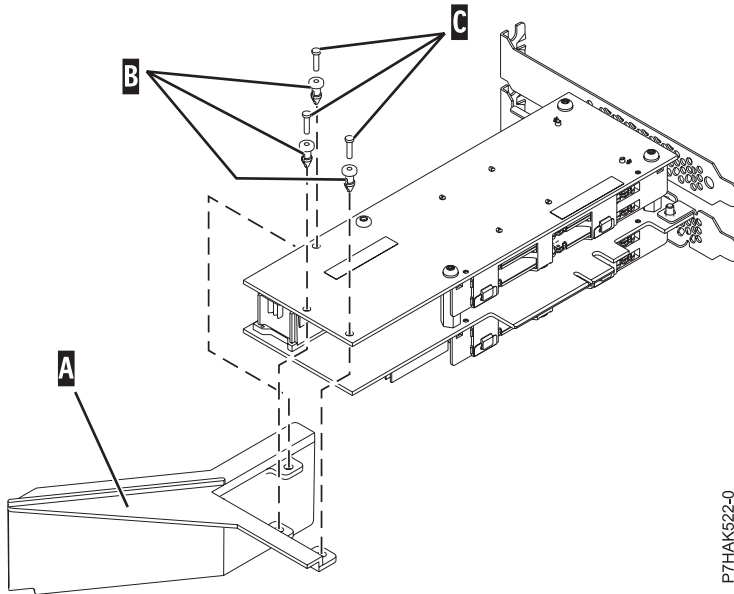
Figure 97. Installing an air dam onto the new PCIe RAID and SSD SAS adapter

8. Place the adapter in the cassette by doing the following steps:
   a. With the tailstock clamp in the open position, insert the adapter firmly into the tailstock retaining channel **(A)**. For a typical PCI adapter, see Figure 98 on page 104. For a PCIe RAID and SSD SAS adapter, see Figure 99 on page 104.
   b. Rotate the adapter toward the top of the cassette and into place.
   c. Close the tailstock clamp **(C)**.
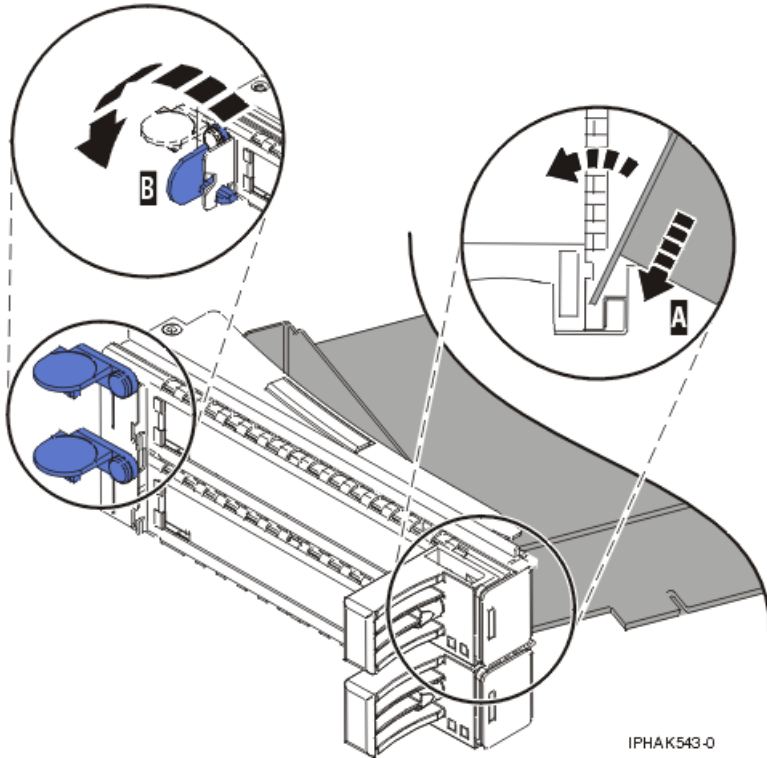
Figure 98. Adapter replaced in the PCI adapter cassette
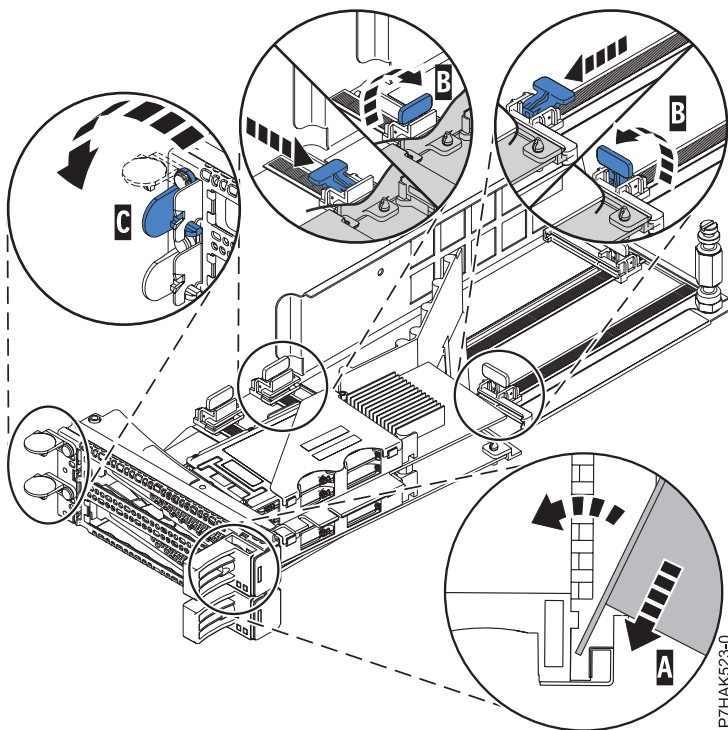
Figure 99. Replacing a PCIe RAID and SSD SAS adapter into the PCI adapter cassette

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

Notes:

1) 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.

2) When the adapter retainer clip is in the horizontal position, the adapter retainers are unlocked and can slide toward the adapter.

3) Place and lock the retainers **(B)**. See Figure 100.

   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.

4) 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.

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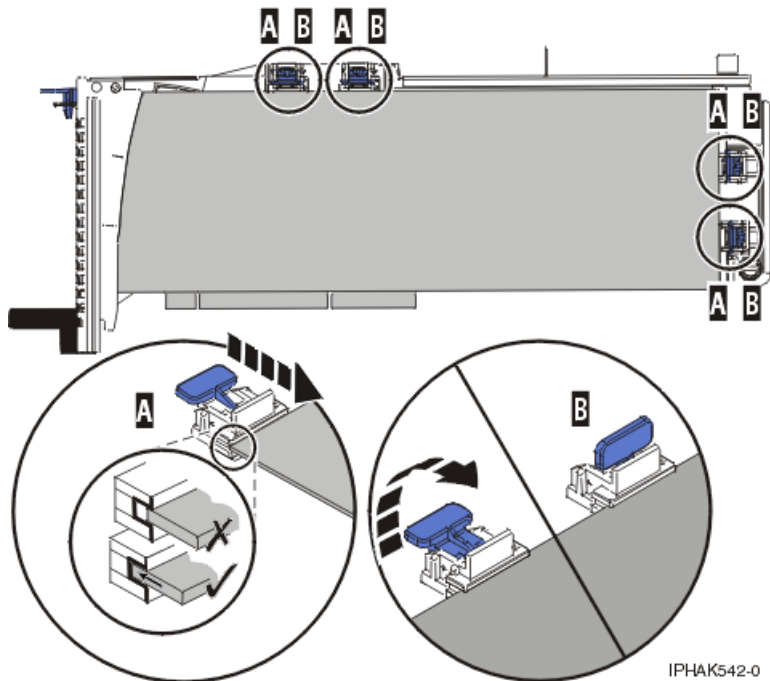
Figure 100. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

9. After the retainers are placed, replace the cassette cover by doing the following steps:
   a. Screw pivot pin **(C)** into place.
   b. Slide the cover **(B)** into position on the cassette as shown in the following figure.
   c. While holding the cover latch **(A)** in the open position, place the cover over the pivot pin **(C)**.
   d. Release the cover latch to lock the cover into place.
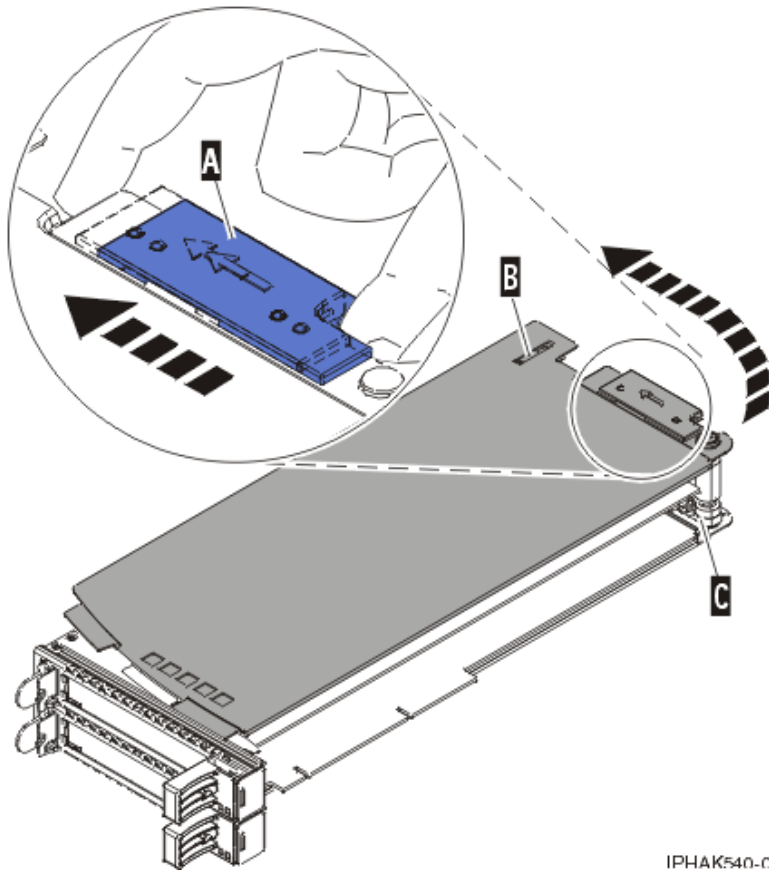
Figure 101. PCI adapter cassette cover replaced

10. Replace the PCI adapter contained in a cassette in 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.

Related procedures for installing and removing PCI adapters for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C

These procedures are related to installing and removing PCI adapters.

Before you begin

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

About this task

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

DANGER

When working on or around the system, observe the following precautions:
 	
Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:
• **Connect power to this unit only with the provided power cord. Do not use the 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.**
 	
   (D005a)

DANGER

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

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

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

CAUTION

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

(R001)

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

Procedure

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

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

5. Ensure that you have access to a medium flat-blade screwdriver, a Phillips screwdriver, and a pair of scissors.

6. If parts are incorrect, missing, or visibly damaged, do the following:
   - If you are replacing a part, contact the provider of your parts or next level of support.
   - If you are installing a feature, contact one of the following service organizations:
     – The provider of your parts or next level of support.

7. If you encounter difficulties during the installation, contact your service provider, or your next level of support.

8. If you are installing new hardware in a logical partition, you need to understand and plan for the implications of partitioning your system. For information, see Logical Partitioning.

Identifying a failing part for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C

Use these instructions to learn how to identify the location of a failed part, the location of a part to be removed, or the location to install a new part on your system or expansion unit using the appropriate method for your system.

About this task

For systems servers that contain the POWER7® processor, the light-emitting diodes (LEDs) can be used to identify or verify the location of a part that you are removing, servicing, or installing.

