ESCALA Power7

PCI Adapters for the M6-700, M6-705, M6-715, M7-700, M7-705 or M7-715

REFERENCE
86 A1 71FF 05

PCI Adapters for the M6-700, M6-705, M6-715, M7-700, M7-705 or M7-715

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

November 2012

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

REFERENCE
86 A1 71FF 05

Printed in France

Trademarks and Acknowledgements

Contents

Safety notices v

Installing, removing, and replacing PCI adapters 1

Model 17M/MB, 17M/MC, 17M/MD, 79M/HB, 79M/HC, or 79M/HD PCI adapters 1
Installing a PCI adapter contained in a cassette 1
Installing a PCI adapter contained in a cassette with the power off 1
Installing a PCI adapter contained in a cassette with the power on in the AIX environment 2
Installing a PCI adapter contained in a cassette with the power on in the Linux environment 4
Removing a PCI adapter contained in a cassette from the system 8
Removing a PCI adapter contained in a cassette from the system with the power off 8
Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment 9
Removing a PCI adapter contained in a cassette from the system with the power on in the Linux environment 12
Replacing a PCI adapter contained in a cassette in the system 13
Replacing a PCI adapter contained in a cassette in the system with the power off 14
Removing and replacing a PCI adapter contained in a cassette in the system with the power on in the AIX environment 15
Replacing a PCI adapter contained in a cassette in the system with the power on in the Linux environment 20
PCI adapter single-width, fourth generation cassette 21
Placing a PCI adapter in a single-width, fourth generation cassette 21
Removing an adapter from the PCI adapter single-width, fourth generation cassette 26
PCI adapter single-width, third generation cassette 31
Placing a PCI adapter in a single-width, third generation cassette 31
Placing a 4-Port USB PCI Express Adapter in a single-width, third generation cassette 38
Removing an adapter from the PCI adapter single-width, third generation cassette 41
PCI adapter single-width, first and second generation cassettes 44
Placing a PCI adapter in a single-width, first or second generation cassette 45
Removing an adapter from the PCI adapter single-width, first or second generation cassette 51
PCI adapter double-wide cassette 57
Removing an adapter from the PCI adapter double-wide cassette 57
Placing an adapter in the PCI adapter double-wide cassette 60
PCI adapter double-wide cassette, generation 2.5 cassette 64
Placing a PCI adapter in a double-wide, generation 2.5 cassette 64
Removing a PCI adapter from a double-wide, generation 2.5 cassette 73
Model 57/96 expansion units, PCI adapters and cassettes 81
Installing a PCI adapter contained in a cassette 82
Installing a PCI adapter contained in a cassette with the power off 82
Installing a PCI adapter contained in a cassette with the power on in the AIX environment 86
Installing a PCI adapter contained in a cassette with the power on in the Linux envirnoment 90
Removing a PCI adapter contained in a cassette from the system 94
Removing a PCI adapter contained in a cassette from the system with the power off 94
Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment 96
Removing a PCI adapter contained in a cassette from the system with the power on in the Linux environment 99
Replacing a PCI adapter contained in a cassette in the system 101
Replacing a PCI adapter contained in a cassette in the system with the power off 102
Removing and replacing a PCI adapter contained in a cassette in the system with the power on in the AIX environment. 105
Replacing a PCI adapter contained in a cassette in the system with the power on in the Linux environment 109
PCI adapter single-width, third generation cassette 112
Placing a PCI adapter in a single-width, third generation cassette 112
Placing a 4-Port USB PCI Express Adapter in a single-width, third generation cassette 119
Removing an adapter from the PCI adapter single-width, third generation cassette 122
PCI adapter double-wide cassette 125
Removing an adapter from the PCI adapter double-wide cassette 125

Placing an adapter in the PCI adapter double-wide cassette . . . 128
Model 58/02 and 58/77 expansion units, PCI adapters, and cassettes . . . 132
Preparing to install, remove, or replace a PCI adapter cassette . . . 132
Installing a PCI adapter contained in a cassette . . . 133
Installing a PCI adapter cassette with the power off . . . 133
Installing a PCI adapter cassette . . . 133
Installing a PCI adapter contained in a cassette with the power on in the AIX environment . . . 135
Installing a PCI adapter contained in a cassette with the power on in the Linux environment . . . 136
Removing a PCI adapter contained in a cassette from the expansion unit . . . 137
Removing a PCI adapter contained in a cassette from the expansion unit with the system power off . . . 137
Removing a PCI adapter cassette from the expansion unit . . . 137
Removing a PCI adapter contained in a cassette from the expansion unit with the power on in AIX . . . 139
Removing a PCI adapter contained in a cassette from the expansion unit with the power on in Linux . . . 140
Replacing a PCI adapter contained in a cassette from the expansion unit . . . 141
Replacing a PCI adapter contained in a cassette from the expansion unit with the power off . . . 141
Replacing a PCI adapter contained in a cassette from the expansion unit with the power on in AIX . . . 141
Replacing a PCI adapter contained in a cassette from the expansion unit with the power on in Linux . . . 143
PCI adapter single-width and double-width cassettes . . . 144
Removing an adapter from the PCI adapter single-width cassette . . . 144
Placing a PCI adapter in a single-width cassette . . . 147
Removing an adapter from the PCI adapter double-wide cassette . . . 154
Placing an adapter in the PCI adapter double-wide cassette . . . 157
Related procedures for installing and removing PCI adapters . . . 162
Before you begin . . . 162
Safety notices . . . 165
Handling static-sensitive devices . . . 170
Installing or replacing a PCI adapter with the system power on in Virtual I/O Server . . . 171
Getting started . . . 171
Installing a PCI adapter . . . 172
Replacing a PCI adapter . . . 172
Unconfiguring storage adapters . . . 173
Preparing the client logical partitions . . . 173
Shutting down logical partitions . . . 174
PCI hot-plug manager access for AIX . . . 175
Accessing hot-plug management functions . . . 175
PCI hot-plug manager menu . . . 176
Component LEDs . . . 177
Resetting the LEDs in AIX . . . 177
Prerequisites for hot-plugging PCI adapters in Linux . . . 178
Verifying that the hot-plug PCI tools are installed for Linux . . . 178
Updating the worldwide port name for a new 2766, 2787, 280E, 5735, 576B, or 5774 IOA . . . 179
Installing a part by using the HMC . . . 179
Removing a part by using the HMC . . . 180
Replacing a part by using the HMC . . . 180
Replacing a part by using the SDMC . . . 181
Removing a part by using the SDMC . . . 181
Installing a part by using the SDMC . . . 182

Notices . . . 183
Trademarks . . . 184
Electronic emission notices . . . 184
Class A Notices . . . 184
Class B Notices . . . 188
Terms and conditions . . . 190

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:

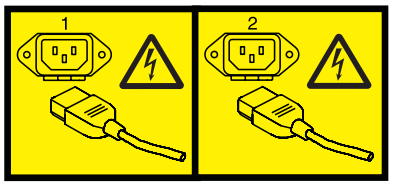
- **Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:**
  - **Remove 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

Model 17M/MB, 17M/MC, 17M/MD, 79M/HB, 79M/HC, or 79M/HD PCI adapters

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

Installing a PCI adapter contained in a cassette

You can install a PCI adapter.

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 Removing a part using the Hardware Management Console.

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 prerequisite tasks as described in "Before you begin" on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
3. To determine in which slot to place the PCI adapter, refer to the placement information regarding slot restrictions for the adapters that can be used in this system. See the PCI adapter placement.
4. Stop the system or logical partition. See Stop the system or logical partition.
5. Disconnect the power source from the system by unplugging the system.
6. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:
   a. Open the rear rack door.
   b. Remove the units cover or covers if applicable.
7. Determine the location of PCI adapter in the system.
8. Install the adapter into the PCI adapter cassette. See the following topics:
   - "PCI adapter single-width, fourth generation cassette" on page 21
   - "PCI adapter single-width, third generation cassette" on page 31
   - "PCI adapter double-wide cassette" on page 57
9. Slide the cassette into the cassette slot as shown in the following figure.

Attention: Ensure proper alignment when you insert a PCI adapter cassette into the system.

10. When the cassette is fully inserted into the system, firmly press cassette handle **(A)** to lock the adapter in its connector.

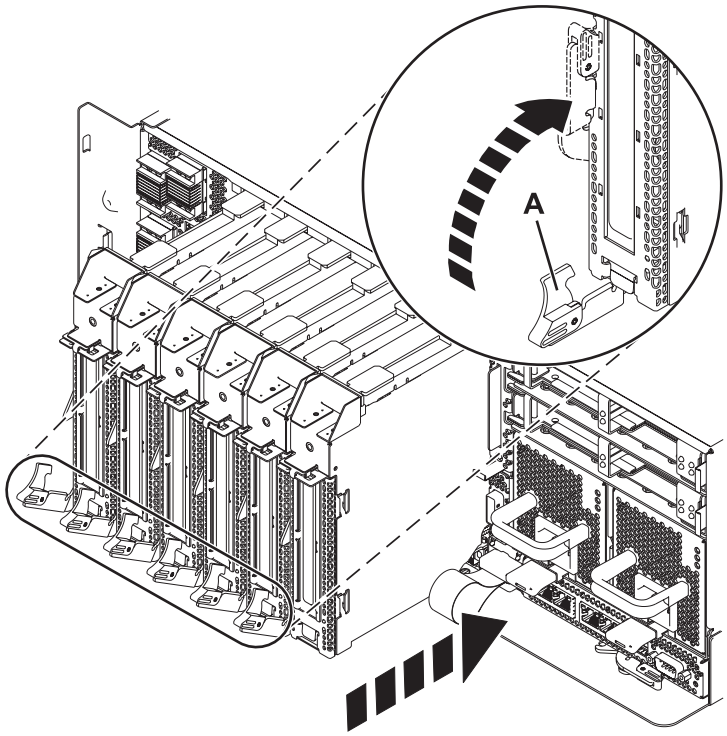


Figure 1. PCI adapter cassette installed in the system unit

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.

Installing a PCI adapter contained in a cassette with the power on in the AIX environment

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

About this task

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.

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.

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 a PCI adapter with the system power on in the AIX environment:

Procedure

1. Perform the prerequisite tasks described in "Before you begin" on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
3. To determine in which slot to place the PCI adapter, refer to the placement information regarding slot restrictions for the adapters that can be used in this system. See the PCI adapter placement.
4. If you are installing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:
   a. Open the rear rack door.
   b. Remove the units cover or covers if applicable.
5. Refer to "PCI hot-plug manager access for AIX" on page 175, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.
6. From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter** and press Enter. The Add a Hot-Plug Adapter window displays.
7. Select the appropriate PCI slot from the ones listed on the screen, and press Enter.
8. Locate the PCI adapter slot and cassette you want to use.
9. If the cassette you want to use does not contain a PCI adapter, continue to the next step. If the cassette you want to use does contain an active PCI adapter, see "Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment" on page 9.
10. Install the adapter into the PCI adapter cassette. See the following topics:
    - "PCI adapter single-width, fourth generation cassette" on page 21
    - "PCI adapter single-width, third generation cassette" on page 31
    - "PCI adapter double-wide cassette" on page 57
11. Slide the cassette into the cassette slot as shown in the following figure.

    Attention: Ensure proper alignment when you insert a PCI adapter cassette into the system.
12. When the cassette is fully inserted into the system, firmly press cassette handle **(A)** to lock the adapter in its connector.

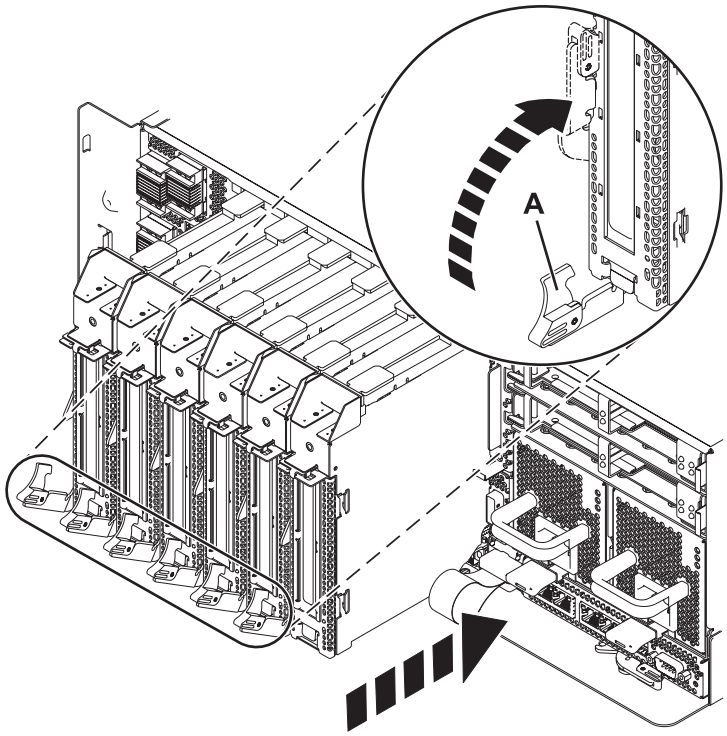


Figure 2. PCI adapter cassette installed in the system unit

13. Run the **cfgmgr** command to configure the adapter.
14. Verify that the new resource is functional. See Verify the installed part.

Installing a PCI adapter contained in a cassette with the power on in the Linux environment

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

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 a PCI adapter in the server. For instructions, see Installing a feature 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 a PCI adapter with the system power on in the Linux environment:

Procedure

1. Perform prerequisite tasks as described in “Before you begin” on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
3. To determine in which slot to place the PCI adapter, refer to the placement information regarding slot restrictions for the adapters that can be used in this system. See the PCI adapter placement.
4. Log in to the system console as the root user.
5. Use the lsslot tool to list the hot-plug PCI slots that are available in the server or partition:

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

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

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

   Select the appropriate empty PCI slot from the ones listed by the command.
6. Lift up the PCI adapter EMC shield **(A)** as shown in Figure 3 and then rotate it up and away from the cassette as shown in Figure 4 on page 6.

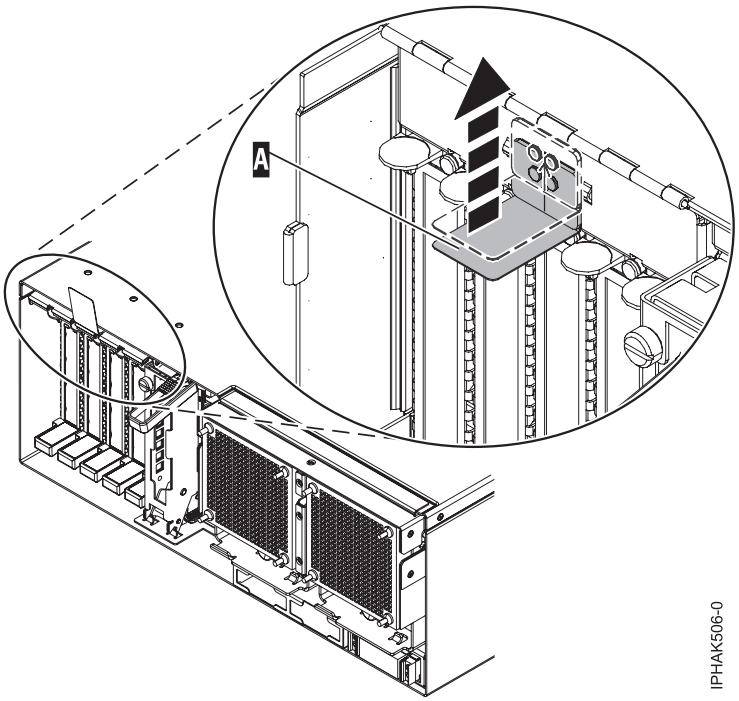


Figure 3. Lift up the EMC shield

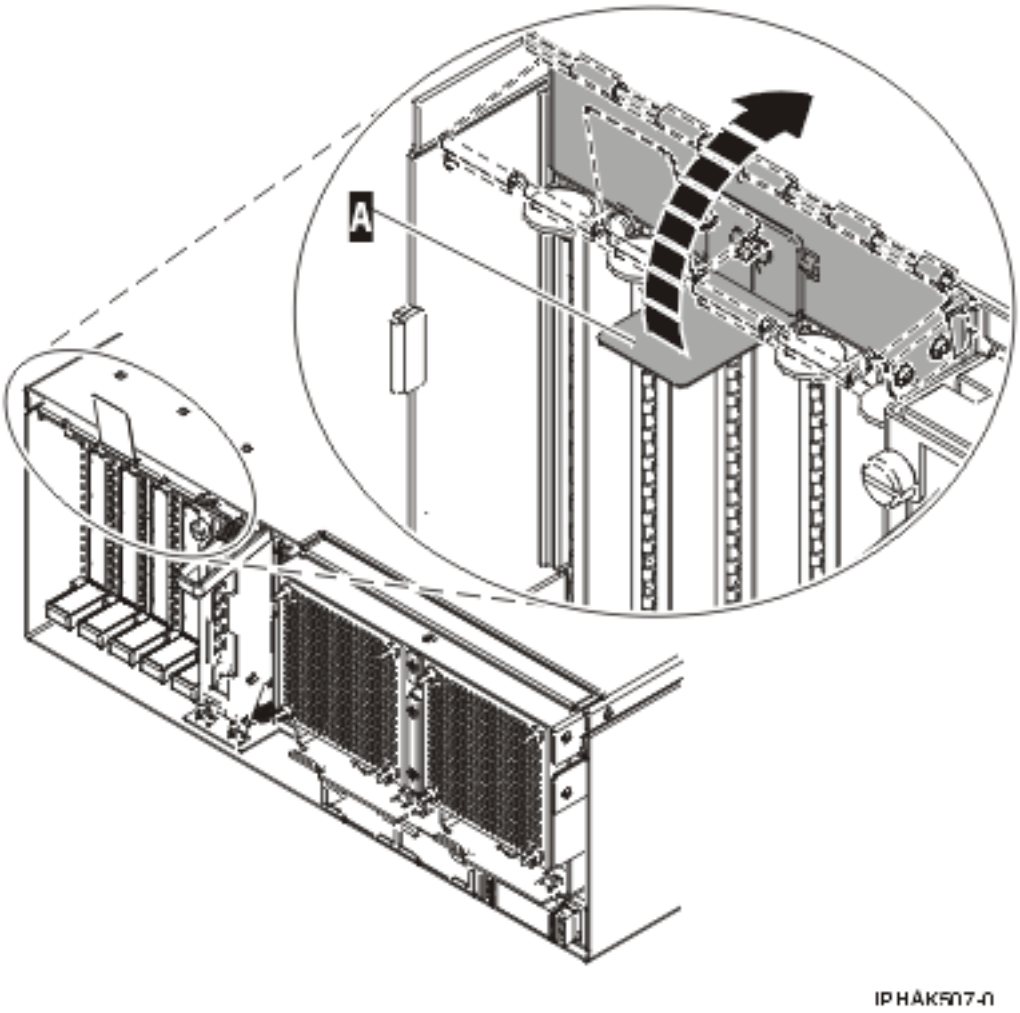


Figure 4. Rotate the EMC shield into the open position

7. Remove the cassette. Press downward on the lower cassette handle **(A)** as shown in the following figure. Pull the PCI cassette out of the system.