The combination identify and fault LED (amber color) shows the location of a field replaceable unit (FRU). When removing a FRU, first verify whether you are working on the correct FRU by using the identify function in the management console or other user interface. When removing a FRU by using the hardware management console, the identify function is activated and deactivated automatically at the correct times.

The identify function causes the amber LED to flash. When you turn off the identify function, the LED returns to the state it was previously. For parts that have a blue service button, the identify function sets LED information for the service button so that when the button is pressed, the correct LEDs on that part flash.

If you need to use the identify function, use the following procedures.

Control panel LEDs

Use this information as a guide to the control panel LEDs and buttons.

The control panel has LEDs that indicate various system status.
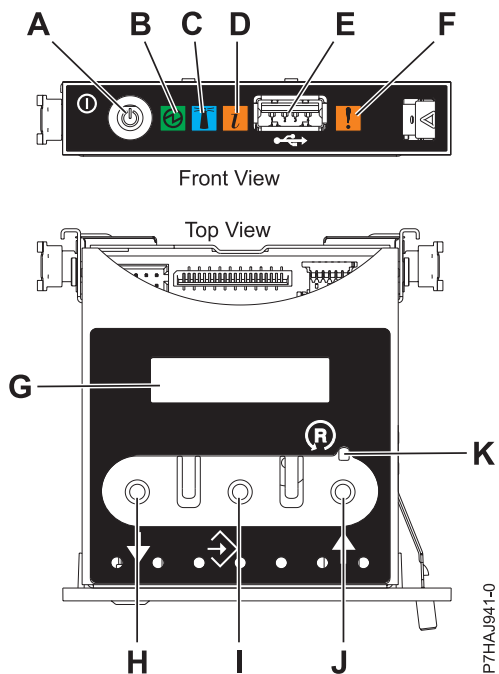
Figure 102. Control panel

- **A**: Power-on button
- **B**: Power LED
  - A constant light indicates full system power to the unit.
  - A flashing light indicates standby power to the unit.

  Note: There is approximately a 30-second transition period from the time the power-on button is pressed to when the power LED goes from flashing to solid. During the transition period, the LED might flash faster.
- **C**: Enclosure identify light
  - A constant light indicates the identify state, which is used to identify a part.
  - No light indicates that the system is operating normally.
- **D**: System information light
  - No light indicates that the system is operating normally.
  - Light on indicates that the system requires attention.
- **E**: USB port
- **F**: Enclosure fault roll-up light
  - A constant light indicates a fault in the system unit.
  - No light indicates that the system is operating normally.
- **G**: Function/Data display
- **H**: Decrement button
- **I**: Enter button
- **J**: Increment button
- **K**: Pinhole reset button

Related concepts:

Identifying a failing part
Use these instructions to learn how to locate and identify a failing part on your system or expansion unit using the appropriate method for your system.

Identifying a failing part in an AIX system or logical partition

Use these instructions to learn how to locate a failing part, and then activate the indicator light for that part on a system or logical partition running the AIX® operating system.

Locating a failing part in an AIX system or logical partition:

You might need to use AIX tools, before activating the indicator light, to locate a part that is failing.

Procedure

1. Log in as root user or `celogin-`.
2. At the command line, type `diag` and press Enter.
3. From the Function Selection menu, select **Task Selection** and press Enter.
4. Select **Display Previous Diagnostic Results** and press Enter.
5. From the Display Previous Diagnostic Results display, select **Display Diagnostic Log Summary**. The Display Diagnostic Log display shows a chronological list of events.
6. Look in the **T** column for the most recent **S** entry. Select this row in the table and press Enter.
7. Select **Commit**. The details of this log entry are shown.
8. Record the location information and the SRN value shown near the end of the entry.
9. Exit to the command line.

What to do next

Use the location information for the failing part to activate the indicator light that identifies the failing part. See "Activating the indicator light for the failing part."

Activating the indicator light for the failing part:

Use these instructions to help physically identify the location of a part you are servicing.

About this task

To activate the indicator light for a failing part, complete the following steps:

Procedure

1. Log in as root user.
2. At the command line, type `diag` and press Enter.
3. From the **Function Selection** menu, select **Task Selection** and press Enter.
4. From the **Task Selection** menu, select **Identify and Attention Indicators** and press Enter.
5. From the list of lights, select the location code for the failing part and press Enter.
6. Select **Commit**. This turns on the system attention and indicator light for the failing part.
7. Exit to the command line.

Deactivating the failing-part indicator light:

Use this procedure to turn off any indicator light that you turned on as a part of a service action.

About this task

To deactivate the indicator light, complete the following steps:

Procedure

1. Log in as root user.
2. At the command line, type `diag` and press Enter.
3. From the **Function Selection** menu, select **Task Selection** and press Enter.
4. From the **Task Selection** menu, select **Identify and Attention Indicators** and press Enter.
5. From the list of lights, select the location code for the failing part and press Enter. When a light is activated for a failing part, an I character precedes the location code.
6. Select **Commit**. This turns off the system attention and indicator light for the failing part.
7. Exit to the command line.

Identifying a failing part in a Linux system or logical partition

If the service aids have been installed on a system or logical partition, you can activate or deactivate the indicator lights to locate a part or complete a service action.

Locating a failing part in a Linux system or logical partition:

If the service aids have been installed on a system or logical partition, you need to activate the indicator lights to locate a part.

About this task

To activate the indicator light, follow these steps:

Procedure

1. Log in as root user.
2. At the command line, type `/usr/sbin/usysident -s identify -l` *location_code* and press Enter.
3. Look for the system attention light to identify the enclosure that contains the failing part.

Finding the location code of a failing part in a Linux system or logical partition:

To retrieve the location code of the failing part, if you do not know the location code, use the procedure in this topic.

About this task

To locate the failing part in a system or logical partition, follow these steps:

Procedure

1. Log in as root user.
2. At the command line, type `grep diagela /var/log/platform` and press Enter.
3. Look for the most recent entry that contains a system reference code (SRC).
4. Record the location information.

Activating the indicator light for the failing part:

If you know the location code of the failing part, activate the indicator light to help you locate which part to replace.

About this task

To activate the indicator light, follow these steps:

Procedure

1. Log in as root user.
2. At the command line, type `/usr/sbin/usysident -s identify -l` *location_code* and press Enter.
3. Look for the system attention light to identify the enclosure that contains the failing part.

Deactivating the failing-part indicator light:

After you complete a removal and replacement procedure, you must deactivate the failing-part indicator light.

About this task

To deactivate the indicator light, follow these steps:

Procedure

1. Log in as root user.
2. At the command line, type `/usr/sbin/usysident -s normal -l` *location_code* and press Enter.

Locating a failing part in a Virtual I/O Server system or logical partition

You can use Virtual I/O Server (VIOS) tools, before activating the indicator light, to locate a part that is failing.

About this task

To locate the failing part, follow these steps:

Procedure

1. Log in as root user or `celogin-`.
2. At the command line, type `diagmenu` and press Enter.
3. From the **Function Selection** menu, select **Task Selection** and press Enter.
4. Select **Display Previous Diagnostic Results** and press Enter.
5. From the **Display Previous Diagnostic Results** display, select **Display Diagnostic Log Summary**. A **Display Diagnostic Log** display appears. This display contains a chronological list of events.
6. Look in the **T** column for the most recent **S** entry. Select this row in the table and press Enter.
7. Choose **Commit**. The details of this log entry are shown.
8. Record the location information and the SRN value shown near the end of the entry.
9. Exit to the command line.

Results

Use the location information for the failing part to activate the indicator light that identifies the failing part. For instructions, see "Identifying a part by using the Virtual I/O Server."

Identifying a part by using the Virtual I/O Server:

You can use Virtual I/O Server (VIOS) tools to physically locate a part.

About this task

To turn on the indicator light for identifying a part, follow these steps:

Procedure
1. Log in as root user.
2. At the command line, type diagmenu and press Enter.
3. From the **Function Selection** menu, select **Task Selection** and press Enter.
4. From the **Task Selection** menu, select **Identify and Attention Indicators** and press Enter.
5. From the list of lights, select the location code for the failing part and press Enter.
6. Select **Commit**. This turns on the system attention and indicator light for the failing part.
7. Exit to the command line.

Safety notices

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

World Trade safety information

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

German safety information

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

Laser safety information

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

Laser compliance

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

DANGER

When working on or around the system, observe the following precautions:
 	
Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:
• **Connect power to this unit only with the provided power cord. Do not use the 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.
 	
    (D005a)

DANGER

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

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

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

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

(R001)

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

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

(R002)

(L001)

(L002)

(L003)

or

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

CAUTION:
This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:
- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**

(C026)

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

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

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

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

Do Not:
- **___ Throw or immerse into water**
- **___ Heat to more than 100°C (212°F)**
- **___ Repair or disassemble**

Exchange only with the approved part. Recycle or discard the battery as instructed by local regulations. (C003a)

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.

Related tasks:

"Installing, removing, and replacing PCI adapters" on page 1
Learn about installing, removing, and replacing Peripheral Component Interconnect (PCI), PCI-X, and PCI Express (PCIe) adapters.

Handling static-sensitive devices

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

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

- Attach a wrist strap to an unpainted metal surface of your hardware to prevent electrostatic discharge from damaging your hardware.
- When using a wrist strap, follow all electrical safety procedures. A wrist strap is for static control. It does not increase or decrease your risk of receiving electric shock when using or working on electrical equipment.
- If you do not have a wrist strap, just prior to removing the product from ESD packaging and installing or replacing hardware, touch an unpainted metal surface of the system for a minimum of 5 seconds.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system.
- With the device still in its antistatic bag, touch it to the metal frame of the system.
- Grasp cards and boards by the edges. Avoid touching the components and gold connectors on the adapter.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system at the same time.
- Handle the devices carefully to prevent permanent damage.

Shutting down logical partitions

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

Before you begin

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

About this task

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

- Operating System (recommended)
- Delayed
- Immediate

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

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

- Shutting down the logical partitions is equivalent to pressing and holding the white control-panel power button on a server that is not partitioned.

- Use this procedure only if you cannot successfully shut down the logical partitions through operating system commands. When you use this procedure to shut down the selected logical partitions, the logical partitions wait a predetermined amount of time to shut down. This allows the logical partitions time to end jobs and write data to disks. If the logical partition is unable to shut down within the predetermined amount of time, it ends abnormally, and the next restart might take a long time.

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

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

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

Updating the worldwide port name for a new 2766, 2787, 280E, 5735, 576B, or 5774 IOA.

If you have exchanged a 2766, 2787, 280E, 5735, 576B, or 5774 Fibre Channel Input/Output Adapter (IOA), the external storage subsystem must be updated to use the worldwide port name (WWPN) of the new 2766, 2787, 280E, 5735, 576B, or 5774 IOA. Any SAN hardware using WWPN zoning might also need updating.

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

The WWPN for the Fibre Channel IOA can be found using the Hardware Service Manager in system service tools (SST) or dedicated service tools (DST). Display detail on the 2766, 2787, 280E, 5735, 576B, or 5774 IOA Logical Hardware Resource information, and use the port worldwide name field.

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

Starting the system or logical partition

Learn how to start a system or logical partition after performing a service action or system upgrade.

Starting a system that is not managed by a HMC or an SDMC

You can use the power button or the Advanced System Management Interface (ASMI) to start a system that is not managed by a Hardware Management Console (HMC) or an Systems Director Management Console (SDMC).

About this task

To start a system that is not managed by a HMC or SDMC, follow these steps:

Procedure

1. Open the front rack door, if necessary.

2. Before you press the power button on the control panel, ensure that power is connected to the system unit as follows:

   - All system power cables are connected to a power source.
   - The power LED, as shown in the following figure, is slowly flashing.
   - The top of the display, as shown in the following figure, shows 01 V=F.

3. Press the power button **(A)**, as shown in the following figure, on the control panel.
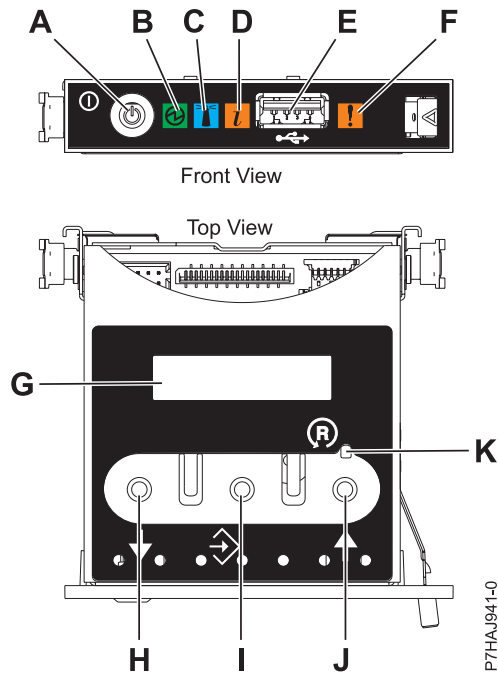
Figure 103. Control panel

- **A**: Power-on button
- **B**: Power LED
  - A constant light indicates full system power to the unit.
  - A flashing light indicates standby power to the unit.

  Note: There is approximately a 30-second transition period from the time the power-on button is pressed to when the power LED goes from flashing to solid. During the transition period, the LED might flash faster.

- **C**: Enclosure identify light
  - A constant light indicates the identify state for the enclosure or for a resource within the enclosure.
  - No light indicates that no resources in the enclosure are being identified.

- **D**: Attention light
  - No light indicates that the system is operating normally.
  - A solid light indicates that the system requires attention.

- **E**: USB port
- **F**: Enclosure fault roll-up light
  - A constant light indicates a fault indicator active in the system.

– No light indicates that the system is operating normally.
  - **G**: Function/Data display
  - **H**: Decrement button
  - **I**: Enter button
  - **J**: Increment button
  - **K**: Pinhole reset button
4. Observe the following aspects after pressing the power button:
  - The power-on light begins to flash faster.
  - The system cooling fans are activated after approximately 30 seconds and begin to accelerate to operating speed.
  - Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. The power-on light on the control panel stops flashing and remains on, indicating that the system power is on.

What to do next

Tip: If pressing the power button does not start the system, do the following steps to start the system by using the Advanced System Management Interface (ASMI):
1. Access the ASMI. For instructions, see Accessing the ASMI without an HMC.
2. Start the system by using the ASMI. For instructions, see Powering the system on and off.

Starting a system or logical partition by using the HMC

You can use the Hardware Management Console (HMC) to start the system or logical partition after the required cables are installed and the power cables are connected to a power source.

About this task

For instructions on working with the HMC, see Managing the Hardware Management Console. For instructions on starting a logical partition, see Logical partitioning. For instructions on starting the system, see Powering on the managed system.

Progress indicators, also referred to as checkpoints, appear on the control panel display while the system is being started. When the power-on light on the control panel stops blinking and remains on, the system power is on.

Starting a system or virtual server by using the SDMC

You can use the Systems Director Management Console (SDMC) to start the system or virtual server after the required cables are installed and the power cables are connected to a power source.

About this task

For instructions on working with the SDMC, see Managing and configuring the SDMC. For instructions on starting a virtual server, see Managing virtual servers. For instructions on shutting down and restarting virtual servers, see Shutting down and restarting virtual servers.

Progress indicators, also known as checkpoints, display on the control panel while the system is being started. When the power-on light on the control panel stops flashing and remains on, the system power is on.

Stopping a system or logical partition

Learn how to stop a system or logical partition as a part of a system upgrade or service action.

About this task

Attention: Using either the power-on button on the control panel or entering commands at the Hardware Management Console (HMC) to stop the system can cause unpredictable results in the data files. Also, the next time you start the system, it might take longer if all applications are not ended before stopping the system.

To stop the system or logical partition, select the appropriate procedure.

Stopping a system that is not managed by an HMC or an SDMC

You might need to stop the system to perform another task. If your system is not managed by the Hardware Management Console (HMC) or the Systems Director Management Console (SDMC), use these instructions to stop the system by using the power button or the Advanced System Management Interface (ASMI).

Before you begin

Before you stop the system, follow these steps:

1. Ensure that all jobs are completed and end all applications.
2. Ensure that the operating system is stopped.

   Attention: Failure to do so can result in the loss of data.
3. If a Virtual I/O Server (VIOS) logical partition is running, ensure that all clients are shut down or that the clients have access to their devices by using an alternate method.

About this task

The following procedure describes how to stop a system that is not managed by the HMC or the SDMC.

Procedure

1. Log in to the system as a user with the authority to run the **shutdown** or **pwrdwnsys** (Power Down System) command.
2. At the command line, enter one of the following commands:
   - If your system is running the AIX operating system, type **shutdown**.
   - If your system is running the Linux operating system, type `shutdown -h now`.
   - If your system is running the operating system, type `PWRDWNSYS`. If your system is partitioned, use the PWRDWNSYS command to power down each of the secondary partitions. Then, use the PWRDWNSYS command to power down the primary partition.

   The command stops the operating system. The system power turns off, the power-on light begins to slowly flash, and the system goes into a standby state.
3. At the Linux command line, type `shutdown -h now`.

   The command stops the operating system. The system power turns off, the power-on light begins to slowly flash, and the system goes into a standby state.
4. Record the IPL type and the IPL mode from the control panel display to help you return the system to this state when the installation or replacement procedure is completed.
5. Set the power switches of any devices connected to the system to off.
6. Unplug any power cables that are attached to the unit from electrical outlets. Ensure that you unplug power cables from peripheral devices, such as printers and expansion units.

   Important: The system may be equipped with a second power supply. Before continuing with this procedure, ensure that all power sources to the system have been disconnected.

   (L003)
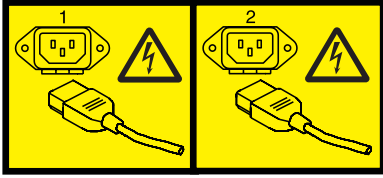
or

Stopping a system by using the HMC

You can use the Hardware Management Console (HMC) to stop the system or a logical partition.

About this task

By default, the managed system is set to power off automatically when you shut down the last running logical partition on the managed system. If you set the managed system properties on the HMC so that the managed system does not power off automatically, you must use this procedure to power off your managed system.

Attention: If possible, shut down the running logical partitions on the managed system before powering off the managed system. Powering off the managed system without shutting down the logical partitions first causes the logical partitions to shut down abnormally and can cause data loss. If you use a Virtual I/O Server (VIOS) logical partition, ensure that all clients are shut down or that the clients have access to their devices using an alternate method.

To power off a managed system, you must be a member of one of the following roles:
* Super administrator
* Service representative
* Operator
* Product engineer

Use the following steps to stop the system by using the HMC:

Procedure

1. In the navigation area, expand the **Systems Management** folder.
2. Click the **Servers** icon.
3. In the Contents area, select the managed system.
4. Select **Tasks** > **Operations** > **Power Off**.
5. Select the appropriate power-off mode and click **OK**.

Related information:

Shutting down and restarting logical partitions

Stopping a system by using the SDMC

You can use the Systems Director Management Console (SDMC) user interface to stop the system or a
virtual server.

About this task

By default, the managed system is set to power off automatically when you shut down the last running
virtual server on the managed system. If you set the managed system properties on the SDMC so that the
managed system does not power off automatically, you must use this procedure to power off your
managed system.

Attention: If possible, shut down the running virtual servers on the managed system before powering
off the managed system. Powering off the managed system without shutting down the virtual servers
first causes the virtual servers to shut down abnormally and can cause data loss. If you use a Virtual I/O
Server (VIOS) logical partition, ensure that all clients are shut down or that the clients have access to
their devices with an alternate method.

To power off a managed system, you must be a member of one of the following roles:
• Super administrator
• Service representative
• Operator
• Product engineer

Use the following steps to stop the system by using the SDMC.

Procedure

1. In the Power Systems™ Resource area, select the managed system you want to power off.
2. From the **Actions** menu, select **Operations** > **Power Off**.
3. Select the appropriate power-off mode and click **OK**.

Removing and replacing covers for the 02E/4B, 02E/4C, 05F/6B, or 05E/6C

Use these instructions to remove, replace, or install covers to access components or perform service.

Removing the front cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system

Use this procedure to remove the cover to access components or perform service.

About this task

To remove the front cover, follow these steps:

Procedure

1. Remove the two shipping screws (if present) that secure the system to the rack.

   Note: Replacing the shipping screws is optional but should be done in geographic areas that are prone to seismic activity.

2. Pull the cover away from the system. The cover has an indentation where you can hold onto it more easily.
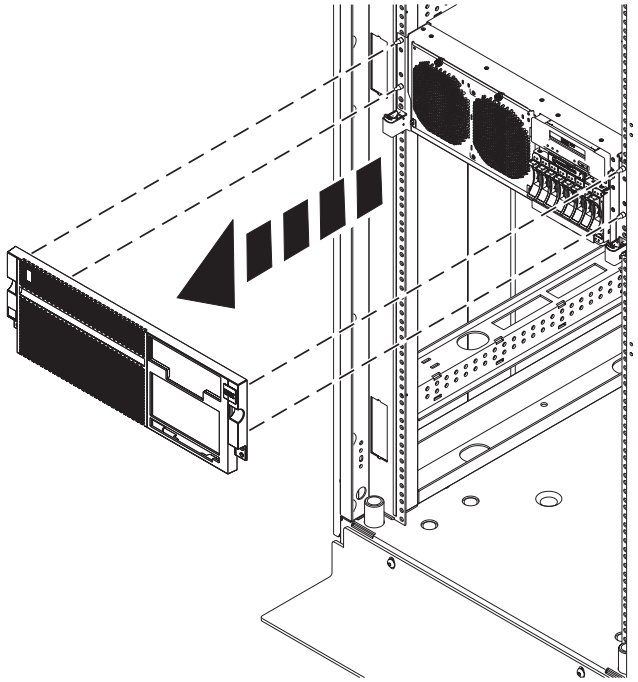
Figure 104. Removing the front cover

Removing the front cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system

Use this procedure to remove the cover to access components or perform service.

About this task

To remove the front cover, complete the following steps:

Procedure

1. Open the front door **(A)** by swinging it towards the left as shown in the following figure.
2. Press latch **(B)** and pull the cover away from the system. The cover has an indentation where you can hold onto it more easily.
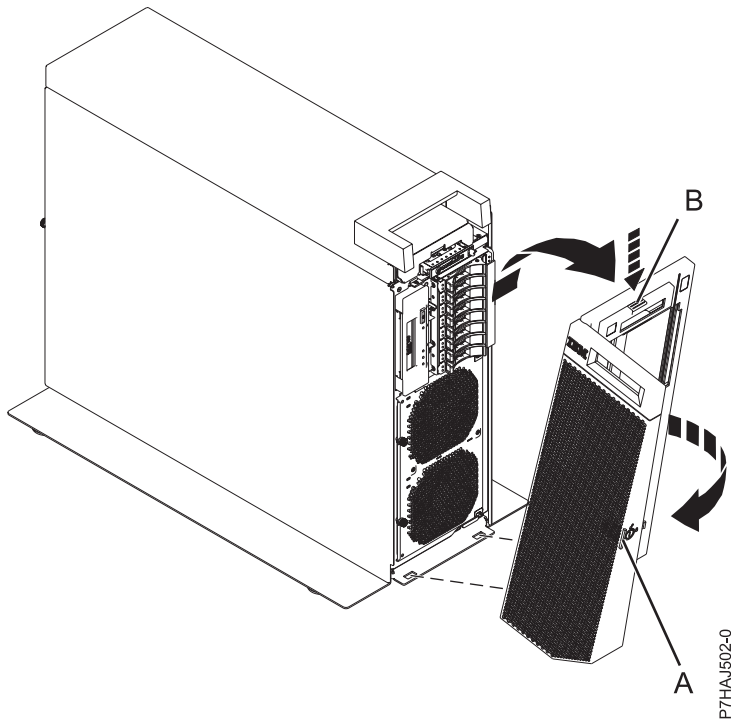
Figure 105. Removing the front cover

Installing the front cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system

Use this procedure to install the cover to access components or perform service.