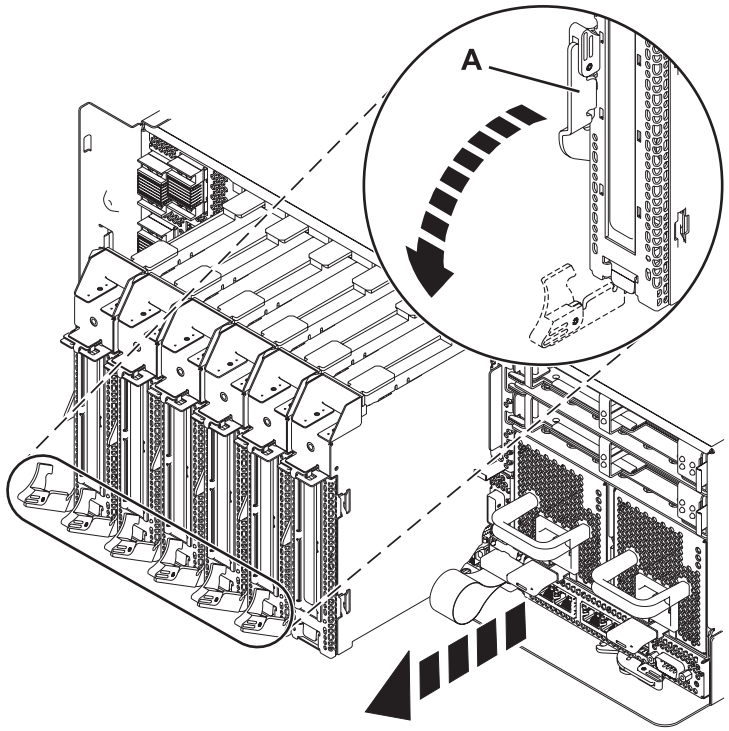


Figure 5. PCI adapter cassette removed from the system unit

8. Install the adapter into the PCI adapter cassette. See the following topics:
   - "PCI adapter single-width, fourth generation cassette" on page 21
   - "PCI adapter single-width, third generation cassette" on page 31
   - "PCI adapter double-wide cassette" on page 57
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. Run the **drmgr** command to enable an adapter to be installed.

    For example, to install an adapter in slot U7879.001.DQD014E-P1-C3, run:

    ```
    drmgr -c pci -r -s locationcode
    ```

    The following displays:

    ```
    The visual indicator for the specified PCI slot has been set to the
    identify state. Press Enter to continue or enter x to exit.
    ```
11. Press Enter.

    The following displays:

    ```
    The visual indicator for the specified PCI slot has been set to the
    action state. Insert the PCI card into the identified slot, connect any
    devices to be configured and press Enter to continue. Enter x to exit.
    ```
12. Slide the cassette into the cassette slot as shown in the following figure.

    Attention: Ensure proper alignment when you insert a PCI adapter cassette into the system.
13. When the cassette is fully inserted into the system, firmly press cassette handle **(A)** to lock the adapter in its connector.

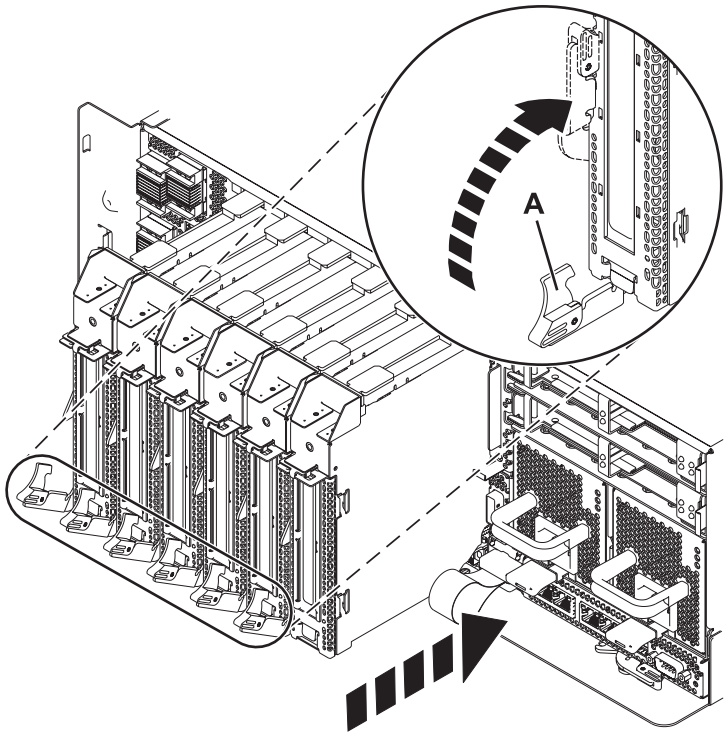


Figure 6. PCI adapter cassette installed in the system unit

14. Use the **lsslot** command to verify that U7879.001.DQD014E-P1-C3 is occupied.

    Enter **lsslot -c pci -s U7879.001.DQD014E-P1-C3**

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

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

Removing a PCI adapter contained in a cassette from the system

You can remove a PCI adapter.

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 using the Hardware Management Console.

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 162.

2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
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. If you are removing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:
   a. Open the rear rack door.
   b. Remove the units cover or covers if applicable.
6. Determine the location of PCI adapter in the system.
7. Pull down the cassette handle **(A)** as shown in the following figure. Pull the PCI cassette out of the system.

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

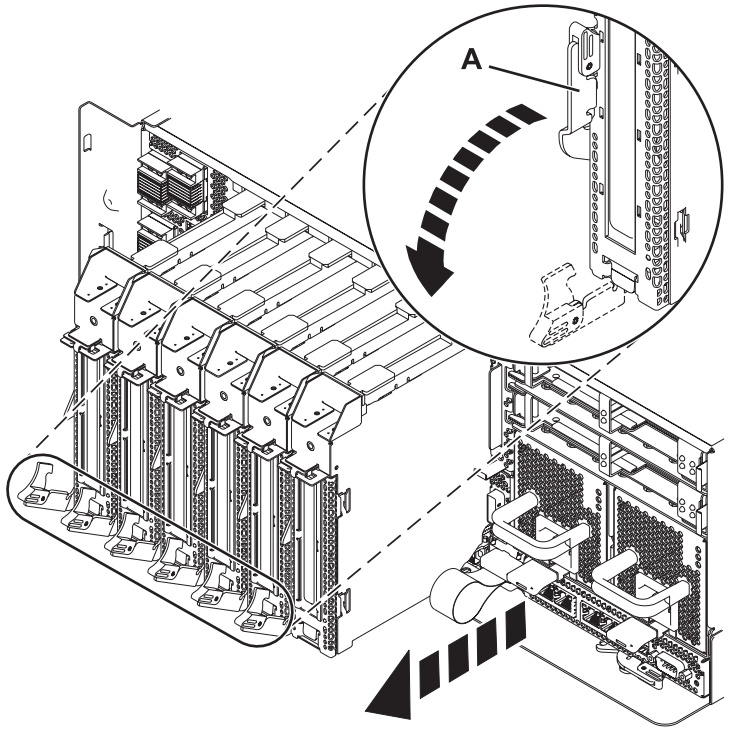


Figure 7. PCI adapter cassette removed from the system unit

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

   Note: The cover will have a label on it.
9. To remove the adapter from the cassette, refer to “Removing an adapter from the PCI adapter single-width, fourth generation cassette” on page 26.

Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment

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

About this task

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

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.

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

Notes:

1. Use this procedure to remove a PCI adapter and leave the slot in the system unit empty.
2. If the adapter that is removed will be placed into a different slot or system, complete this removal procedure, and then install the adapter as described in "Installing a PCI adapter contained in a cassette with the power on in the AIX environment" on page 2.
3. Procedures performed on a PCI adapter with the system power on in AIX, also known as hot-plug procedures, require the system administrator to take the PCI adapter offline prior to performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

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

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 162.
2. If you are removing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:
   a. Open the rear rack door.
   b. Remove the units cover or covers if applicable.
3. Determine the location of PCI adapter in the system.
4. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system unit.
5. Ensure that any processes or applications that might use the adapter are stopped.
6. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at AIX command line.
7. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays, press Enter.
8. At the FUNCTION SELECTION menu, select **Task Selection**, and then press enter.
9. At the Task Selection list, select **PCI Hot Plug Manager**.
10. Select **Unconfigure a Device**, and then press Enter.
11. Press F4 (or Esc +4) to display the **Device Names** menu.
12. Select the adapter you are removing in the **Device Names** menu.
13. Use the Tab key to answer `NO` to **Keep Definition**. Use the Tab key again to answer `YES` to **Unconfigure Child Devices**, and then press Enter. The **ARE YOU SURE** screen displays.
14. Press Enter to verify the information. Successful unconfiguration is indicated by the `OK` message displayed next to the Command field at the top of the screen.
15. Press F4 (or Esc +4) twice to return to the **Hot Plug Manager** menu.
16. Select **replace/remove PCI Hot Plug adapter**.
17. Select the slot that has the device to be removed from the system.
18. Select **remove**. A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
19. Label all cables attached to the adapter you plan to remove.
20. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.

21. Disconnect all cables attached to the adapter you plan to remove.
22. Before handling any PCI adapter, see "Handling static-sensitive devices" on page 170.
23. Pull down the cassette handle **(A)** as shown in the following figure. Pull the PCI cassette out of the system.

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

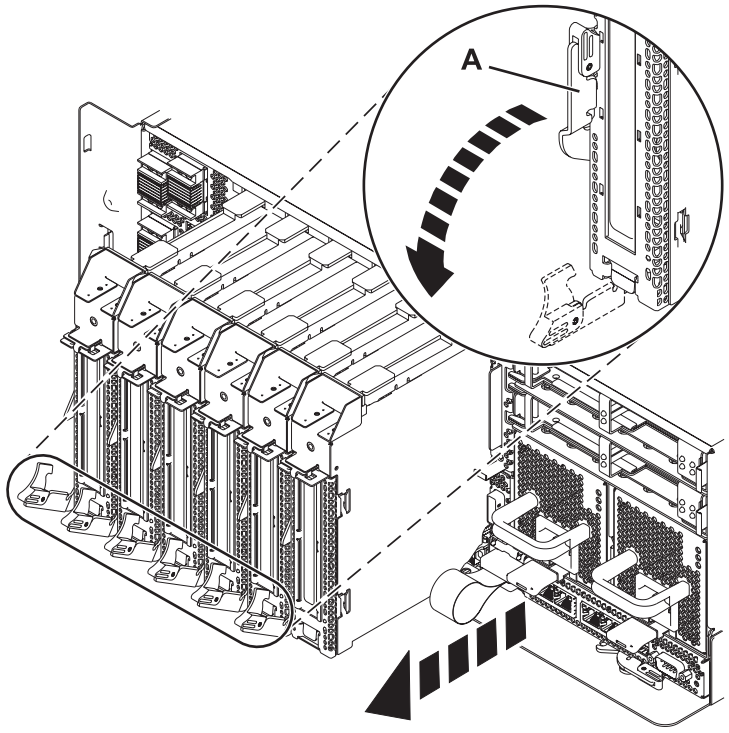


Figure 8. PCI adapter cassette removed from the system unit

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

    Note: The cover will have a label on it.
25. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the `OK` message displayed next to the Command field at the top of the screen.
26. If you have other adapters to remove, press the F3 key to return to the PCI Hot-Plug Manager menu and then return to step 21.

    or

    If you do not have other adapters to remove, continue with the next step.
27. Press F10 to exit the Hot-Plug Manager.
28. Run the **diag -a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
29. Place an empty cassette into the unused PCI slot for proper air flow.
    - To remove the adapter from the PCI adapter cassette, see "Removing an adapter from the PCI adapter single-width, fourth generation cassette" on page 26.
    - To install an adapter in the system, see "Installing a PCI adapter contained in a cassette with the power on in the AIX environment" on page 2.

Removing a PCI adapter contained in a cassette from the system with the power on in the Linux environment

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

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 using the Hardware Management Console.

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 on in the Linux environment:

Procedure

1. Ensure that the system meets the "Prerequisites for hot-plugging PCI adapters in Linux" on page 178.
2. Verify that the Linux, hot-plug PCI tools are installed. See "Verifying that the hot-plug PCI tools are installed for Linux" on page 178.
3. Perform the prerequisite tasks as described in "Before you begin" on page 162.
4. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
5. If you are removing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:
   a. Open the rear rack door.
   b. Remove the units cover or covers if applicable.
6. Determine the location of PCI adapter in the system.
7. Label, and then disconnect all cables attached to the adapter you plan to remove.
8. Run the **drmgr** command to enable an adapter to be removed:

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

   ```
   drmgr -c pci -r -s locationcode
   ```

   Follow the instructions on the display to complete the task.
9. Pull down the cassette handle **(A)** as shown in the following figure. Pull the PCI cassette out of the system.

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

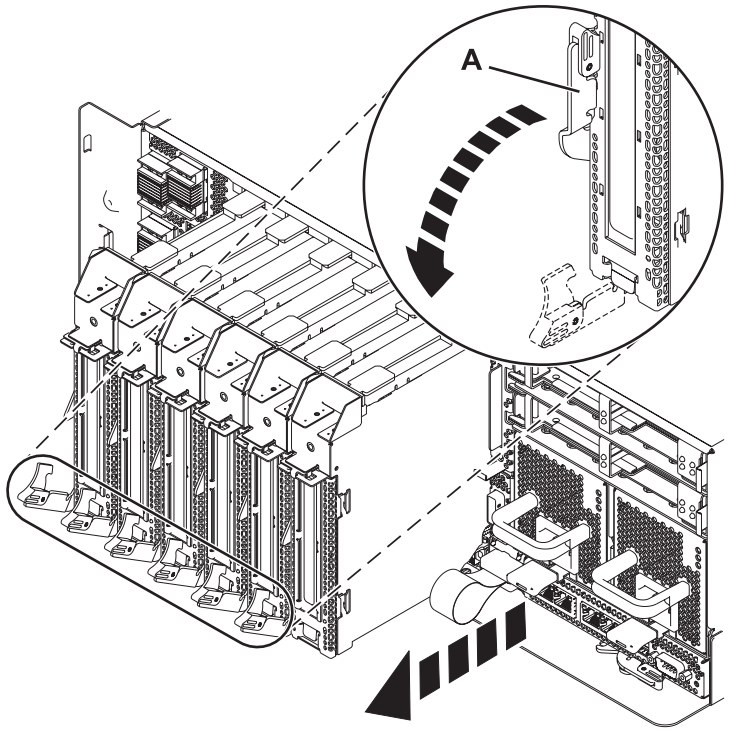


Figure 9. PCI adapter cassette removed from the system unit

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

    Note: The cover will have a label on it.
11. To remove an adapter from the PCI adapter cassette, refer to "Removing an adapter from the PCI adapter single-width, fourth generation cassette" on page 26.

Results

To replace the adapter in the system, see "Replacing a PCI adapter contained in a cassette in the system with the power on in the Linux environment" on page 20.

Replacing a PCI adapter contained in a cassette in the system

You can replace a PCI adapter.

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 179
- 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.

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 8 in order to have the slot powered off.

If your system is managed by the Hardware Management Console (HMC), use the HMC to replace 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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
3. If the adapter needs to be placed in a PCI adapter cassette, see one of the following topics:
   - "PCI adapter single-width, fourth generation cassette" on page 21
   - "PCI adapter single-width, third generation cassette" on page 31
   - "PCI adapter double-wide cassette" on page 57
4. At the back of the system, lift the cassette cover flap and 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. Slide the cassette into the cassette slot as shown in the following figure.