About this task

To install the front cover, follow these steps:

Procedure

1. Push the cover onto the system.
2. Gently push the cover in until the four cover clips are seated in their respective mounting posts as shown in the following figure. The cover snaps into place and has an indentation where you can hold onto it more easily.

   Note: Replacing the shipping screws is optional but should be done in geographic areas that are prone to seismic activity.
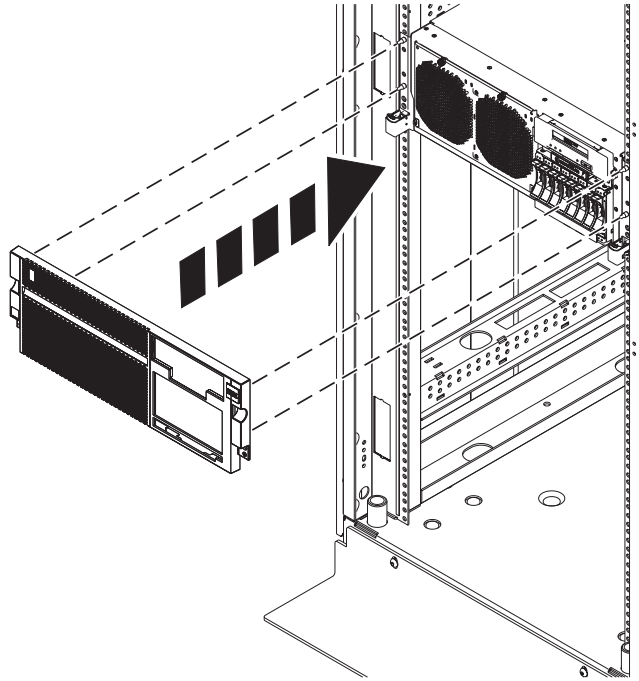
Figure 106. Removing the front cover

Installing the front cover and front door on a stand-alone 02E/4B, 02E/4C, or 05F/6B system

Use this procedure to install the cover to access components or perform service.

About this task

To install the front cover and front door, complete the following steps.

Procedure

1. Align the cover **(A)** until the two cover tabs are seated into the slots on the base plate **(B)**, as shown in the following figure.
2. Rotate the cover up and towards the system until the release latch is seated into its respective slot. The cover has an indentation where you can hold onto it more easily.
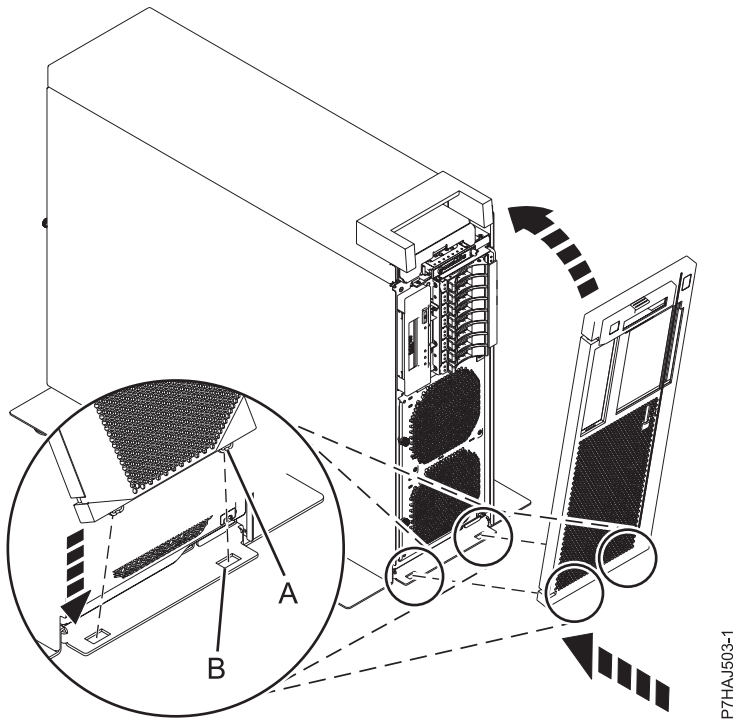
Figure 107. Installing the front cover

3. Hold the front door at an approximate 120 degree angle to the system as shown in the following figure. Engage the latches.
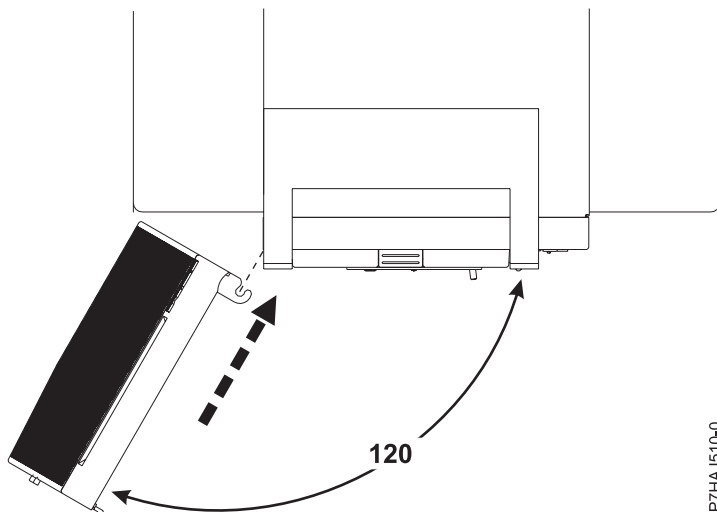
Figure 108. Installing the front door

Removing the service access cover from a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system

Use this procedure to remove the service access cover.

Procedure

1. Loosen the two thumbscrews **(A)** located at the rear of the cover.

2. Slide the cover toward the rear of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.

   Attention: When the service access cover is removed, the system powers down.
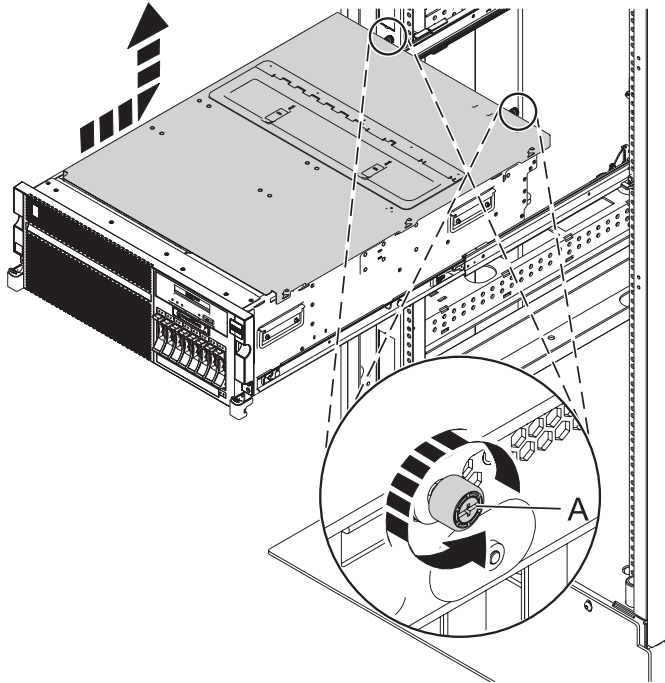
Figure 109. Removing the service access cover

Removing the service access cover from a stand-alone 02E/4B, 02E/4C, or 05F/6B system

Use this procedure to remove the service access cover.

Procedure

1. Loosen the thumbscrew **(A)** located at the rear of the outside cover.
2. Slide the cover **(B)** toward the rear of the system unit. When the front of the service access cover has cleared the upper frame ledge, lift the cover up and off the system unit.
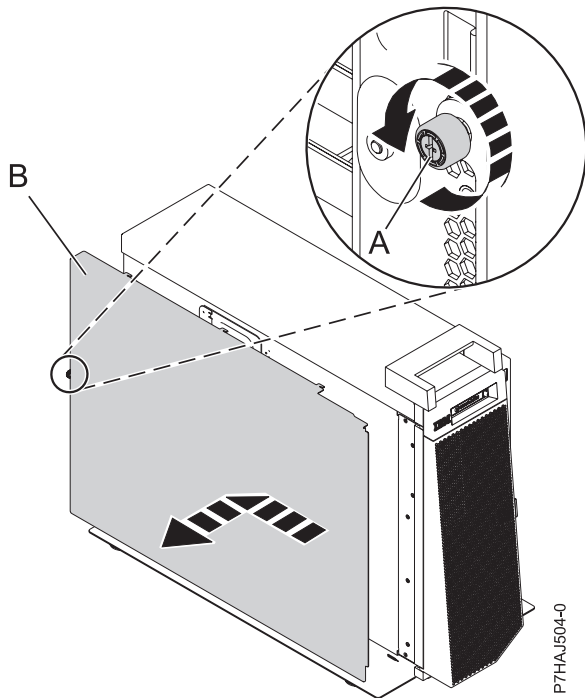
Figure 110. Installing the outside service access cover

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

   Attention: When the service access cover is removed, the system powers down.
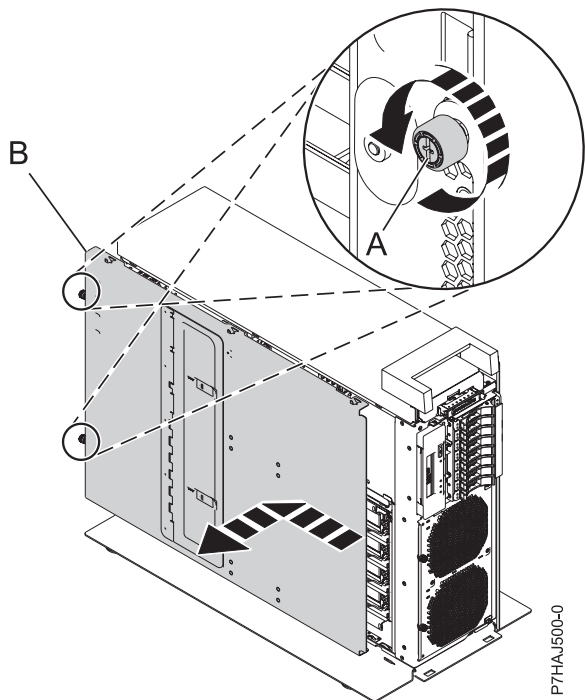
Figure 111. Removing the inside service access cover

Installing the service access cover on a rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system

Use this procedure to install the service access cover.

Procedure

1. Place the service access cover on top of the system, about 25 mm (1 in.) from the upper chassis ledge.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align the two thumbscrews **(A)** located on the rear of the service access cover with the two holes on the rear of the system chassis.
4. Tighten the thumbscrews to secure the service access cover.
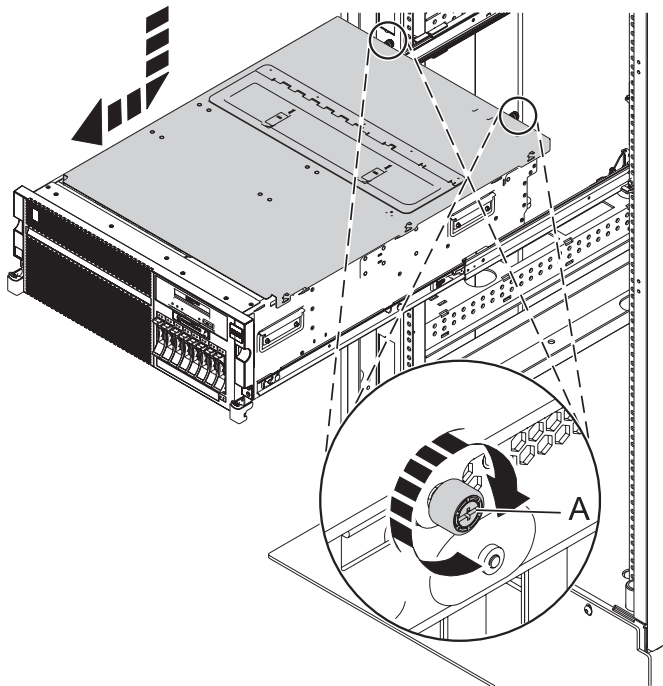
Figure 112. Installing the service access cover

Installing the service access cover on a stand-alone 02E/4B, 02E/4C, or 05F/6B system

Use this procedure to install the service access cover.

Procedure

1. Place the inside service access cover **(A)** on top of the system, about 25 mm (1 in.) from the upper chassis ledge.
2. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
3. Align the two thumbscrews **(B)** located on the rear of the service access cover with the two holes on the rear of the system chassis.
4. Tighten the thumbscrews to secure the service access cover.
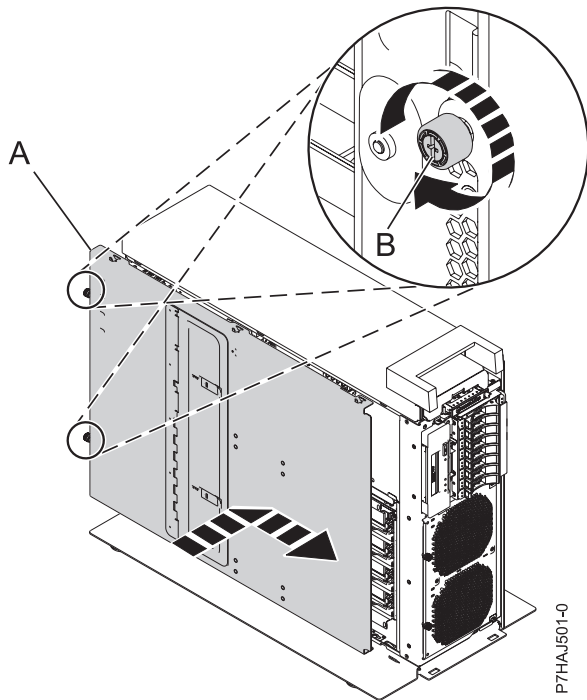
Figure 113. Installing the inside service access cover

5. Place the outside service access cover **(A)** on top of the system.
6. Hold the service access cover against the system unit and slide it toward the front of the system. The tabs of the service access cover slide beneath the upper chassis ledge.
7. Align the thumbscrew **(B)** located on the rear of the service access cover with the hole on the rear of the system chassis.
8. Tighten the thumbscrew to secure the service access cover.
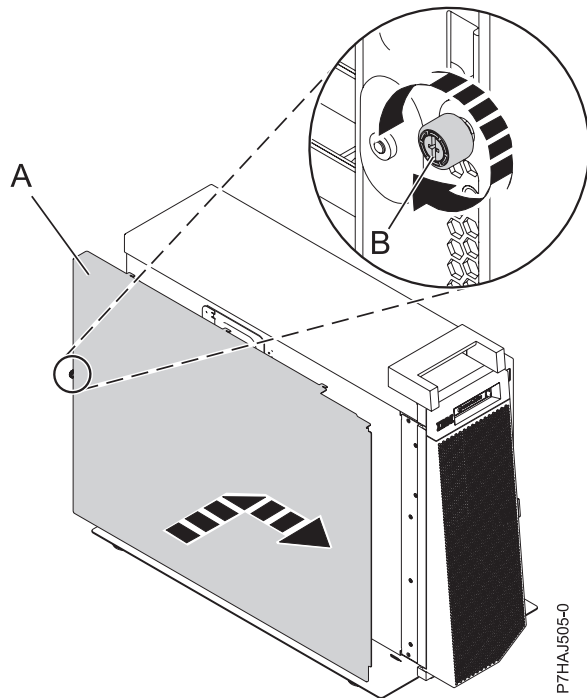
Figure 114. Installing the outside service access cover

Placing the 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service or operating position

Use these procedures to place a system into the service position or operating position to perform service or to gain access to internal components.

Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the service position

Use this procedure to place the rack-mounted system into the service position.

Before you begin

Notes:
- When placing the system into the service position, it is essential that all stability plates are firmly in position to prevent the rack from toppling. Ensure that only one system unit is in the service position at a time.
- Ensure that the cables at the rear of the system unit do not catch or bind as you pull the unit forward in the rack.
- When the rails are fully extended, the rail safety latches lock into place. This action prevents the system from being pulled out too far.

Procedure

1. Open the front rack door.
2. Identify the system unit you are servicing in the rack.
3. Remove the two screws **(A)** (if present) that secure the system unit **(B)** to the rack.

Note: Replacing the shipping screws is optional but should be done in geographic areas that are prone to seismic activity.
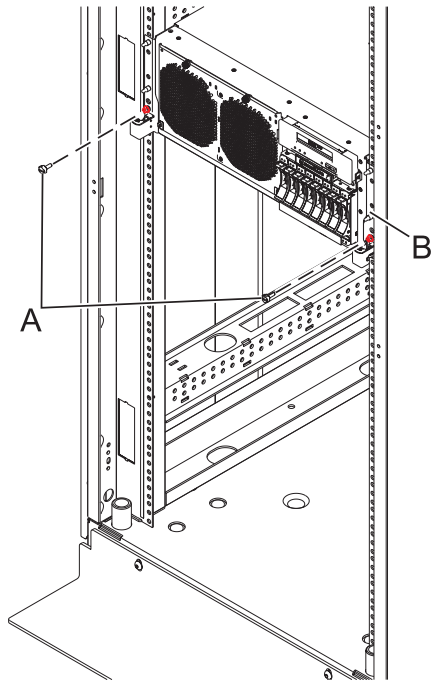
Figure 115. Placing the system unit in the service position

4. While holding the system unit release latches **(A)** down on both the left and right sides, pull the system unit **(B)** out from the rack until the rails are fully extended and locked.
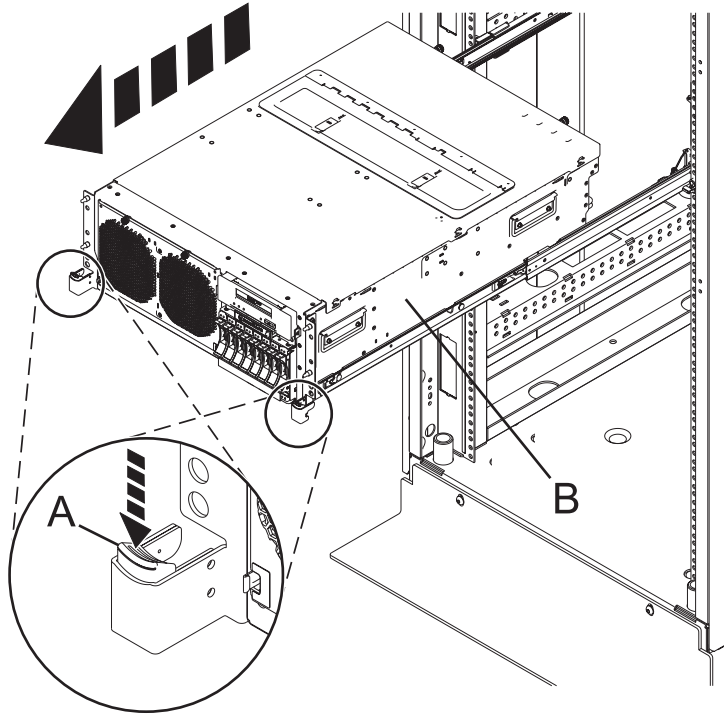
Figure 116. Locking the system unit in the service position

Placing the rack-mounted 02E/4B, 02E/4C, 05F/6B, or 05E/6C system into the operating position

Use this procedure to place the rack-mounted system into the operating position.

Before you begin

When placing the system into operating position, ensure that the cables at the rear of the system do not catch or bind as you push the system unit back into the rack.

Procedure

1. Unlock the blue rail safety latches **(A)** by lifting them upward. The rail safety latches are located near the middle of the system.
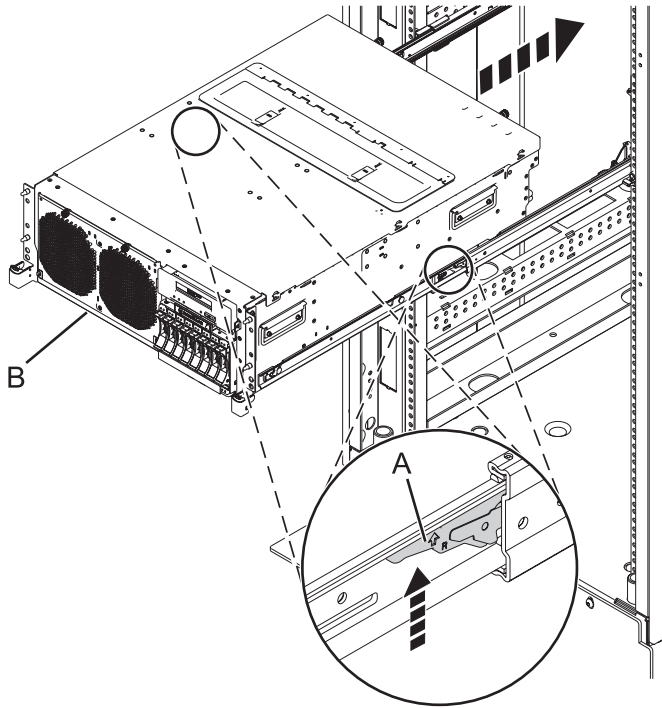
Figure 117. Placing the system unit into the operating position

2. Push the system unit **(B)** rear into the rack until both system-unit release latches have locked into position.

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

   Note: Replacing the two shipping screws is optional but should be done in geographic areas that are prone to seismic activity.