   Attention: Ensure proper alignment when you insert a PCI adapter cassette into the system.
7. When the cassette is fully inserted into the system, firmly press cassette handle **(A)** to lock the adapter in its connector.

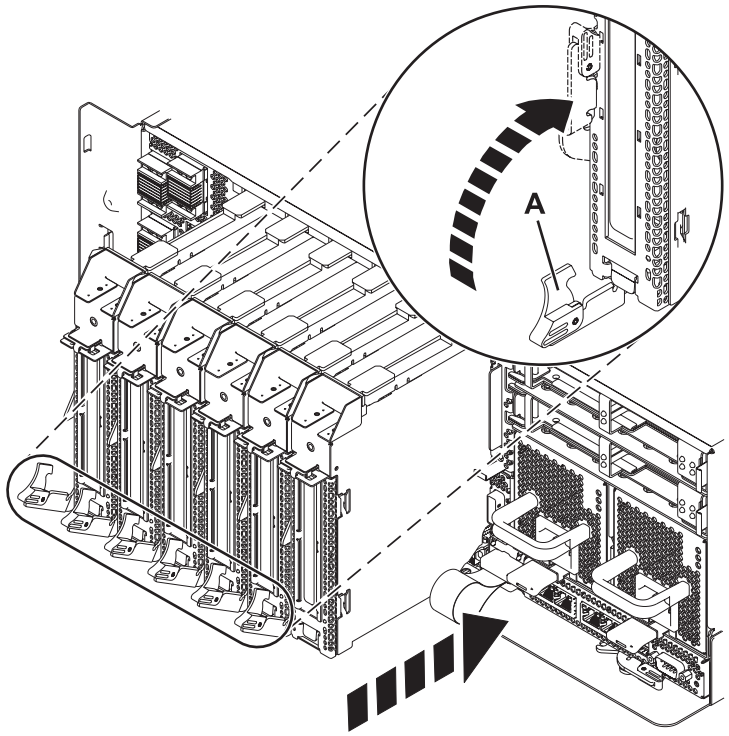


Figure 10. PCI adapter cassette installed in the system unit

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

Removing and replacing a PCI adapter contained in a cassette in the system with the power on in the AIX environment

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

About this task

If your system is managed by the Hardware Management Console (HMC), use the HMC to replace a PCI adapter. For instructions, see "Replacing a part by using the HMC" on page 180.

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.

Important:

1. Use this procedure if you intend to remove a failing PCI adapter and replace it with the same type of adapter.
2. If you plan to remove a failing adapter and leave the slot empty, see "Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment" on page 9.
3. This procedure should not be used to remove an existing adapter and install a different type of adapter. To install a different adapter, remove the existing adapter as described in "Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment" on page 9, and then install the new adapter as described in "Installing a PCI adapter contained in a cassette with the power on in the AIX environment" on page 2.

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

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

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
3. If you are removing and replacing a PCI adapter in a rack-mounted system or expansion unit, follow these steps:
   a. Open the rear rack door.
   b. Remove the units cover or covers if applicable.
4. Determine the location of the PCI adapter in the system.
5. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system unit.
6. Ensure that any processes or applications that might use the adapter are stopped.
7. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at AIX command line.
8. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays, press Enter.
9. At the FUNCTION SELECTION menu, select **Task Selection**, and then press enter.
10. At the Task Selection list, select **PCI Hot Plug Manager**.
11. Select **Unconfigure a Device**, and then press Enter.
12. Press F4 (or Esc +4) to display the **Device Names** menu.
13. Select the adapter you are removing in the **Device Names** menu.
14. Use the Tab key to answer `YES` to **Keep Definition**. Use the Tab key again to answer `YES` to **Unconfigure Child Devices**, and then press Enter. The **ARE YOU SURE** screen displays.
15. Press Enter to verify the information. Successful unconfiguration is indicated by the `OK` message displayed next to the Command field at the top of the screen.
16. Press F3 (or Esc +3) twice to return to the **Hot Plug Manager** menu.
17. Select **replace/remove PCI Hot Plug adapter**.
18. Select the slot that has the device to be removed from the system.
19. Select **Replace**.

    Note: A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
20. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
21. Label, and then disconnect all cables attached to the adapter you plan to remove.
22. Slide the cassette into the cassette slot as shown in the following figure.

    Attention: Ensure proper alignment when you insert a PCI adapter cassette into the system.
23. When the cassette is fully inserted into the system, firmly press cassette handle **(A)** to lock the adapter in its connector.

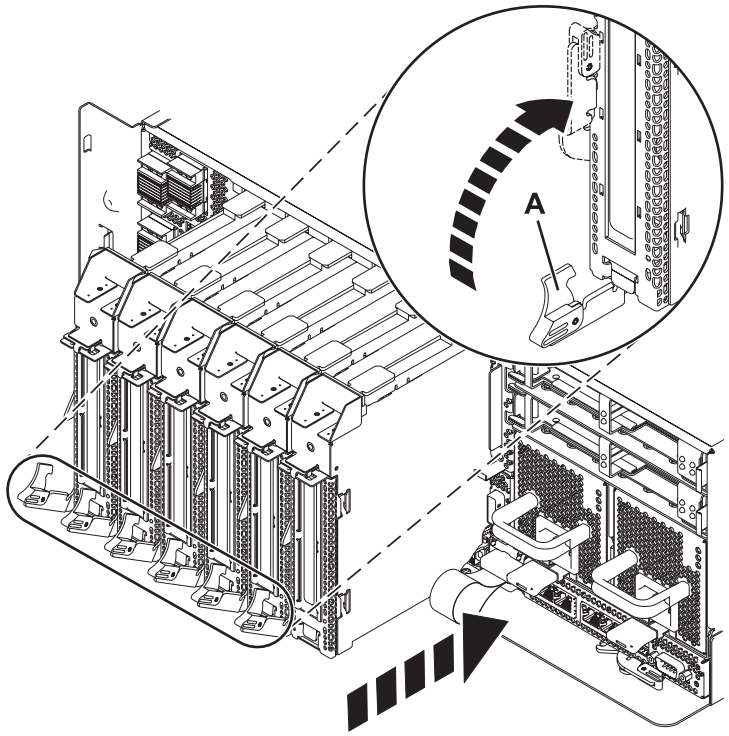


Figure 11. PCI adapter cassette installed in the system unit

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

    Note: The cover will have a label on it.
25. Install the adapter into the PCI adapter cassette. See the following topics:
    - "PCI adapter single-width, fourth generation cassette" on page 21
    - "PCI adapter single-width, third generation cassette" on page 31
    - "PCI adapter double-wide cassette" on page 57
26. At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
27. 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.
28. Lift and hold the PCI adapter EMC shield in the open position.
29. Slide the cassette into the cassette slot as shown in the following figure.

    Attention: Ensure proper alignment when you insert a PCI adapter cassette into the system.
30. When the cassette is fully inserted into the system, pull upward on the lower cassette handle **(A)** to lock the adapter in its connector.

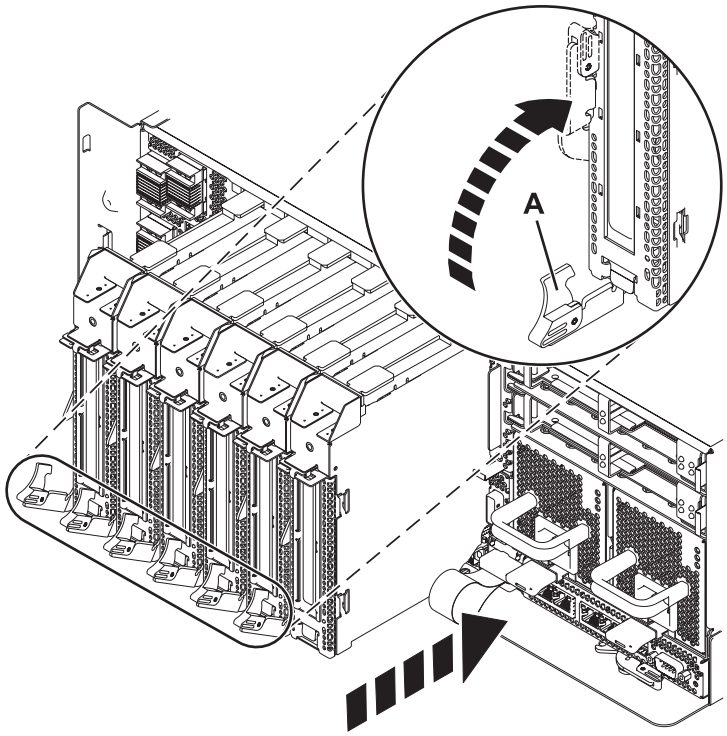


Figure 12. PCI adapter cassette removed from the system unit

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

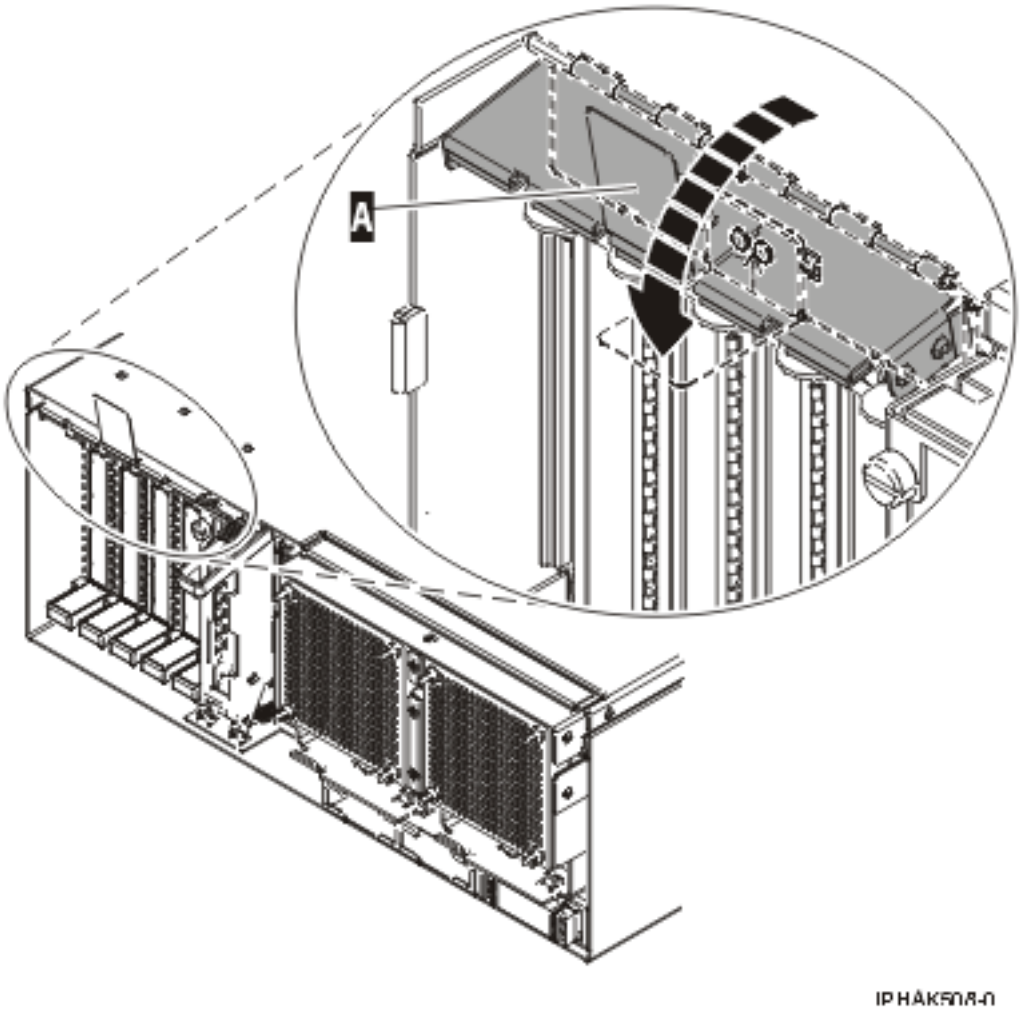


Figure 13. PCI adapter EMC shield in the closed position

33. Press Enter and continue to follow the screen instructions until you receive a message that the replacement is successful. Successful replacement is indicated by the OK message displayed next to the **Command** field at the top of the screen.
34. Press the F3 (or Esc+3) key to return to the **PCI Hot-Plug Manager** menu.
35. Press the F3 (or Esc+3) key to return to the **TASK** selection list.
36. Select **Log Repair Action**.
37. Select the resource just replaced, press Enter, press Commit (F7 or ESC 7), and then press Enter.
38. Press F3 (or Esc+3) to return to **TASK Selection List**.
39. Select **Hot Plug Task**, press enter.
40. Select **PCI Hot Plug Manager**, and then select **Configure a defined device**, and then press Enter.
41. Select the device just replaced from the list, and then press Enter. The device is now configured.
42. Press the F10 key to exit the diagnostic program.
43. Verify the PCI adapter by using the following instructions:
    a. Did you replace the adapter with the system power on?
       - Yes - Go to the next step.
       - No - Load the diagnostic program by doing the following:
         – If AIX is available, boot AIX, log in as root or CELOGIN, and then enter the **diag** command.
    b. Type the **diag** command if you are not already displaying the diagnostic menus

c. Select **Advance Diagnostic Routines**, and then select **Problem Determination**.
d. Select the name of the resource just replaced from the menu. If the resource just replaced is not shown, choose the resource associated with it. Press Enter, and then press **Commit** ((F7 or Esc+7)).
e. Did the Problem Determination identify any problems?
   - No: Continue to the next step.
   - Yes: A problem is identified
     – If you are a customer, record the error information, and then contact your service provider.
     – If you are an authorized service provider, return to map 210-5.

44. Press the F10 key to exit the diagnostic program.

Results

Replacing a PCI adapter contained in a cassette in the system with the power on in the Linux environment

You can replace a PCI adapter.

About this task

If your system is managed by the Hardware Management Console (HMC), use the HMC to replace a PCI adapter. For instructions, see "Replacing a part by using the HMC" on page 180.

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.

You must have already completed the procedure "Removing a PCI adapter contained in a cassette from the system with the power on in the Linux environment" on page 12 in order to have the slot powered off.

Note: Use this procedure only when you are replacing an adapter with an identical adapter. If you are replacing an adapter with an adapter that is not identical to the adapter removed, go to "Removing a PCI adapter contained in a cassette from the system with the power on in the Linux environment" on page 12 and "Installing a PCI adapter contained in a cassette with the power on in the Linux environment" on page 4.

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

Procedure

1. Perform prerequisite tasks as described in "Before you begin" on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
3. If the adapter needs to be placed in the PCI adapter cassette, see "Placing a PCI adapter in a single-width, fourth generation cassette" on page 21.
4. At the back of the system, lift the cassette cover flap and 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. Run the **drmgr** command to enable an adapter to be replaced:

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

   ```
   drmgr -c pci -r -s locationcode
   ```

   Follow the instructions on the display to complete the task.

7. Slide the cassette into the cassette slot as shown in the following figure.

   Attention: Ensure proper alignment when you insert a PCI adapter cassette into the system.
8. When the cassette is fully inserted into the system, firmly press cassette handle **(A)** to lock the adapter in its connector.

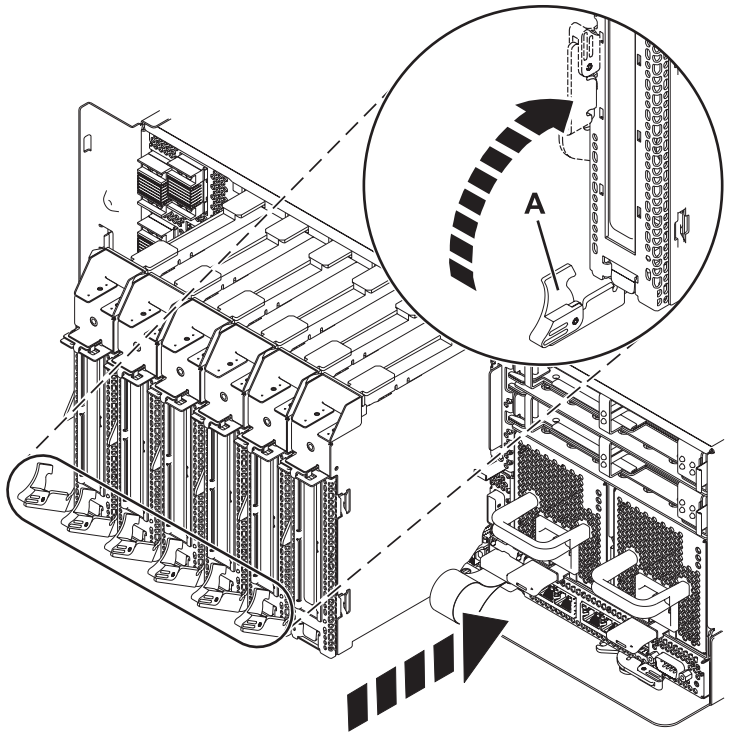


Figure 14. PCI adapter cassette installed in the system unit

9. Run the lsslot command to verify that the slot is occupied.

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

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

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

PCI adapter single-width, fourth 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, fourth 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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
3. Remove any shipping handles or brackets attached to the adapter.

4. Unlock the cassette guide rail.
   a. Lift the retaining lock of the guide rail.
   b. Push the guide rail as shown in the following figure.

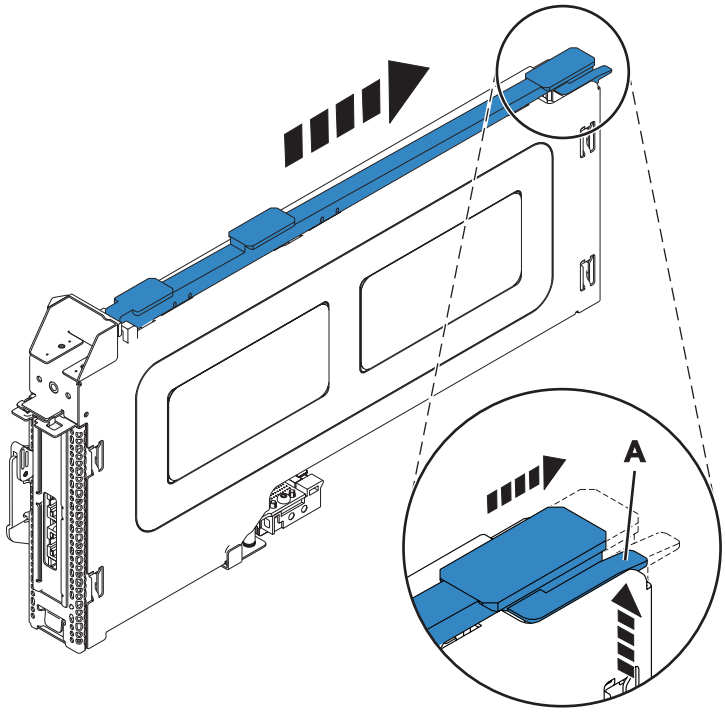


Figure 15. PCI adapter cassette guide rail removed

5. Remove the cassette cover by doing the following:
   a. Slide the cover out of the grooves on the cassette.
   b. Lift the cover off the cassette.

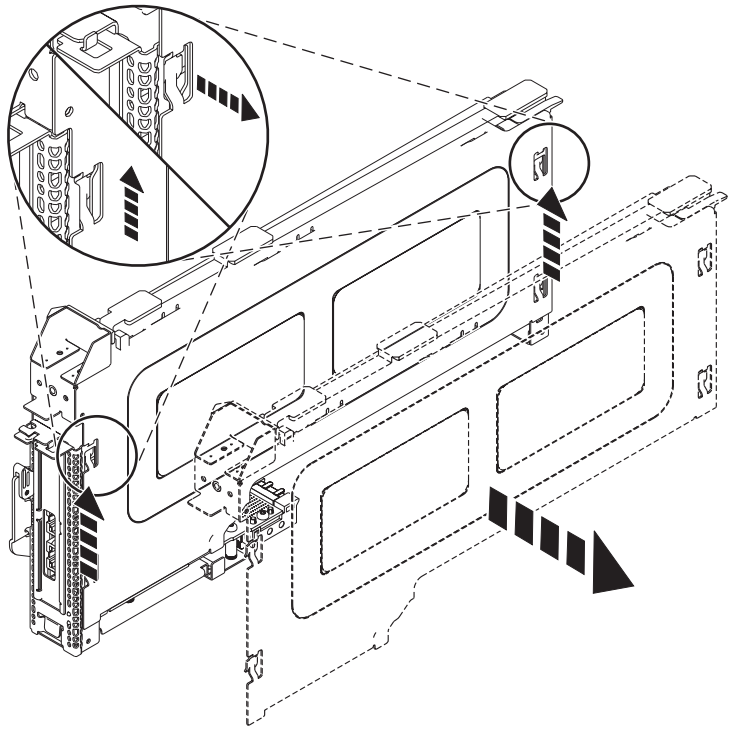


Figure 16. PCI adapter cassette cover removed

6. 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, fourth generation cassette" on page 26.
      - 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, into the open position, to allow the placement of the adapter.
7. Place the adapter in the cassette by doing the following:
   a. Insert the adapter into the cassette and align the tailstock with the tailstock retaining channel.
   b. Slid the adapter into the connector ensuring that the tailstock is in the channel.
   c. To lock in position, press down on the top of the tailstock adapter **(A)**.
   d. Position the adapter retainers clips to support the adapter, and then rotate the retainer clip into the closed position **(B)**.

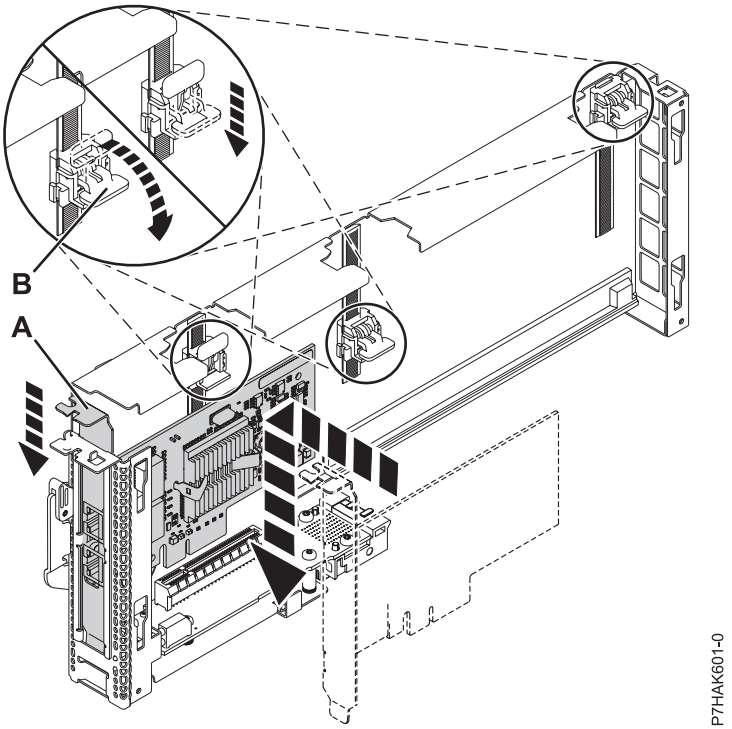


Figure 17. Adapter installed into the PCI adapter single-width cassette

8. Replace the cassette cover by doing the following:
   a. Slide the cover into the grooves **(A)** on the cassette.
   b. Ensure the locating tab **(B)** is installed inside of the cassette.
   c. Push the cover down to lock the cover into place.

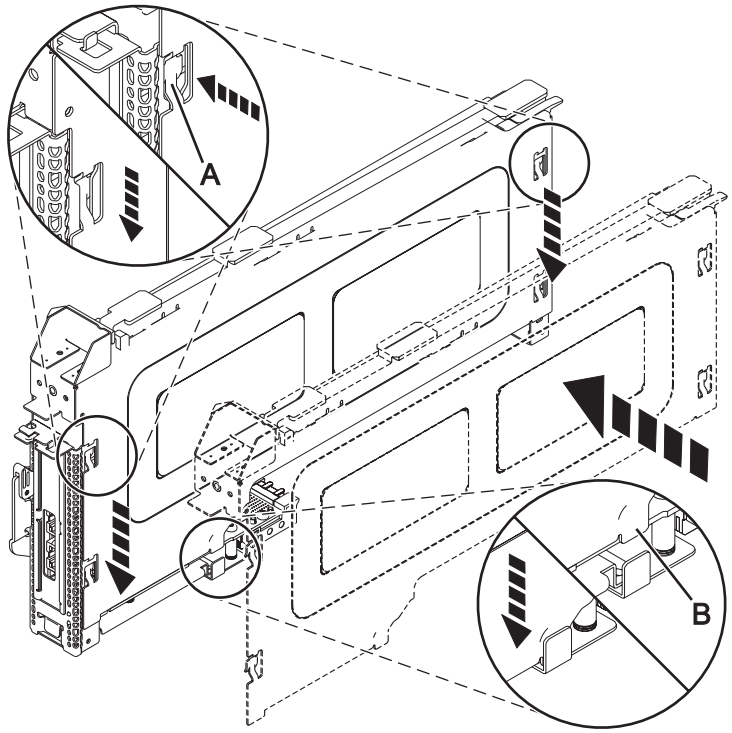


Figure 18. PCI adapter cassette cover replaced

9. Lock the cassette guide rail by doing the following:
   a. Push the retaining lock into the guide rail.
   b. Slide the guide rail as shown in the following figure.

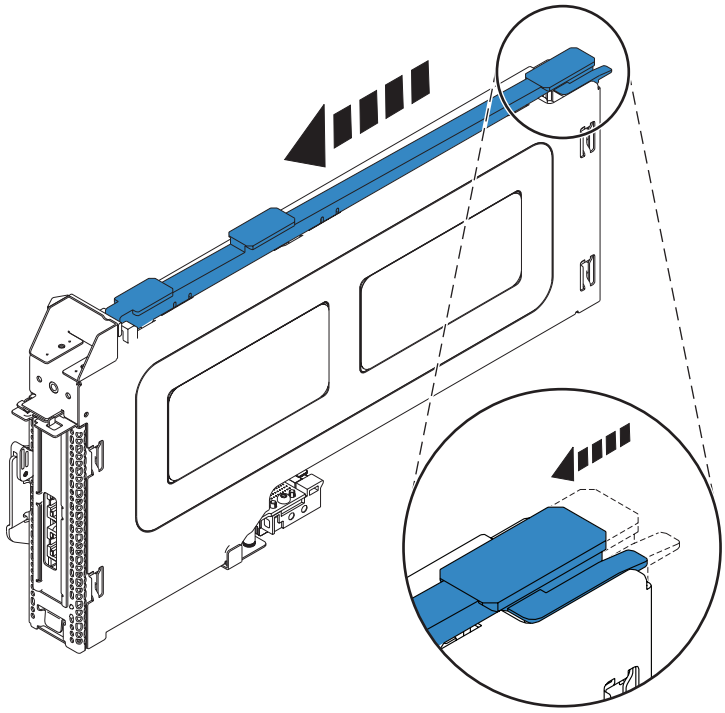


Figure 19. PCI adapter cassette guide rail locked

Removing an adapter from the PCI adapter single-width, fourth 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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
3. Remove the cassette from the system.
4. Unlock the cassette guide rail.
   a. Lift the retaining lock of the guide rail.
   b. Push the guide rail as shown in the following figure.

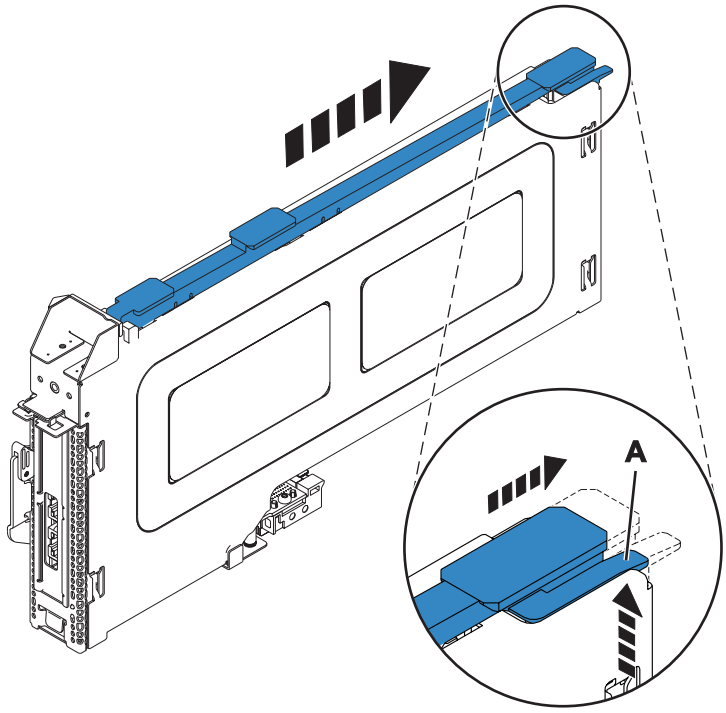


Figure 20. PCI adapter cassette guide rail removed

5. Remove the cassette cover by doing the following:
   a. Slide the cover out of the grooves on the cassette.
   b. Lift the cover off the cassette.

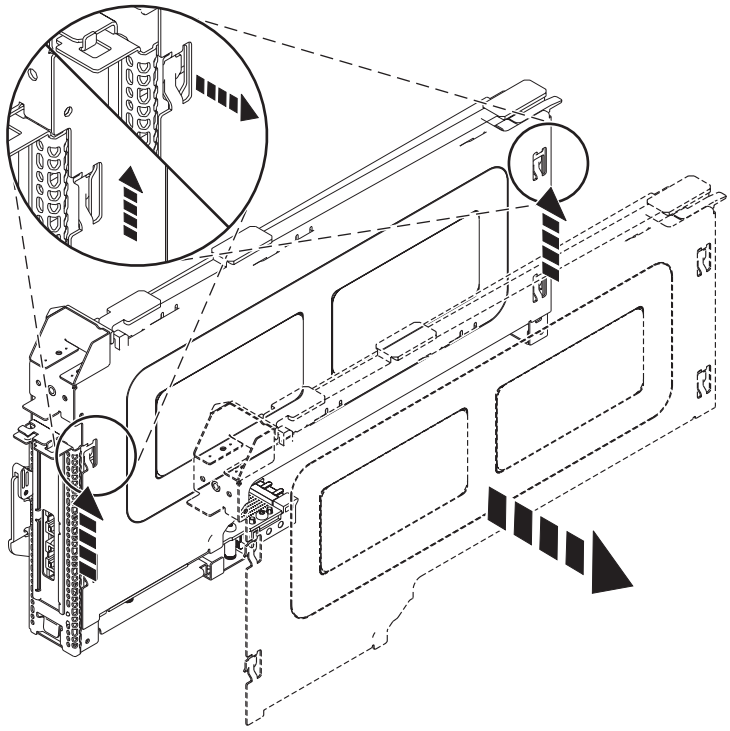


Figure 21. PCI adapter cassette cover removed

6. Remove the adapter from the cassette by doing the following:
   a. Unlock the adapter retainers by rotating the retainer clips **(A)** into the horizontal position. See Figure 22 on page 29.

      Notes:

      1) The edge of the adapter located at the end of the cassette that contains the cassette handles is called the adapter **tailstock (C)**.
      2) Two retainers clips **(A)** are located at the top of the cassette, along the top edge of the adapter. Slid the adapter retainers clips away from the adapter..
      3) When the retainer clip is in the horizontal position, the retainers clips are unlocked and can slide away from the card.
      4) If the corner support retainer clip is used, unlock it, and then slide the corner support retainer clip away from the card.

   b. Remove the adapter out of the cassette by grasping the edge of the adapter opposite the tailstock, and then lift the adapter away from the bottom of the cassette. Slid the adapter out of the tailstock retaining channel **(B)**.

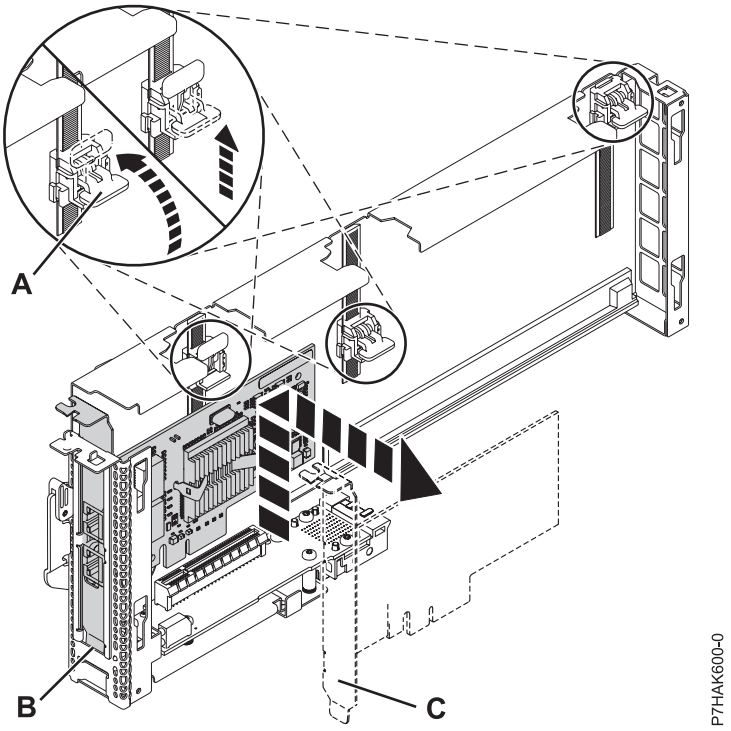


Figure 22. Adapter removed from the PCI adapter cassette

c. 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.

7. Place a PCI adapter or filler panel in the cassette. See "Placing a PCI adapter in a single-width, fourth generation cassette" on page 21.
8. Replace the cassette cover by doing the following:
   a. Slide the cover into the grooves **(A)** on the cassette.
   b. Ensure the locating tab **(B)** is installed inside of the cassette.
   c. Push the cover down to lock the cover into place.