4. Close the front rack door of the unit you are servicing.
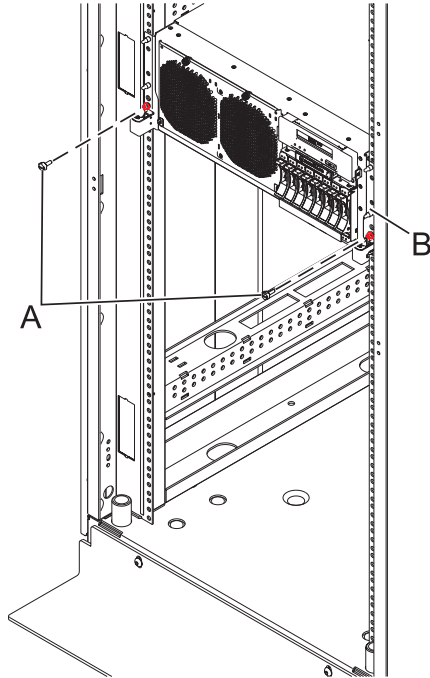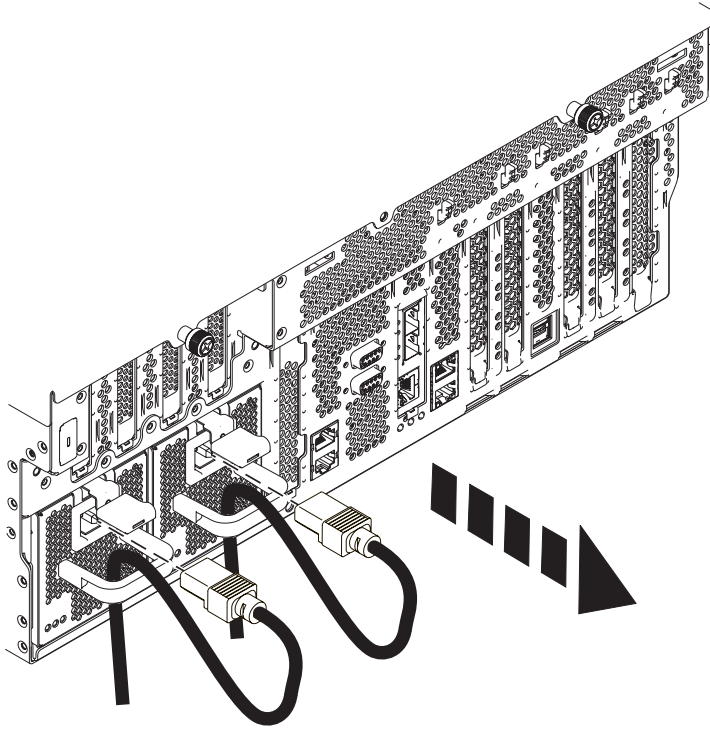
Figure 118. Placing the system unit into the operating position

Disconnecting the power cords from the 02E/4B, 02E/4C, 05F/6B, or 05E/6C system

Use these procedures to disconnect the power cords from the system.

Procedure

1. For a rack-mounted system, open the rear rack door on the unit you are servicing and identify the system unit you are servicing in the rack.
2. For both a rack-mounted system and a stand-alone system, disconnect all power cords from the unit you are servicing. This system might be equipped with two power supplies. Before continuing with any remove and replace procedures that require the power off, ensure that both power sources to the system have been completely disconnected.

Figure 119. Removing the power cords for a rack-mounted system
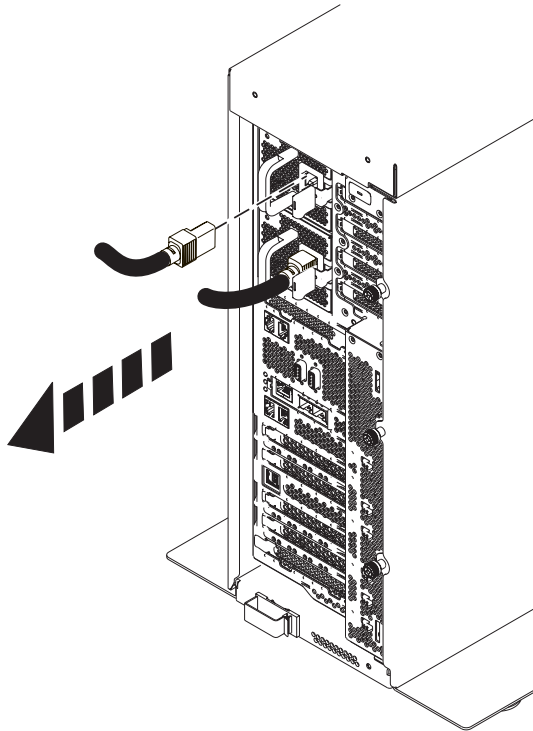
Figure 120. Removing the power cords for a stand-alone system

Connecting the power cords to the 02E/4B, 02E/4C, 05F/6B, or 05E/6C system

Use this procedure to connect the power cords to the system.

Procedure

1. Identify the system unit you are servicing in the rack.
2. Connect all power cords to the unit you are servicing. Ensure that the cords are threaded through the handles.
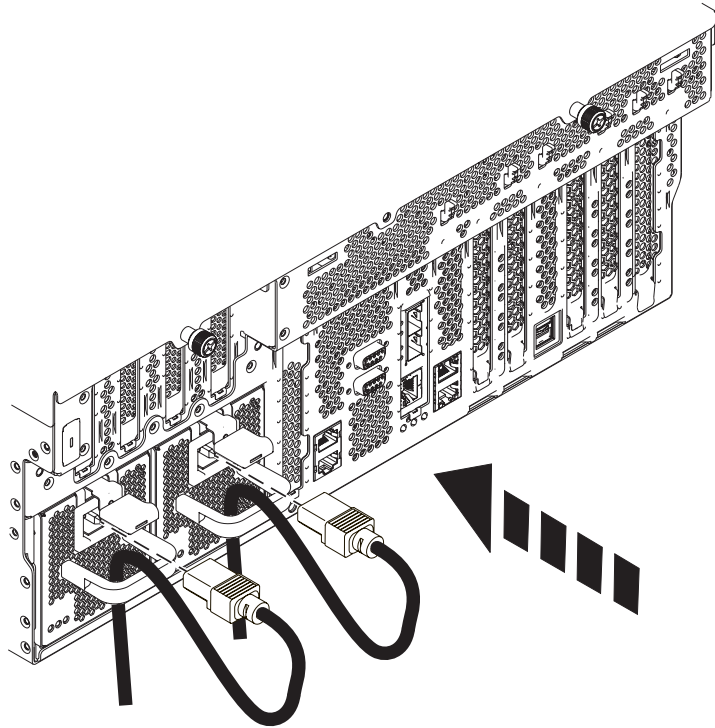
Figure 121. Connecting the power cords

3. Close the rear rack door.

Installing a part by using the HMC

You can use the Hardware Management Console (HMC) to perform many service actions, including the installation of a new feature or part.

Before you begin

To install a feature or part into a system or expansion unit that is managed by HMC Version 7, or later, complete the following steps:

Procedure

1. In the navigation area, expand **Systems Management** > **Servers**.
2. Select the managed system on which you will install the part.

Note: If your part is in a miscellaneous equipment specification (MES), continue with step 3. If your part is contained in the install done by the software sales representative (SSR) or in a ship group, go to step 8.

3. In the Tasks area, expand **Serviceability** > **Hardware** > **MES Tasks** > **Open MES**.
4. Click **Add MES Order Number**.
5. Enter the number, and click **OK**.
6. Click the newly created order number, and click **Next**. The details of the order number are displayed.
7. Click **Cancel** to close the window.
8. In the Tasks area, expand **Serviceability** > **Hardware** > **MES Tasks**.
9. Select **Add FRU** (field replaceable unit).
10. In the Add/Install/Remove Hardware-Add FRU, Select FRU Type window, select the system or enclosure into which you are installing the feature.
11. Select the type of feature you are installing, and click **Next**.
12. Select the location code where you will install the feature, and click **Add**.
13. After the part is listed in the **Pending Actions** section, click **Launch Procedure** and follow the instructions to install the feature.

Note: The HMC might open external instructions for installing the feature. If so, follow those instructions to install the feature.

Removing a part by using the HMC

You can use the Hardware Management Console (HMC) to perform many service actions, including the removal of a field replaceable unit (FRU) or part.

About this task

To remove a part in a system or expansion unit that is managed by HMC Version 7, or later, complete the following steps:

Procedure

1. In the navigation area, expand **Systems Management** > **Servers**.
2. Select the managed system from which you are removing a part.
3. In the **Tasks** area, expand **Serviceability** > **Hardware** > **MES Tasks** > **Remove FRU**
4. In the Add/Install/Remove Hardware - Remove FRU, Select FRU Type window, select the system or enclosure from which you are removing the part.
5. Select the type of part that you are removing, and click **Next**.
6. Select the location of the part that you are removing, and click **Add**.
7. After the part is listed in the **Pending Actions** section, click **Launch Procedure** and follow the instructions to remove the part.

Note: The HMC might open the information center instructions for removing the part. If so, follow those instructions to remove the part.

Replacing a part by using the HMC

You can use the Hardware Management Console (HMC) to perform many service actions, including exchanging a field replaceable unit (FRU) or part.

About this task

If you are exchanging a part to repair a serviceable event, follow those instructions. If you are exchanging a part as a part of any other procedure by using HMC Version 7, or later, complete the following steps:

Procedure

1. In the navigation area, expand **Systems Management** > **Servers**.
2. Select the managed system in which you are exchanging a part.
3. In the **Tasks** area, expand **Serviceability** > **Hardware** > **Exchange FRU**.
4. Select the system or enclosure from which you want to exchange the part.
5. In the Replace Hardware - Replace FRU, Select FRU Type window, select the type of part that you will exchange from the menu, and click **Next**.
6. Select the location code of the part that you will exchange, and click **Add**.
7. After the part is listed in the **Pending Actions** section, click **Launch Procedure** and follow the instructions to exchange the part.

   Note: The HMC might open external instructions for replacing the part. If so, follow those instructions to replace the part.

Verifying the installed part

You can verify a newly installed or replaced part on your system, logical partition, or expansion unit by using the operating system, stand-alone diagnostics, or the Hardware Management Console (HMC).

Verifying an installed feature or replaced part in an AIX system or logical partition

If you installed feature or replaced a part, you might want to use the tools in the AIX operating system to verify that the feature or part is recognized by the system or logical partition.

About this task

To verify the operation of a newly installed feature or replacement part, select the appropriate procedure:
- Verify the installed feature using AIX
- Verifying the replaced part using AIX

Verify the installed feature by using the AIX operating system:

1. Log in as root user.
2. At the command line, type `diag` and press Enter.
3. Select **Advanced Diagnostics Routines** and press Enter.
4. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.
5. When the **Advanced Diagnostic Selection** menu appears, do one of the following:
   - To test a single resource, select the resource that you just installed from the list of resources and press Enter.
   - To test all the resources available to the operating system, select **All Resources** and press Enter.
6. Select **Commit**, and wait until the diagnostic programs run to completion, responding to any prompts that appear.
7. Did the diagnostics run to completion and display the message `No trouble was found`?
   - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the installation procedures to ensure that the new feature is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code

information that you see. If the system is running in logical partitioning (LPAR) mode, note the logical partition in which you installed the feature. Contact your service provider for assistance.

- **Yes:** The new device is installed correctly. Exit the diagnostic programs and return the system to normal operations.

Verify the replacement part by using the AIX operating system:

To verify the operation of a newly installed feature or replacement part, follow these steps:

1. Did you use either the AIX operating system or the online diagnostics service aid concurrent (hot-swap) service to replace the part?

    No: Go to step 2.

    Yes: Go to step 5.

2. Is the system powered off?

    No: Go to step 4.

    Yes: Continue with the next step.

3. Start the system and wait until the AIX operating system login prompt is displayed or until apparent system activity on the operator panel or display has stopped.

    Did the AIX login prompt display?

    - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system does not start or you have no login prompt, see: Problems with loading and starting the operating system.

        If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.

    - **Yes:** Go to step 4.

4. At the command prompt, type `diag –a` and press Enter to check for missing resources. If you see a command prompt, go to step 5.

    If the **Diagnostic selection** menu is shown with **M** appearing next to any resource, follow these steps:

    a. Select the resource and press Enter.

    b. Select **Commit**.

    c. Follow any instructions that are shown.

    d. If the *Do you want to review the previously displayed error?* message is shown, select **Yes** and press Enter.

    e. If an SRN is shown, suspect a loose card or connection. If no obvious problem is shown, record the SRN and contact your service provider for assistance.

    f. If no SRN is shown, go to step 5.