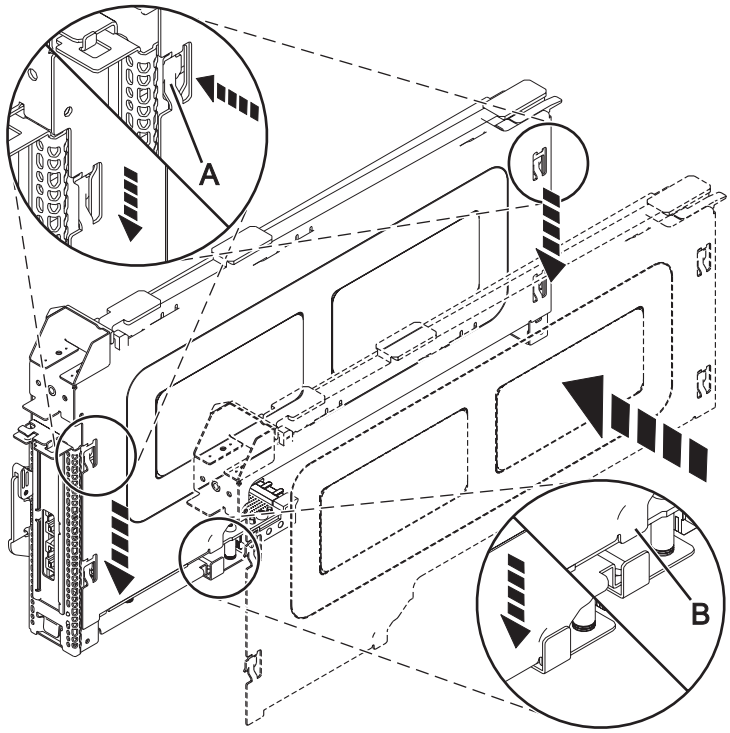


Figure 23. PCI adapter cassette cover replaced

9. Lock the cassette guide rail by doing the following:
   a. Push the retaining lock into the guide rail.
   b. Slide the guide rail as shown in the following figure.

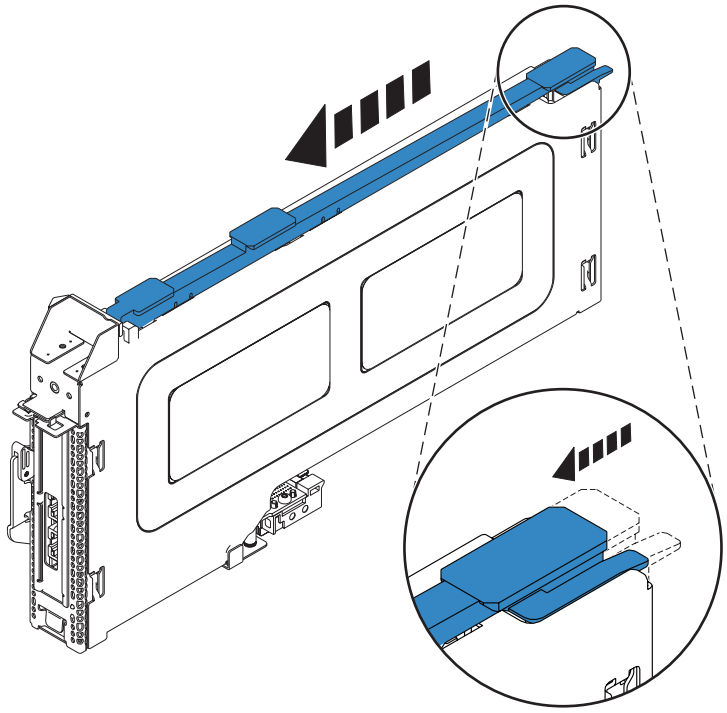


Figure 24. PCI adapter cassette guide rail locked

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

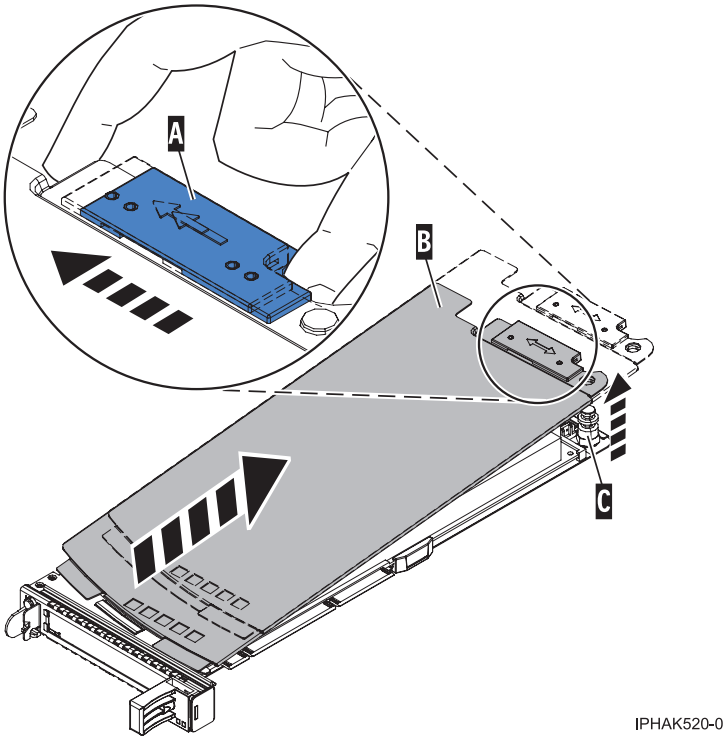


Figure 25. PCI adapter single-width cassette cover removed

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 41.
      - 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 26 on page 33.

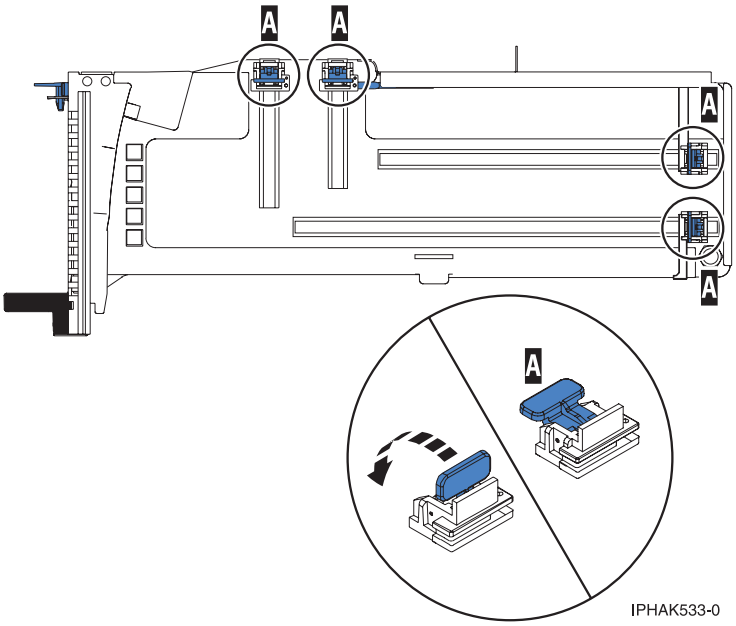


Figure 26. Adapter retainers

c. Rotate the tailstock clamp into the open position.

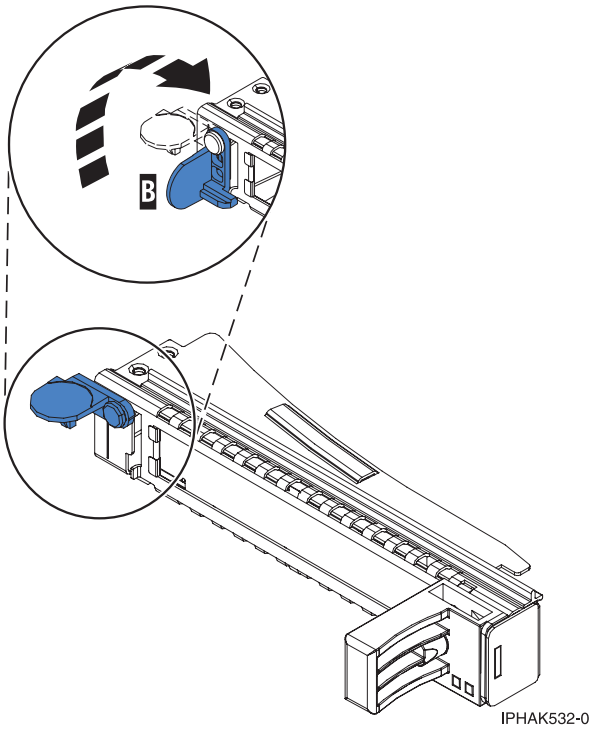


Figure 27. Tailstock clamp in the open position

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 28 on page 34.
   b. Rotate the adapter toward the top of the cassette and into place.

c. Close the tailstock clamp **(B)**. See Figure 28.

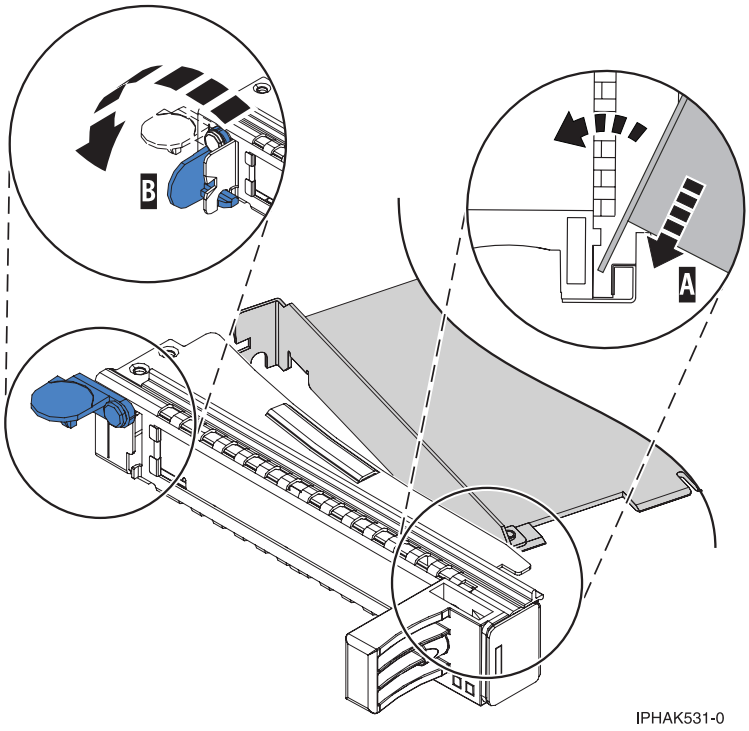


Figure 28. Adapter removed from the PCI adapter single-width cassette

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 29 on page 35.

      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.

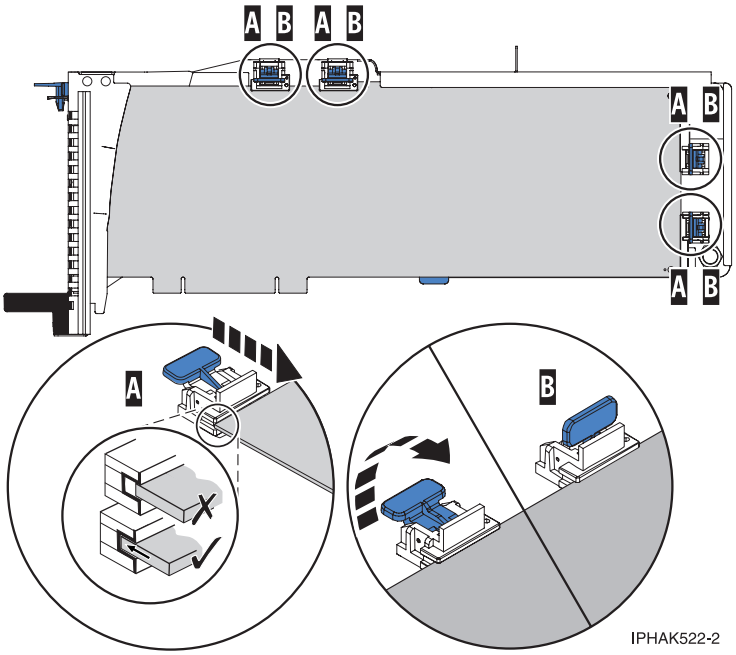


Figure 29. Large adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for medium-length adapters

a) Remove the adapter stabilizer **(C)**. See Figure 30 on page 36.

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.

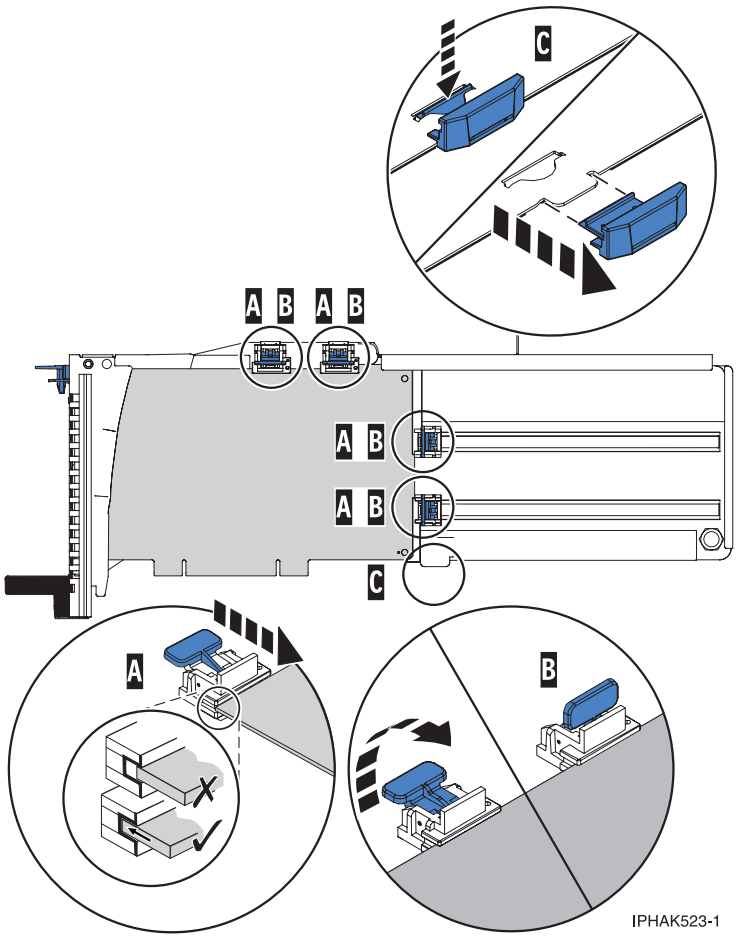


Figure 30. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for small adapters

a) Remove the adapter stabilizer **(C)**. See Figure 31 on page 37.

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.

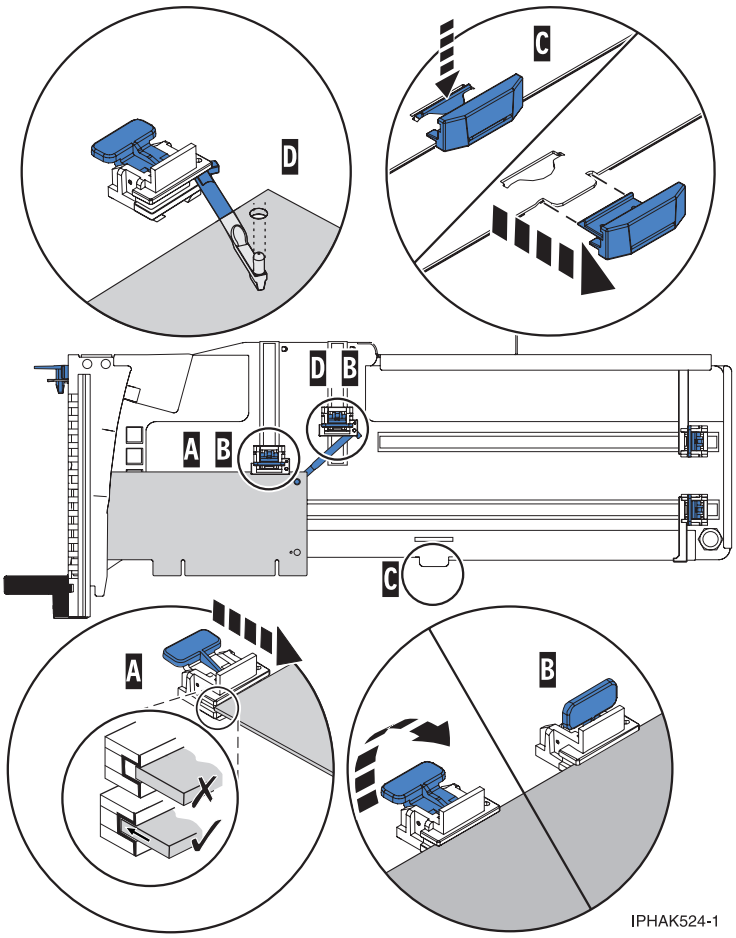


Figure 31. Small adapter in the PCI adapter cassette with the supports and the hookarm in place

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.

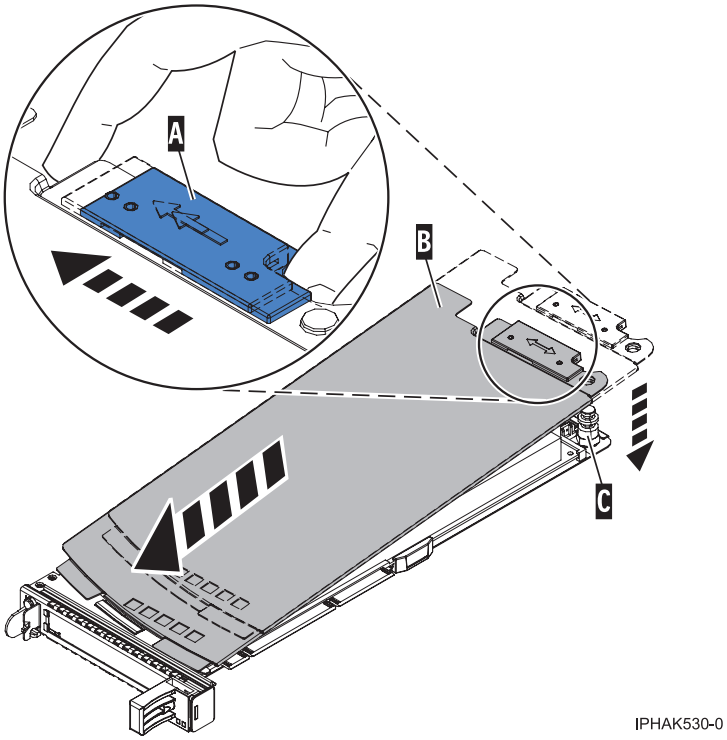


Figure 32. PCI adapter cassette cover replaced

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

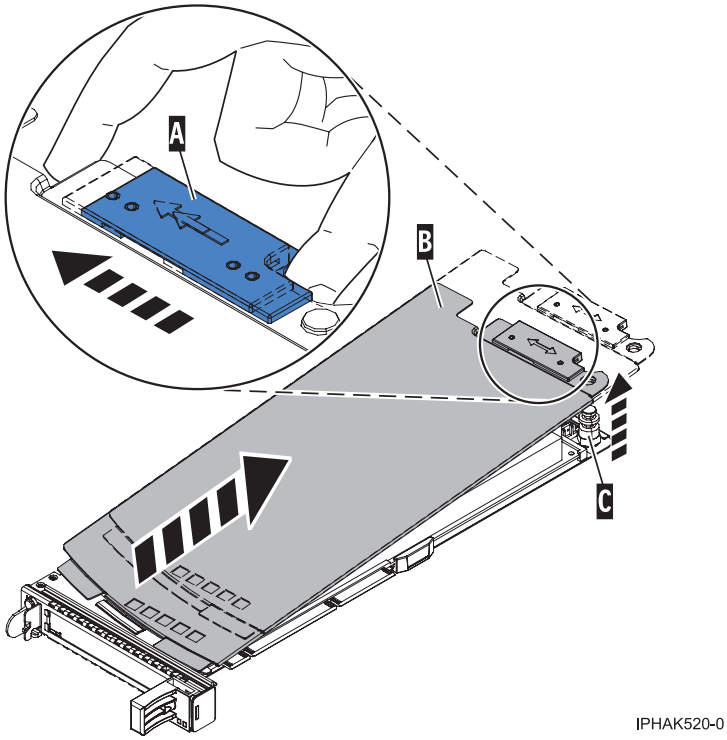


Figure 33. PCI adapter single-width cassette cover removed

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 34 on page 40.
   b. Rotate the adapter toward the top of the cassette and into place.
   c. Close the tailstock clamp **(B)**. See Figure 34 on page 40.

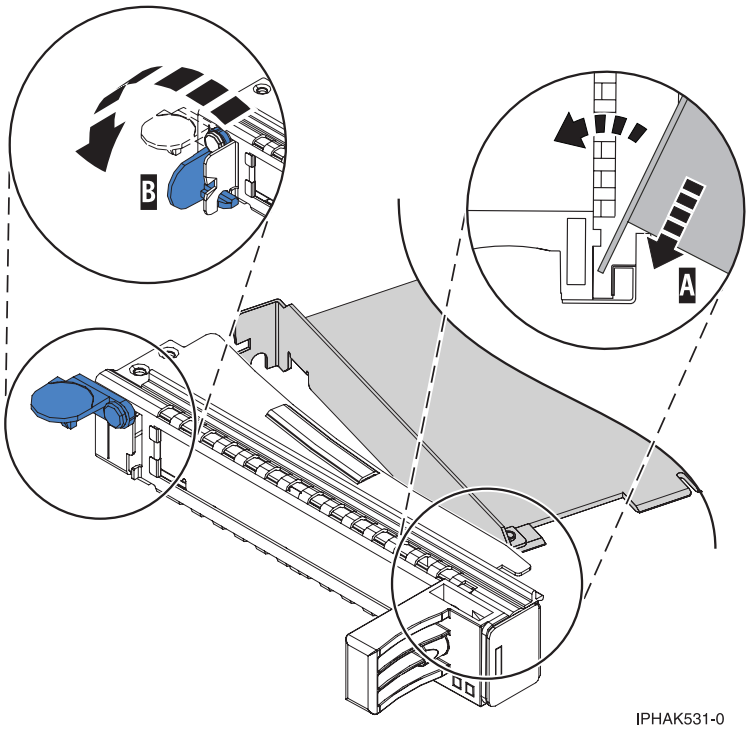


Figure 34. Placing the PCI adapter single-width cassette

d. Position the adapter retainer to support the adapter.

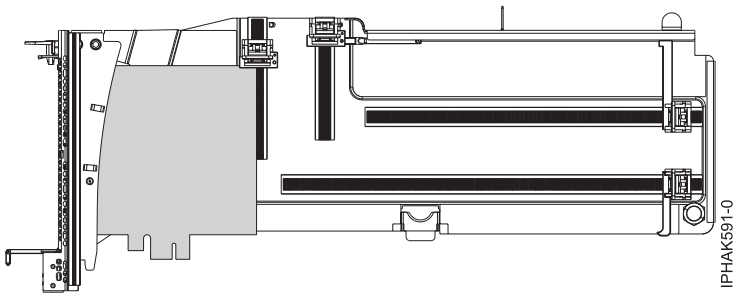


Figure 35. Side view of adapter in cassette

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.

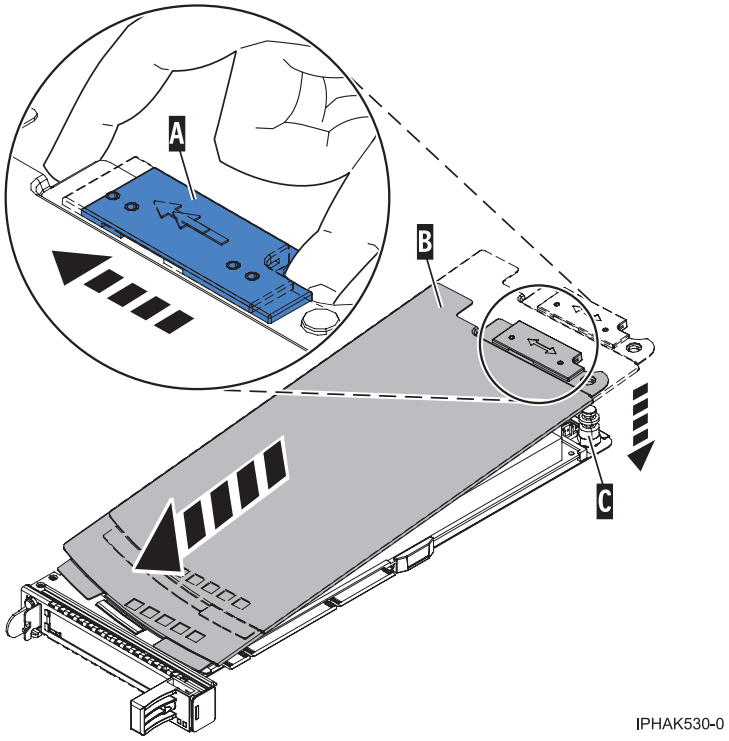


Figure 36. PCI adapter cassette cover replaced

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

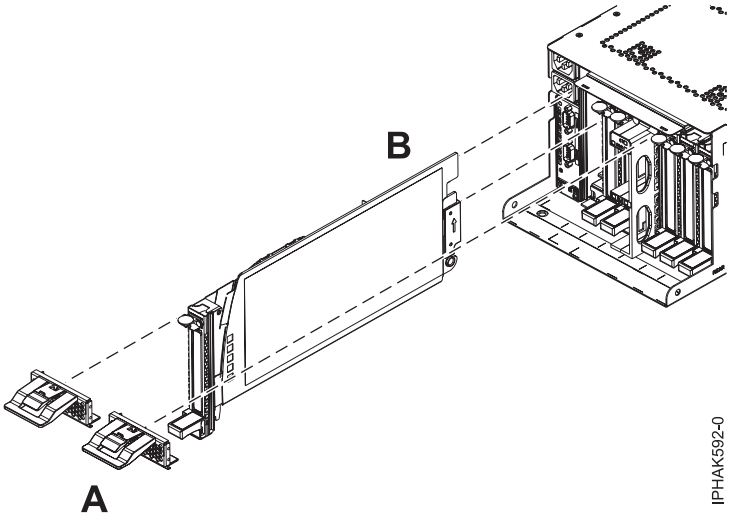


Figure 37. Replace the cassette and install the EMC grill

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
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.

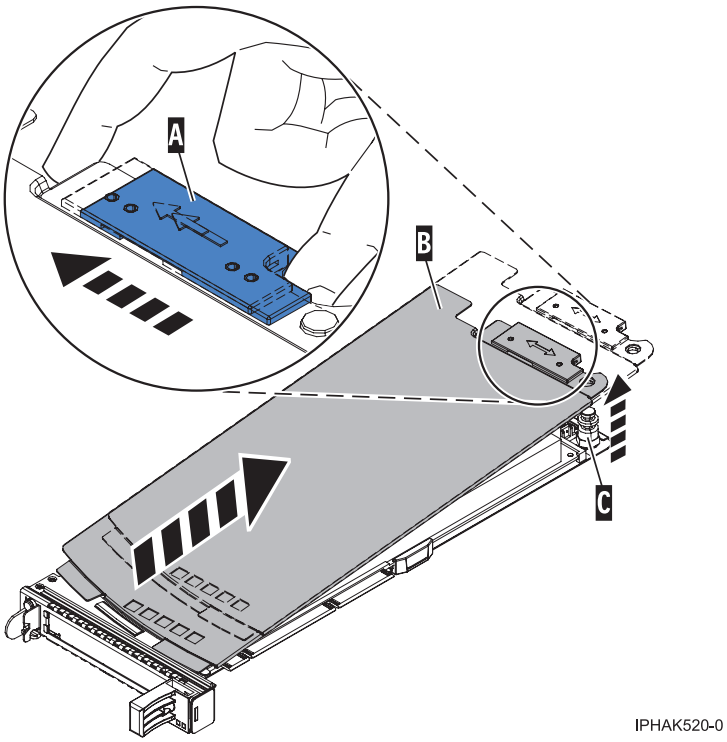


Figure 38. PCI adapter cassette cover removed

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 39 on page 43.

      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.

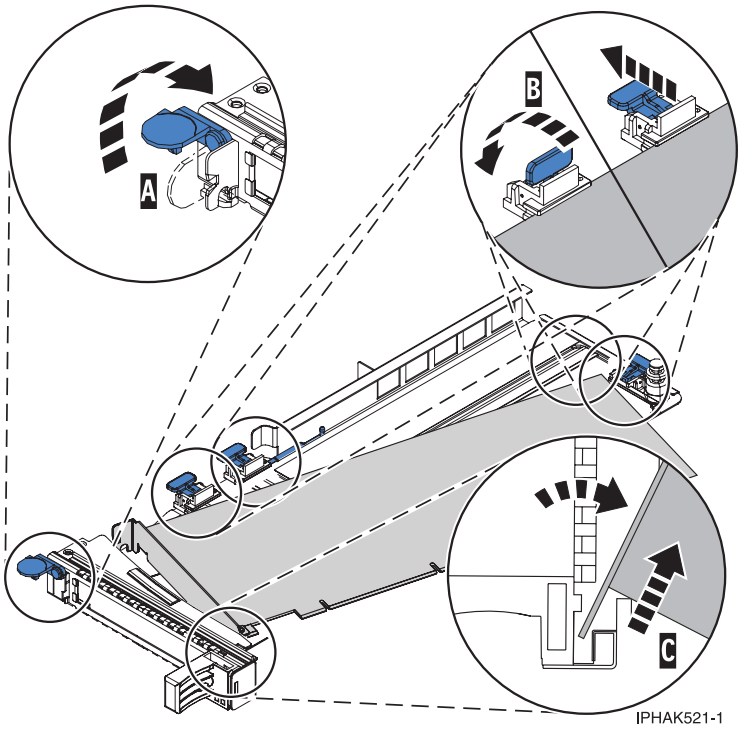


Figure 39. Adapter removed from the PCI adapter cassette

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 31.
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.

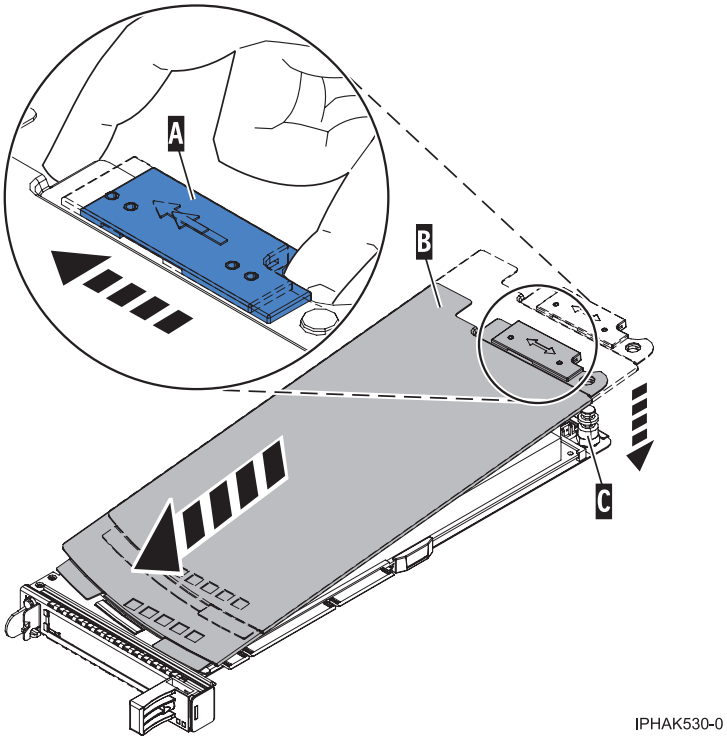


Figure 40. PCI adapter cassette cover replaced

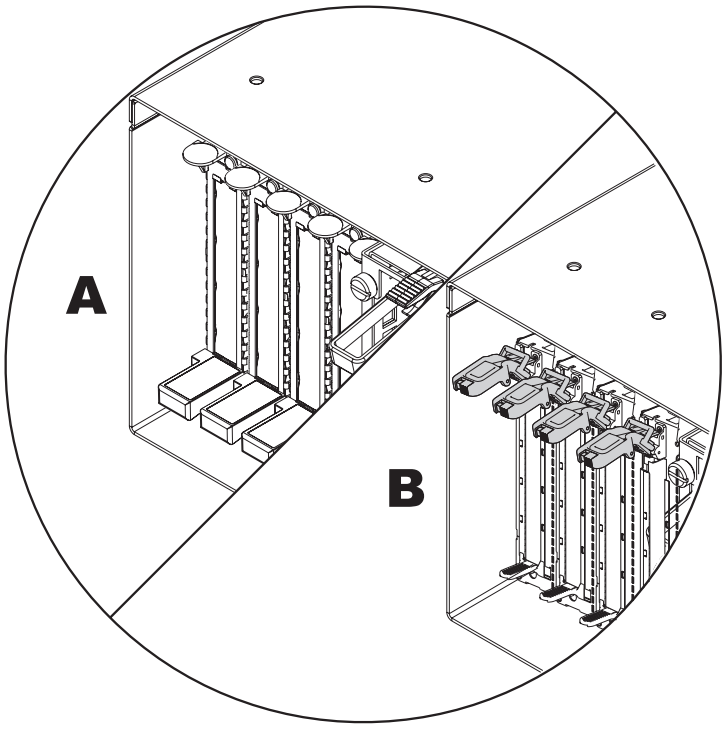
Results

PCI adapter single-width, first and second generation cassettes

You might need to remove, replace, or install PCI adapters in a single-width, generation 1, generation 2, or generation 2.5 cassette.

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

Use the following graphic to determine your PCI cassette generation.



A Generation 3 or higher. Use the procedures in the topic "PCI adapter single-width, third generation cassette" on page 31.

B Generation 2.5 or earlier. Use the following procedures.

Placing a PCI adapter in a single-width, first or second generation cassette

You can place a PCI adapter in a single-width, generation 1, generation 2, or generation 2.5 cassette. cassette. Use the procedure in this topic to perform this task.

Before you begin

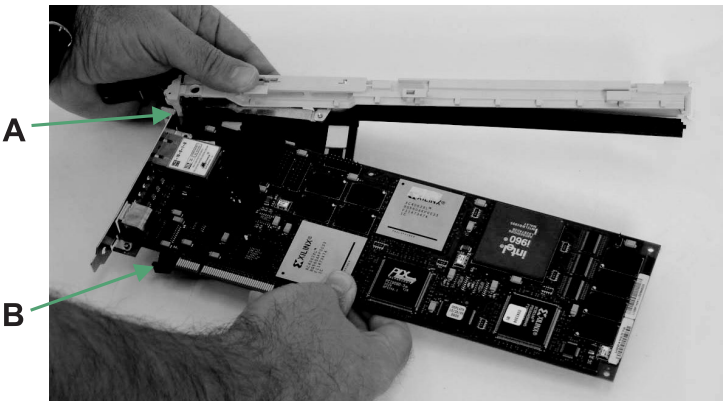
Prerequisite: This procedure begins where "Removing an adapter from the PCI adapter single-width, first or second generation cassette" on page 51 ends.