5. Test the part by doing the following steps:

    a. At the command line, type `diag` and press Enter.

    b. From the **Function Selection** menu, select **Advanced Diagnostics Routines** and press Enter.

    c. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.

    d. Select **All Resources**, or select the diagnostics for the individual part to test only the part you replaced and any devices that are attached to the part you replaced and press Enter.

        Did the **Resource Repair Action** menu appear?

        No: Go to step 6.

        Yes: Go to step 7 on page 145.

6. Did the *Testing Complete, No trouble was found* message appear?

- **No:** There is still a problem. Contact your service provider. **This ends the procedure.**
- **Yes:** Select **Log Repair Action**, if not previously logged, from 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** and press Enter.

     Tip: This action changes the indicator light for the part from the fault state to the normal state.

     Go to step 9.

7. Select the resource for the replaced part from the **Resource Repair Action** menu. 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 appears. Complete the following steps to update the AIX error log to indicate that a system-detectable part has been replaced.

     Note: On systems with an indicator light for the failing part, this action changes the indicator light to the normal state.

   a. 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 does not appear on the resource list, select **sysplanar0** and press Enter.
   b. Select **Commit** after you make your selections. Did another **Resource Repair Action** display appear?

      No: If the **No Trouble Found** display appears, go to step 9

      Yes: Go to step 8.

8. Select the parent or child of the resource for the replaced part from the **Resource Repair Action** menu if necessary. 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 appears. Complete the following steps to update the AIX error log to indicate that a system-detectable part has been replaced.

     Note: This action changes the indicator light for the part from the fault state to the normal state.

   a. From the **Resource Repair Action** menu, select the parent or child of the resource that has been replaced. If the repair action was to reseat a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the resource list, select **sysplanar0** and press Enter.
   b. Select **Commit** after you make your selections.
   c. If the **No Trouble Found** display appears, go to step 9.

9. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the values they had prior to servicing the system.

10. Did you do any hot-plug procedures before doing this procedure?

      No: Go to step 11.

      Yes: Go to step 12.

11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?

      No: Contact your service provider. **This ends the procedure.**

      Yes: Go to step 12.

12. Are the indicator lights still on?

    - **No. This ends the procedure.**
    - **Yes.** Turn off the lights. See the following for instructions: Changing service indicators.

Verifying the installed part in a Linux system or logical partition

If you have installed a new part, learn how to verify that the system recognizes the part.

About this task

To verify the newly installed or replaced part, continue with "Verifying an installed part by using stand-alone diagnostics."

Verifying an installed part by using stand-alone diagnostics

If you have installed or replaced a part, verify that the system recognizes the new part. You can use stand-alone diagnostics to verify an installed part in an AIX or Linux system, expansion unit, or logical partition.

Before you begin

- If this server is directly attached to another server or attached to a network, ensure communications with the other servers have stopped.
- The stand-alone diagnostics require use of all of the logical partition resources. No other activity can be running on the logical partition.
- The stand-alone diagnostics require access to the system console.

About this task

You access these diagnostics from a CD-ROM or from the Network Installation Management (NIM) server. This procedure describes how to use the diagnostics from a CD-ROM. For information on running diagnostics from the NIM server, see Running stand-alone diagnostics from a Network Installation Management server.

To use stand-alone diagnostics, follow these steps:

Procedure

1. Stop all jobs and applications and then stop the operating system on the system or logical partition.
2. Remove all tapes, diskettes, and CD-ROM.
3. Turn off the system unit power. The next step boots the server or logical partition from the stand-alone diagnostics CD-ROM. If the optical drive is not available as a boot device on the server or logical partition on which you are working, follow these steps:
   a. Access the ASMI. For information on using the ASMI, see Accessing the ASMI.
   b. On the ASMI main menu, click **Power/Restart Control**.
   c. Click **Power On/Off System**.
   d. Select the **Service mode boot from default boot list** option in the AIX or Linux logical partition mode boot drop-down menu.
   e. Click **Save settings and power on**. When the optical drive is powered on, insert the stand-alone diagnostic CD-ROM.
   f. Go to step 5.
4. Turn on the system unit power and immediately insert the diagnostics CD-ROM into the optical drive.
5. After the **keyboard** POST indicator displays on the system console and before the last POST indicator (**speaker**) displays, press the numeric 5 key on the system console to indicate that a service mode boot must be initiated by using the default-service mode boot list.
6. Enter any requested password.
7. At the **Diagnostic Operating Instructions** display, press Enter.

Tip: If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection.

Note: If you received an SRN or any other reference code when you attempted to start the system, contact your service provider for assistance.

8. If the terminal type is requested, select the **Initialize Terminal** option on the Function Selection menu to initialize the operating system.

9. From the Function Selection menu, select **Advanced Diagnostics Routines** and press Enter.

10. From the Diagnostic Mode Selection menu, select **System Verification** and press Enter.

11. When the Advanced Diagnostic Selection menu appears, select **All Resources**, or test only the part you replaced, and any devices that are attached to the part you replaced, by selecting the diagnostics for the individual part and press Enter.

12. Did the `Testing Complete,` `No trouble was found` message appear?
    - **No:** There is still a problem. Contact your service provider.
    - **Yes:** Go to step 13.

13. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the value they had prior to servicing the system.

14. If the indicator lights are still on, follow these steps:
    a. Select **Identify and Attention Indicators** from the Task Selection menu to turn off the system attention and indicator lights and press Enter.
    b. Select **Set System Attention Indicator to NORMAL** and press Enter.
    c. Select **Set All Identify Indicators to NORMAL** and press Enter.
    d. Choose **Commit**.

    Note: This changes the system attention and identify indicators from the *Fault* state to the *Normal* state.

    e. Exit to the command line.

Verifying the installed part by using the HMC

If you have installed or replaced a part, use the Hardware Management Console (HMC) to update your HMC records after you have completed a service action on your server. If you have reference codes, symptoms, or location codes that you used during the service action, locate the records for use during this procedure.

About this task

To verify the installed part, complete these steps:

Procedure

1. At the HMC, examine the service action event log for any open service action events. See "Viewing serviceable events by using the HMC" on page 149 for details.

2. Are there any service action events that are open?

    No: If the system attention LED is still on, use the HMC to turn off the LED. See "Activating and deactivating LEDs by using the HMC" on page 148. **This ends the procedure.**

    Yes: Continue with the next step.

3. Record the list of open service action events.

4. Examine the details of the open service action event. Is the error code associated with this service action event the same as you gathered earlier.
    - **No**: Select one of the following options:
        - Review the other serviceable events, find one that does match, and continue with the next step.

- – If the log does not match what you had gathered earlier, contact your service provider.
  - **Yes**: Continue with the next step.
5. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
6. Click **Close Event**.
7. Add comments for the serviceable event. Include any unique additional information. Click **OK**.
8. Did you replace, add, or modify a field replaceable unit (FRU) of the open service action event?
   - **No**: Select the **No FRU Replaced for this Serviceable Event** option, and click **OK** to close the service action event.
   - **Yes**: Perform the following steps:
     a. From the FRU list, select a FRU that you need to update.
     b. Double-click the FRU and update the FRU information.
     c. Click **OK** to close the service action event.
9. If you continue to have problems, contact your service provider.

Activating and deactivating LEDs by using the HMC

Use this procedure to activate or deactivate LEDs by using Service Focal Point™ from the Hardware Management Console (HMC).

Deactivating a system attention LED or partition LED by using the HMC:
About this task

You can deactivate the attention LED for a system or logical partition if you decide that a problem is not a high priority and you decide to repair the problem at a later time. The deactivation also allows the LED to be activated again when another problem occurs.

To deactivate a system attention LED by using HMC, complete the following steps:

Procedure
1. In the navigation area, open **Systems Management**.
2. Open **Servers** and select the required system.
3. In the content area, select the required partition.
4. Select **Tasks** > **Operations** > **Deactivate Attention LED**. A confirmation window is displayed with an indication that there still might be open problems with the system.
5. Click **OK** to continue with the deactivation. A window is displayed that provides the details of the system or partition, and a confirmation that the system or logical partition attention LED was deactivated.

Activating or deactivating an identify LED by using the HMC:
About this task

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:

Procedure

1. In the navigation area, open **Systems Management**.
2. Select **Servers**.
3. In the content area, check the box for the appropriate System.
4. Select **Tasks** > **Operations** > **LED Status** > **Identify LED**.
5. 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.
6. To activate or deactivate an identify LED for a FRU, select an enclosure from the table and click **List FRUs**.
7. 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.

Viewing serviceable events by using the HMC

Use this procedure to view a serviceable event, including details, comments, and service history.

About this task

To view serviceable events and other information about the events, you must be a member of one of the following roles:
- Super administrator
- Service representative
- Operator
- Product engineer
- Viewer

To view serviceable events, follow these steps:

Procedure

1. In the navigation area, select **Service Management**.
2. Select **Manage Serviceable Events**.
3. Select the criteria for the serviceable events that you want to view, and click **OK**. The Serviceable Event Overview window opens. The list shows all serviceable events that match your selection criteria. You can use the menu options to perform actions on the serviceable events.
4. Select a line in the Serviceable Event Overview window, and select **Selected** > **View Details**. The Serviceable Event Details window opens, showing detailed information about the serviceable event. The upper table shows information, such as problem number and reference code. The lower table shows the field replaceable units (FRUs) associated with this event.
5. Select the error for which you want to view comments and history, and follow these steps:
   a. Select **Actions** > **View Comments**.
   b. When you are finished viewing the comments, click **Close**.
   c. Select **Actions** > **View Service History**. The Service History window opens, showing service history associated with the selected error.
   d. When you are finished viewing the service history, click **Close**.

6. When you are finished, click **Cancel** twice to close the Serviceable Event Details window and the Serviceable Event Overview window.

Verifying the installed part by using the SDMC

If you installed or replaced a part, use the Systems Director Management Console (SDMC) to update your SDMC records after you have completed a service action on your server. If you have reference codes, symptoms, or location codes that you used during the service action, locate the records for use during this procedure.

About this task

To verify the installed part, complete these steps:

Procedure

1. From the SDMC, examine the service action event log for any open service action events. See "Viewing serviceable events by using the SDMC" on page 151 for details.
2. Are there any service action events that are open?

    No: If the system attention LED is still on, use the SDMC to turn off the LED. See "Activating and deactivating LEDs by using the SDMC." **This ends the procedure.**

    Yes: Continue with the next step.
3. Record the list of open service action events.
4. Examine the details of the open service action event. Is the error code associated with this service action event the same as you gathered earlier.

    - **No**: Select one of the following options:
        - Review the other serviceable events, find one that does match, and continue with the next step.
        - If the log does not match what you had gathered earlier, contact your service provider.
    - **Yes**: Continue with the next step.
5. Select and highlight the service action event from the Error Associated With This Serviceable Event window.
6. Click **Delete** or **Ignore**.

    Note: These options are only available from the problem event log.

Activating and deactivating LEDs by using the SDMC

Use this procedure to activate or deactivate LEDs by using the Systems Director Management Console (SDMC).

Deactivating a system attention LED or partition LED by using the SDMC:
About this task

You can deactivate a system attention LED or a logical partition LED. For example, you might determine that a problem is not a high priority and decide to repair the problem at a later time. However, you want to be alerted if another problem occurs, so you must deactivate the system attention LED so that it can be activated again if another problem occurs.

To deactivate the system attention LED, complete the following steps:

Procedure

1. On the Resources tab, select the appropriate host or virtual server.
2. Select **Actions** > **Service and Support** > **Hardware** > **System Attention LED**.
3. Select **Deactivate System Attention LED**. 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.