About this task

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

Procedure

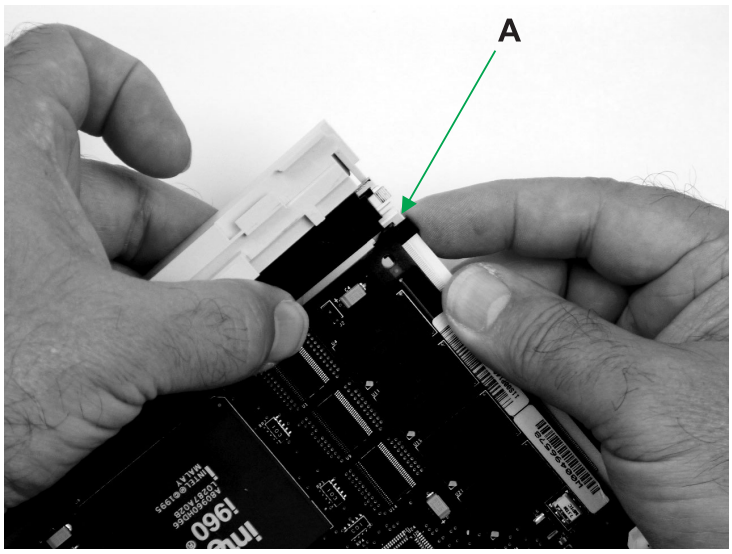
1. Select the PCI adapter type:
   - If you are placing a large adapter, go to step 2.
   - If you are placing a small adapter, go to step 4 on page 46.
2. Install a large adapter in the cassette.



a. Place the adapter into the cassette so that the upper-left corner of the adapter engages the adjustable top adapter retaining clip **(A)**.
b. Rotate the adapter so that the adapter engages the slot in the bottom adapter retaining clip **(B)** and the top corner of the adapter is seated into the adjustable top adapter retaining clip.

   If the adapter is not a full-height adapter, you must slide the adjustable top adapter-retaining clip downward until the lower edge of the adapter is seated into the slot on the bottom adapter-retaining clip.

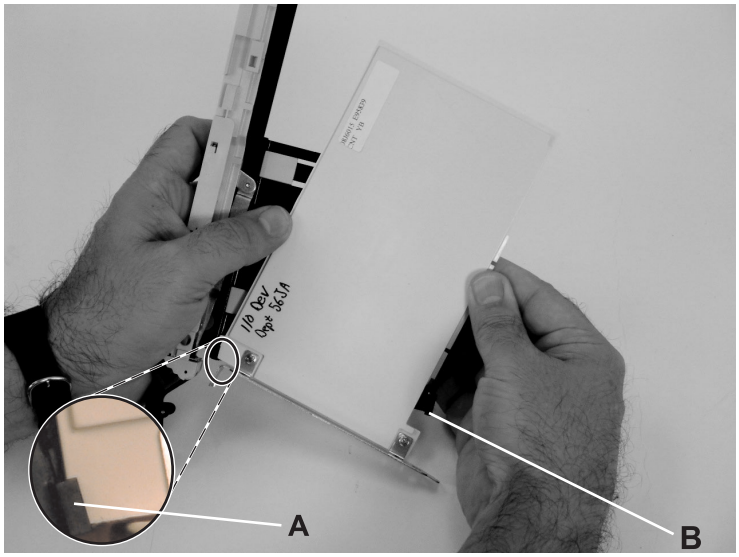
3. Slide the adapter arms toward the large adapter.



a. Slide the large adapter retaining arm **(A)** toward the adapter on the cassette linkage rail.
b. Make sure that the top adapter retaining clip holds the upper-right corner of the adapter.
c. Make sure that the bottom adapter retaining clip holds the lower-right corner of the adapter.

   It might be necessary to apply pressure to engage and hold the bottom of the adapter.
d. To ensure that the adapter is secure, slide the large adapter retaining arm closer to the adapter (as needed), until the adapter is firmly held in place.
e. Go to step 6 on page 47.

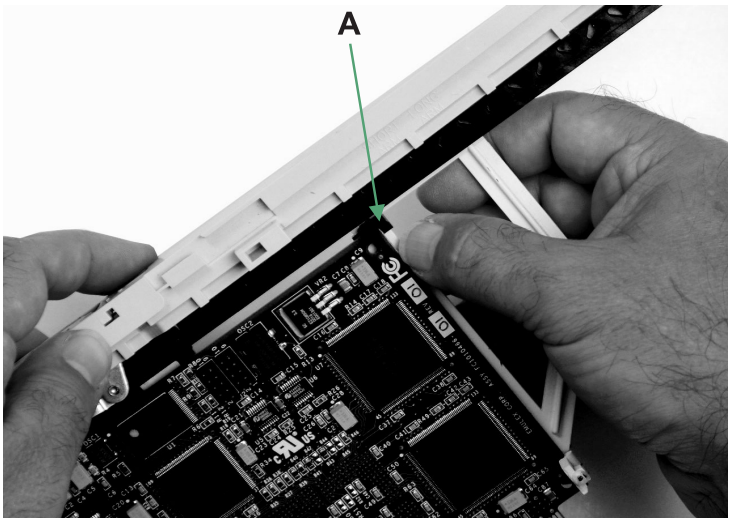
4. Install a small adapter in the cassette.



a. Place the adapter into the cassette so that the upper-left corner of the adapter engages the adjustable top adapter retaining clip **(A)**.
b. Rotate the adapter so that the adapter engages the slot in the bottom adapter retaining clip **(B)** and the top corner of the adapter is seated into the adjustable top adapter retaining clip.

   If the adapter is not a full-height adapter, you must slide the adjustable top adapter-retaining clip downward until the lower edge of the adapter is seated into the slot on the bottom adapter-retaining clip.

5. Slide the adapter arms toward the small adapter.



a. Slide the small adapter retaining arm **(A)** toward the adapter on the cassette linkage rail.
b. Make sure that the top adapter retaining clip holds the upper right corner of the adapter.
c. Make sure that the bottom adapter retaining clip holds the lower right corner of the adapter.

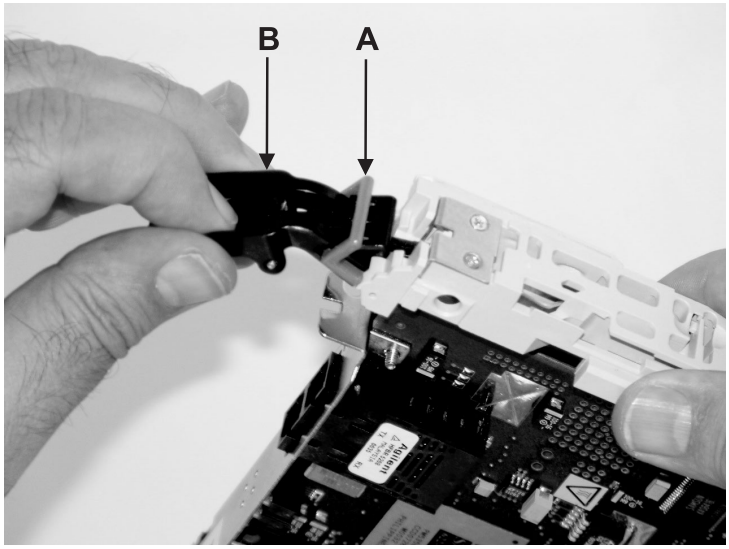
   It might be necessary to apply pressure to engage and hold the bottom of the adapter.

d. To ensure that the adapter is secure, slide the small adapter retaining arm closer to the adapter (as needed), until the adapter is firmly held in place.

6. Install the EMC shield.

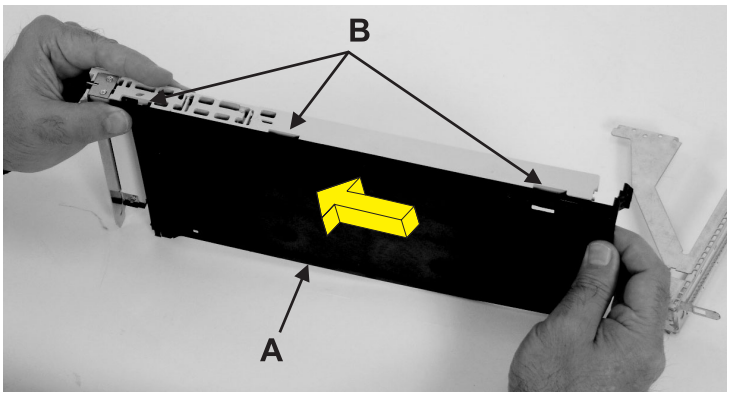
Install the metal EMC shield **(A)** to the top of the tailstock.

7. Lock the handle.



a. Lower the lever **(B)** on the cassette linkage assembly until it moves into the down position (the adapter or blank filler should move up into the cassette assembly).
b. Push on both sides of the gray plastic locking bar **(A)** to ensure that the handle is pushed into the locked position.

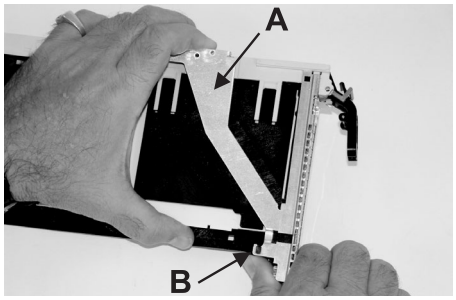
8. Install the cover.

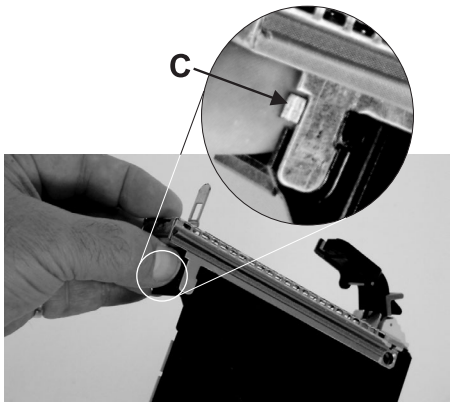


a. Position the adapter and cassette assembly with the handle on the left (in the down position) and the top facing away from you.
b. Place the cover **(A)** on the cassette assembly and align the tabs on the cover with the holes **(B)** in the assembly.
c. Slide the cover toward the handle until the hole in the cover aligns with the hole in the cassette assembly.

   The cover might be difficult to slide. If you grasp the left end (handle end) of the cassette and the right end of the cover, you can use enough force to push the cover onto the PCI adapter cassette assembly.

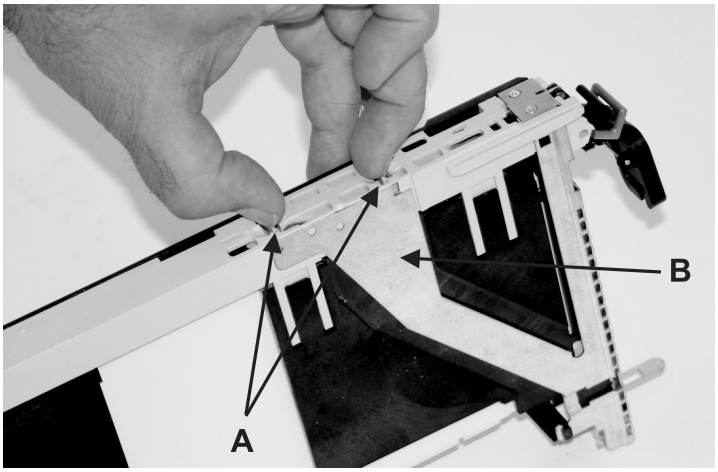
9. Slide on the bezel and latch it.





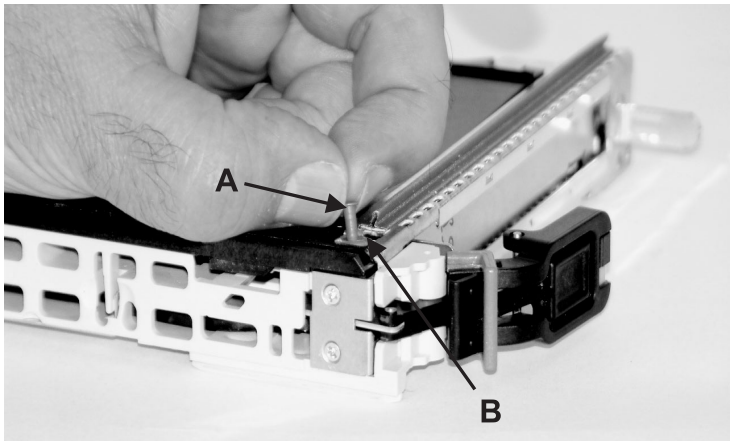
a. Turn over the cassette so the cover side is down.
b. While holding the bezel extension **(A)** out, slide the bezel onto the cassette assembly.
c. Push the plastic cover arm latch **(B)** in the bezel hook.
d. Turn over the cassette so the cover side is facing up.
e. Push the cover tab **(C)** up to ensure that it is holding the bezel to the cover.

10. Lock the bezel.



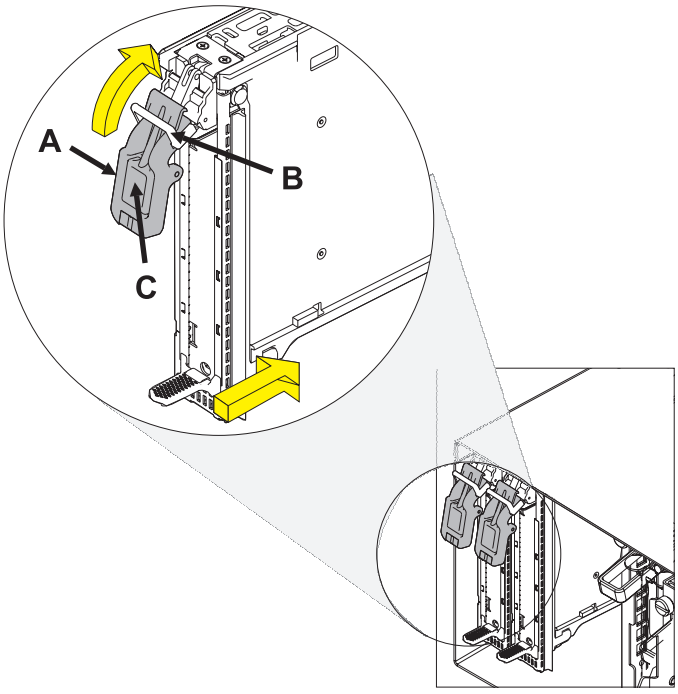
   a. Push the top part of the bezel extension **(B)** down until the metal tabs lock into the slots in the PCI adapter cassette assembly.
   b. Make sure that the extension arm engages the pins **(A)** on the cassette assembly. (You should be able to see the pins in the holes in the arm).

11. Install the bushing-lock pin and bushing.



   a. Turn over the cassette so the cover side is up and the top of the adapter is facing you.
   b. Install the bushing **(B)** in the PCI adapter cassette assembly by pressing it into the cassette assembly hole.
   c. Install the lock pin **(A)** in the bushing by pressing it into the hole in the bushing.

12. Install the PCI adapter cassette.



a. Before installing the PCI adapter cassette, make sure the lever **(A)** is down.
b. Push the locking bar **(B)** upward into the locked position.
c. Slide the PCI adapter cassette all the way into the assembly.
d. Press the tab **(C)** to unlock the locking bar.
e. Rotate the lever **(A)** up to install it in the slot.

Removing an adapter from the PCI adapter single-width, first or second generation cassette

You can remove a PCI adapter in a single-width, generation 1, generation 2, or generation 2.5 cassette. Use the procedure in this topic to perform this task.

Before you begin

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

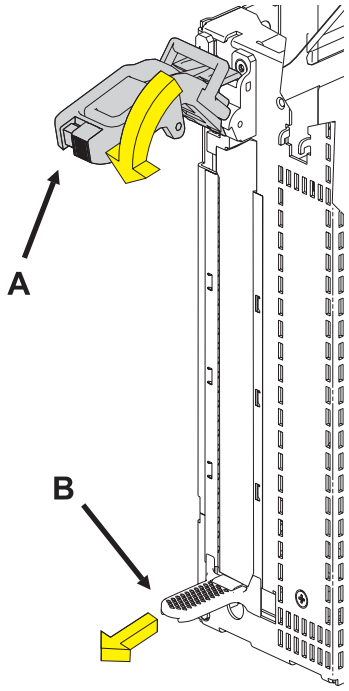
If your system is managed by the Systems Director Management Console (SDMC), use the SDMC to remove the PCI adapter from the server. For information about using the SDMC to remove a PCI adapter, see Removing a part by using the Systems Director Management Console.

About this task

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

Procedure

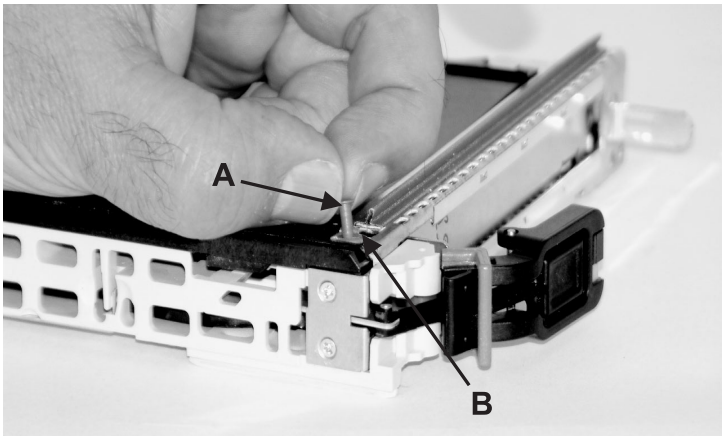
1. Remove the cassette from the system unit.