4. Select one of the virtual servers, and select **Deactivate System Attention LED**. 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 logical partition.
   - An indication that you cannot activate the virtual server LED.

Activating or deactivating an identify LED by using the SDMC:
About this task

The system provides several LEDs that help identify various components, such as enclosures or field replaceable units (FRUs). 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:

Procedure
1. On the Resources tab, select the appropriate host or virtual server.
2. Select **Actions** > **Service and Support** > **Hardware** > **Identify LED**.
3. In the Identify LED, Select Enclosure window, select the system unit or enclosure.
4. To activate or deactivate an identify LED, 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 a system or enclosure from the table, and then click **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.

Viewing serviceable events by using the SDMC
Use this procedure to view a serviceable event, including details, comments, and service history.

About this task

To view serviceable events, follow these steps:

Procedure
1. On the Resources tab, select the appropriate host or virtual server.
2. Select **Actions** > **System Status and Health** > **Event Log**.
3. Optional: You can narrow the event criteria by using the Event filter menu.
4. Select a line in the Events window, and select **Actions** > **Properties** The Properties window opens, showing detailed information about the serviceable event. The table shows information, such as problem number, reference code, and the field replaceable units (FRUs) associated with this event.

Verifying an installed part or replaced part on a system or logical partition by using Virtual I/O Server tools

If you installed or replaced a part, you might want to use the tools in Virtual I/O Server (VIOS) to verify that the part is recognized by the system or logical partition.

Verifying the installed part by using VIOS

You can verify the operation of a newly installed part or a replacement part.

About this task

Perform the following steps to verify an installed or replaced part:

Procedure

1. Log in as root user.
2. At the command line, type `diagmenu` and press Enter.
3. Select **Advanced Diagnostics Routines** and press Enter.
4. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.
5. When the **Advanced Diagnostic Selection** menu appears, do one of the following steps:
   - To test a single resource, select the resource that you just installed from the list of resources and press Enter.
   - To test all the resources available to the operating system, select **All Resources** and press Enter.
6. Select **Commit**, and wait until the diagnostic programs run to completion, responding to any prompts that appear.
7. Did the diagnostics run to completion and display the message `No trouble was found`?
   - **No:** If a service request number (SRN) or other reference code is displayed, suspect a loose adapter or cable connection. Review the installation procedures to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system is running in LPAR mode, note the logical partition in which you installed the part. Contact your service provider for assistance.
   - **Yes:** The new device is installed correctly. Exit the diagnostic programs and return the system to normal operations.

Verify the replacement part by using VIOS

To verify the operation of a newly installed part or replacement part, complete the following steps:

Procedure

1. Did you replace the part by using either VIOS or the online diagnostics service aid's concurrent (hot-swap) service operation?
   - **No:** Go to step 2.
   - **Yes:** Go to step 5 on page 153.
2. Is the system powered off?
   - **No:** Go to step 4 on page 153.
   - **Yes:** If the system supports slow boot, set the system to perform a slow boot. For information, see Performing a slow boot.
3. Start the system and wait until the VIOS operating system login prompt displays or until apparent system activity on the operator panel or display has stopped. Did the VIOS login prompt display?
   - **No:** If an SRN or other reference code is displayed, suspect a loose adapter or cable connection. Review the procedures for the part that you replaced to ensure that the new part is installed correctly. If you cannot correct the problem, collect all SRNs or any other reference code information that you see. If the system does not start or you have no login prompt, see Problems with loading and starting the operating system.

If the system is partitioned, note the logical partition in which you replaced the part. Contact your service provider for assistance.

- **Yes:** Go to step 4.

4. At the command prompt, type `diag –a` and press Enter to check for missing resources. If you see a command prompt, go to step 5.

   If the **Diagnostic selection** menu is shown with **M** appearing next to any resource, follow these steps:

   a. Select the resource and press Enter.

   b. Select **Commit**.

   c. Follow any instructions that are shown.

   d. If a *Do you want to review the previously displayed error?* message is shown, select **Yes** and press Enter.

   e. If an SRN is shown, suspect a loose card or connection. If no obvious problem is shown, record the SRN and contact your service provider for assistance.

   f. If no SRN is shown, go to 5.

5. Test the part by doing the following:

   a. At the command line, type `diagmenu` and press Enter.

   b. From the **Function Selection** menu, select **Advanced Diagnostics Routines** and press Enter.

   c. From the **Diagnostic Mode Selection** menu, select **System Verification** and press Enter.

   d. Select **All Resources**, or select the diagnostics for the individual part to test only the part you replaced, and any devices that are attached to the part you replaced and press Enter.

      Did the **Resource Repair Action** menu appear?

   - **No:** Go to step 6.
   - **Yes:** Go to step 7.

6. Did the *Testing Complete, No trouble was found* message appear?

   - **No:** There is still a problem. Contact your service provider. **This ends the procedure.**
   - **Yes:** Select **Log Repair Action**, if not previously logged, from the **Task Selection** menu to update the 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** and press Enter.

     Tip: This action changes the indicator light for the part from the fault state to the normal state. Go to step 9 on page 154.

7. Select the resource for the replaced part from the **Resource Repair Action** menu. When a test is run on a resource in system verification mode, and that resource has an entry in the error log, if the test on the resource was successful, the **Resource Repair Action** menu appears. Complete the following steps to update the error log to indicate that a system-detectable part has been replaced. On systems with a indicator light for the failing part, this changes the indicator light to the normal state.

   a. 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 does not appear on the Resource List, select **sysplanar0**. Press Enter.

   b. Select **Commit** after you make your selections. Did another **Resource Repair Action** display appear?

   - **No:** If the **No Trouble Found** display appears, go to step 9 on page 154.
   - **Yes:** Go to step 8.

8. Select the parent or child of the resource for the replaced part from the **Resource Repair Action** menu if necessary. When a test is run on a resource in system verification mode, and that resource has an entry in the error log, if the test on the resource was successful, the **Resource Repair Action**

menu appears. Complete the following steps to update the error log to indicate that a system-detectable part has been replaced. This changes the indicator light for the part from the fault state to the normal state.

a. From the **Resource Repair Action** menu, select the parent or child of the resource that has been replaced. If the repair action was to reseat a cable or adapter, select the resource associated with that repair action. If the resource associated with your action does not appear on the Resource List, select **sysplanar0**. Press Enter.

b. Select **Commit** after you make your selections.

a. If the **No Trouble Found** display appears, go to step 9.

9. If you changed the service processor or network settings, as instructed in previous procedures, restore the settings to the values they had prior to servicing the system.

10. Did you do any hot-plug procedures before doing this procedure?
   - **No:** Go to step 11.
   - **Yes:** Go to step 12.

11. Start the operating system, with the system or logical partition in normal mode. Were you able to start the operating system?
   - **No:** Contact your service provider. **This ends the procedure.**
   - **Yes:** Go to step 12.

12. Are the indicator lights still on?
   - **No:** This ends the procedure.
   - **Yes.** Turn off the lights. For instructions, see Changing service indicators.

Installing a part by using the SDMC

You can use the Systems Director Management Console (SDMC) to perform many service actions, including the installation of a new field-replaceable unit (FRU) or part.

Before you begin

To install a part into a system or expansion unit that is managed by an SDMC, complete the following steps:

Procedure

1. In the Power Systems Resources area, select the system on which you want to install a part.
2. From the **Actions** menu, expand **Service and Support** > **Hardware** > **MES Tasks** > **Add FRU**.
3. On the Add FRU page, select the system or enclosure type from the **Enclosure type** list.
4. Select the FRU type that you are installing, and click **Next**.
5. Select the location code for the location to install, and click **Add**.
6. After the part is placed in the **Pending Actions** section, click **Launch Procedure** and follow the instructions to install the part.

   Note: The SDMC might open external instructions for installing the feature. If so, follow those instructions to install the part.

Removing a part by using the SDMC

You can use the Systems Director Management Console (SDMC) to perform many service actions, including the removal of a field-replaceable unit (FRU) or part.

About this task

To remove a part in a system or expansion unit that is managed by an SDMC, complete the following steps:

Procedure

1. In the Power Systems Resources area, select the managed system from which you are removing a part.
2. From the **Actions** menu, expand **Service and Support** > **Hardware** > **MES Tasks** > **Remove FRU**.
3. On the Remove FRU page, select the enclosure from which you want to remove the part from the **Installed Enclosures** list.
4. Select the type of the part that you are removing, and click **Next**.
5. Select the location of the part that you are removing, and click **Add**.
6. After the part is listed in the **Pending Actions** section, click **Launch Procedure** and follow the instructions to remove the part.

   Note: The SDMC might open external instructions for removing the part. If so, follow those instructions to remove the part.

Replacing a part by using the SDMC

You can use the Systems Director Management Console (SDMC) to perform many service actions, including exchanging a field-replaceable unit (FRU) or part.

About this task

To replace a part by using the SDMC, complete the following steps:

Procedure

1. In the Power Systems Resource area, select the managed system in which you are exchanging a part.
2. Select one of the following options:
   - If you are replacing a part that is not part of a serviceable event from the **Actions** menu, expand **Service and Support** > **Hardware** > **Exchange FRU**.
   - If you are exchanging a part to repair a serviceable event, see Starting a repair action.
3. On the Exchange FRU page, select the enclosure from which you want to replace the part from the **Installed Enclosure Types** list.
4. Select the type of part that you want to exchange, and click **Next**.
5. Select the location code of the part that you want to exchange, and click **Add**.
6. After the part is listed in the **Pending Actions** section, click **Launch Procedure** and follow the instructions to exchange the part.

   Note: The SDMC might open external instructions for replacing the part. If so, follow those instructions to replace the part.

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Electronic emission notices

When attaching a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices supplied with the monitor.

Class A Notices

The following Class A statements apply to the servers.

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 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 Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 7032 15 2941
email: lugi@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、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。　　　　　　　　　　　　　　　　　　VCCI−A

The following is a summary of the VCCI Japanese statement in the box above:

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline with Modifications (products greater than 20 A per phase)

高調波ガイドライン準用品

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.

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 업무용(A급)으로 전자파적합기기로
서 판매자 또는 사용자는 이 점을 주의하시기
바라며, 가정외의 지역에서 사용하는 것을 목
적으로 합니다.

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 von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von 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 Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Regulations, Abteilung M372
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 7032 15 2941
email: lugi@de.ibm.com

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

Class B Notices

The following Class B statements apply to features designated as electromagnetic compatibility (EMC) Class B in the feature installation information.

Federal Communications Commission (FCC) statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM-authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate this 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 B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe B 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 B Information Technology Equipment according to European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication equipment.

European Community contact:
IBM Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 7032 15 2941
email: lugi@de.ibm.com

VCCI Statement - Japan

この装置は，クラスB情報技術装置です。この装置は，家庭環境で使用
することを目的としていますが，この装置がラジオやテレビジョン受信機に
近接して使用されると，受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。　　　　VCCI－B

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline (products less than or equal to 20 A per phase)

高調波ガイドライン適合品

Japanese Electronics and Information Technology Industries Association (JEITA) Confirmed Harmonics Guideline with Modifications (products greater than 20 A per phase)

高調波ガイドライン準用品

Electromagnetic Interference (EMI) Statement - Korea

이 기기는 가정용(B급)으로 전자파적합기기로
서 주로 가정에서 사용하는 것을 목적으로 하
며, 모든 지역에서 사용할 수 있습니다.

Germany Compliance Statement

Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse B 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 B 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 von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

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 B

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
International Business Machines Corp.
New Orchard Road
Armonk, New York 10504
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:
IBM Deutschland GmbH
Technical Regulations, Abteilung M372
IBM-Allee 1, 71139 Ehningen, Germany
Tel: +49 7032 15 2941
email: lugi@de.ibm.com

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse B.

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