Follow these steps:

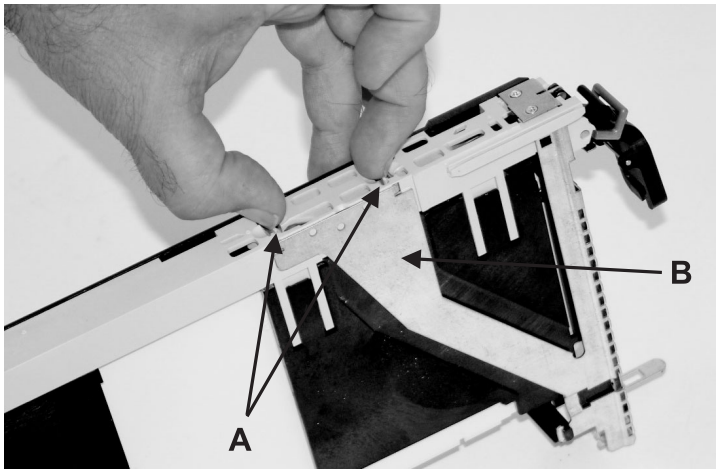
a. Perform the prerequisite tasks described in “Before you begin” on page 162.
b. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
c. Push the lever **(A)** down to unlock the PCI adapter cassette.
d. Lift the lower tab **(B)** and pull the PCI adapter cassette out of the assembly.
e. Set the cassette aside with the cover facing up.

2. Remove the bushing-lock pin and bushing.

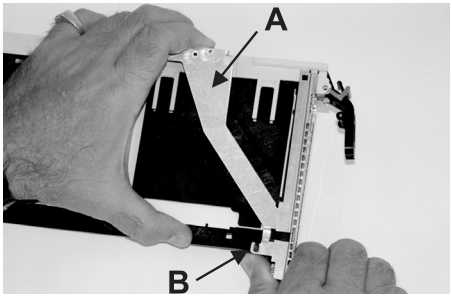


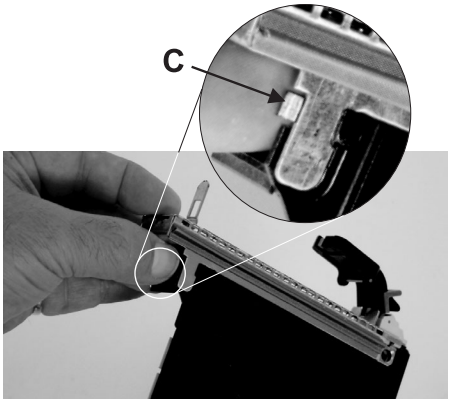
a. Place the PCI adapter cassette assembly on a flat work surface with the cover facing up and the top of the adapter facing you.
b. Using two fingers, remove the bushing-lock pin **A** from the bushing. The pin can be removed by pulling it out of the bushing with your fingernails, tweezers, or a similar tool.
c. Remove the bushing **B**. The bushing can be removed by pulling it out of the PCI adapter cassette assembly with your fingernails, tweezers, or a similar tool.

3. Unlock the bezel.



   a. Turn the PCI adapter cassette assembly over so that the cover side is down.
   b. Locate the plastic latch fingers **A** in the top part of the cassette.
   c. Using one hand, pinch the plastic latch fingers, and, with your other hand, carefully lift the top part of the bezel extension **B** out until the tabs clear the slots in the PCI adapter cassette assembly.
4. Unlatch the bezel and slide off.



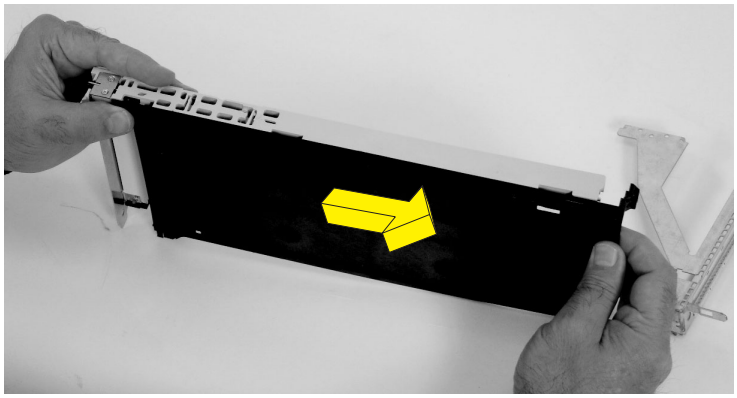


Follow these steps:

   a. While holding up the bezel extension **A**, push the plastic cover latch **B** out of the bezel hook.
   b. Turn the cassette assembly over so that the cover side is up.
   c. Push down on the cover tab **C** to release the bezel.
   d. Turn the cassette assembly over so that the cover side is down.

e. Carefully slide the bezel off of the cassette assembly and set it aside.

5. Remove the cover.



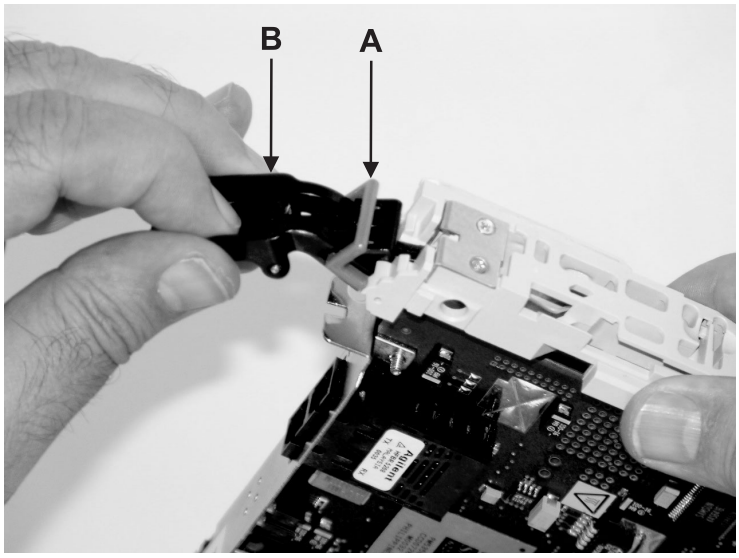
a. Turn over the cassette assembly so that the cover side is up.

b. Slide the cover **A**, until it releases from the cassette assembly.

   The cover might be tight and difficult to slide. If you grasp the left end (handle end) of the cassette and the right end of the cover, you can use enough force to pull the cover off of the PCI adapter cassette assembly.

c. Lift the cover off the assembly, and set it aside.

6. Unlock the handle.



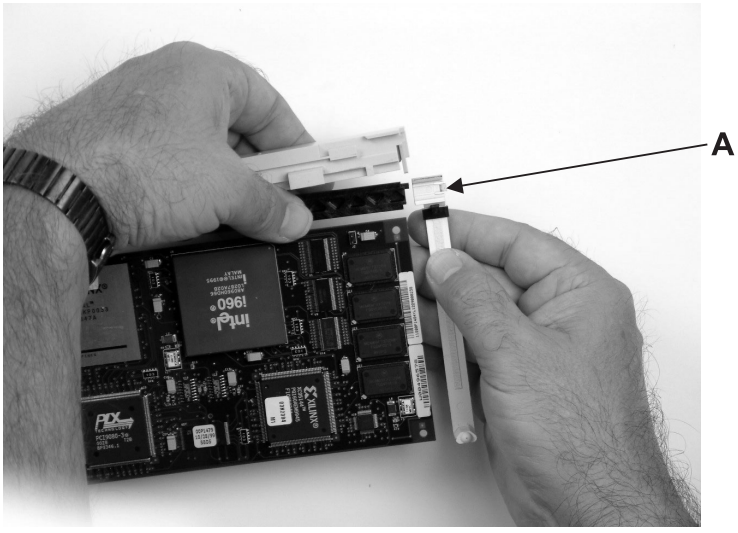
a. Ensure that the handle is pulled into the unlocked position by pulling on both sides of the gray plastic locking bar **A** which is located on the lever **B**.

b. Raise the handle on the cassette linkage assembly until it moves into the up position (the blank filler or adapter moves downward).

7. Remove the electromagnetic compatibility (EMC) shield.

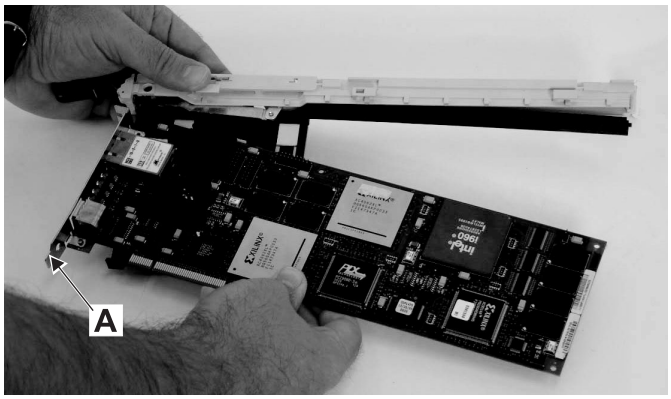
Remove the metal EMC shield **A** from the top of the tailstock.

8. Select the PCI adapter type:
   - If you are removing a large adapter, go to step 9.
   - If you are removing a small adapter, go to step 12 on page 56.
9. Slide the large adapter off the cassette assembly.



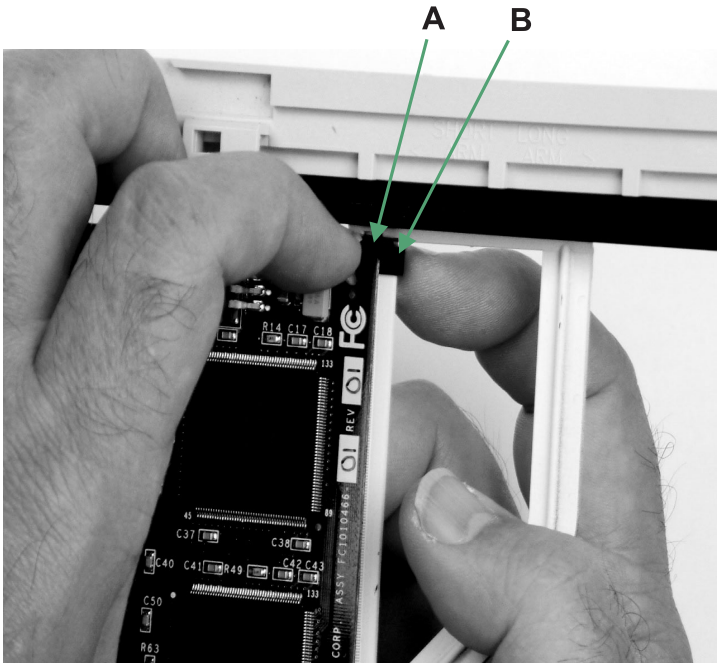
Each adapter arm has a release tab **A** that allows the arm to be moved away from the adapter in the cassette assembly. Use your fingernail to lift the tab, which allows the arm to be moved away from the adapter. Lift the release tab on the large adapter arm, and slide it off the cassette linkage assembly.

10. Remove the large adapter from the cassette.



Remove the adapter from the cassette linkage assembly by rotating the bottom of the tailstock **A** out as shown in the illustration. Store the adapter in a safe place.

11. Go to step 14 on page 57.
12. Slide the adapter arms away from the small adapter.

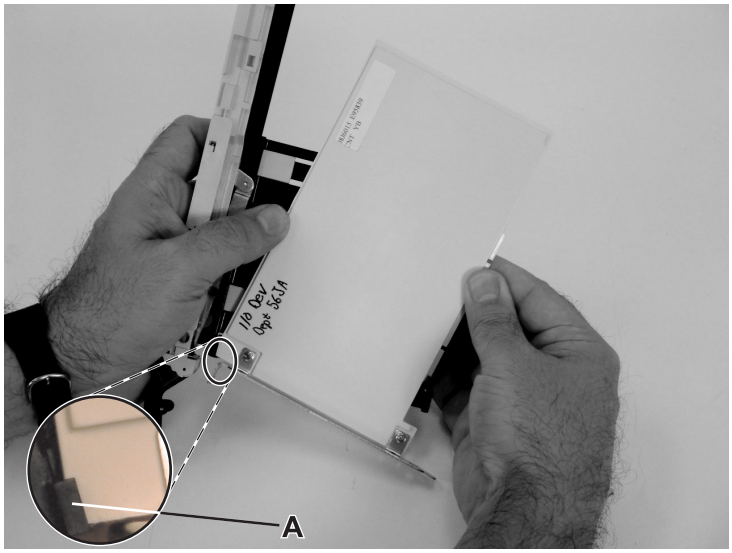


a. Each adapter arm has a release tab **A** that allows the arm to be moved away from the adapter or blank filler in the cassette assembly. Use your fingernail to lift the tab, which allows each arm to be moved away from the adapter. Lift the release tab on the small adapter arm, and push on the slotted tab **B** to release the end of the blank filler.

   Leave the large adapter arm on the cassette linkage assembly.

b. Slide the large and small adapter arms away from the adapter.

13. Remove the small adapter from the cassette.



Remove the adapter or blank filler from the cassette linkage assembly by rotating the bottom of the tailstock **A** out, as shown in the illustration. Store the adapter or blank filler in a safe place.

14. Install a new adapter as described in "Placing a PCI adapter in a single-width, first or second generation cassette" on page 45.

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

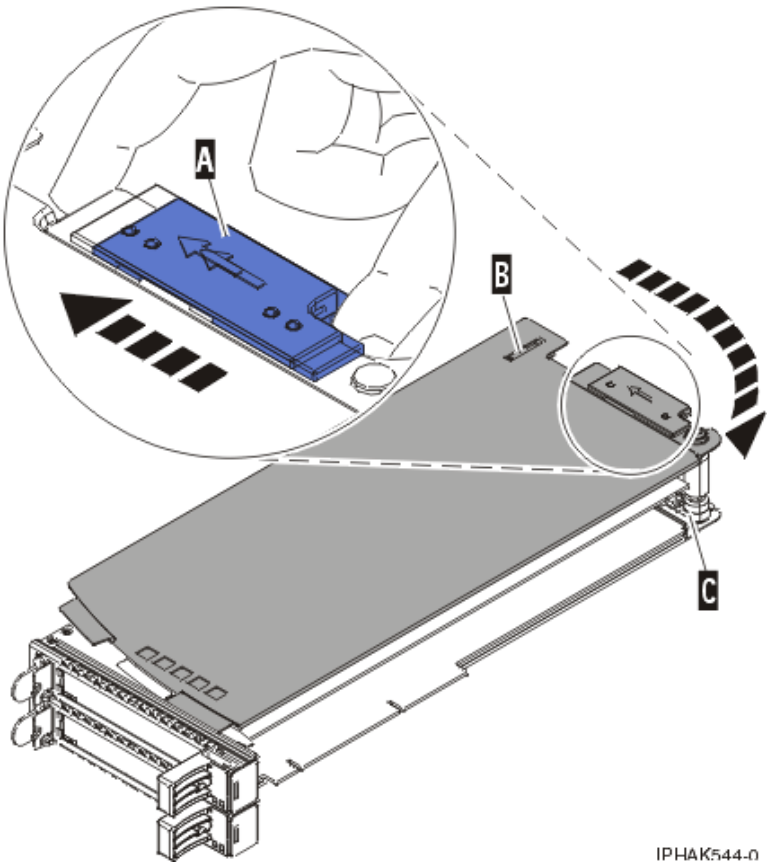


Figure 41. PCI adapter cassette cover removed

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 42 on page 59.

      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.

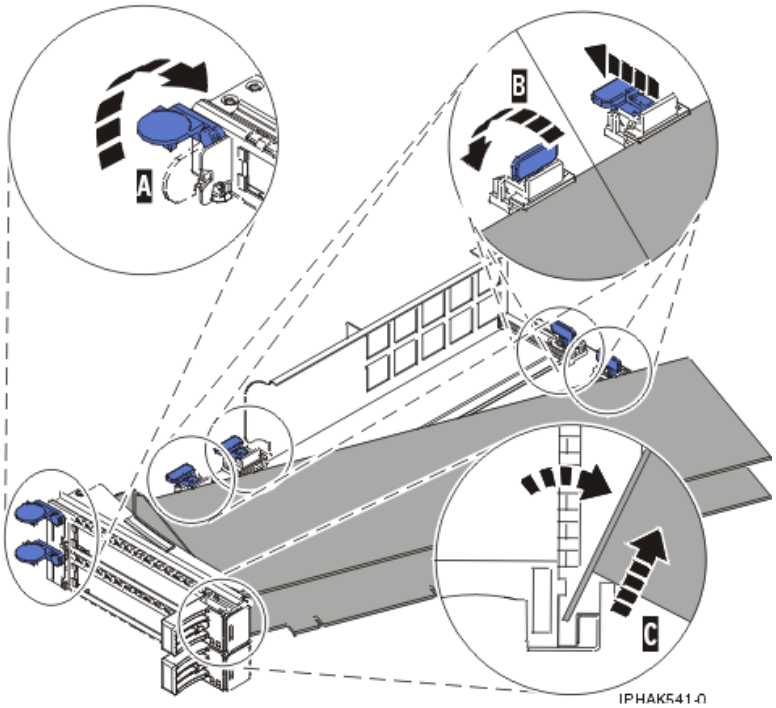


Figure 42. Adapter removed from the PCI adapter cassette

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 60.

   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.

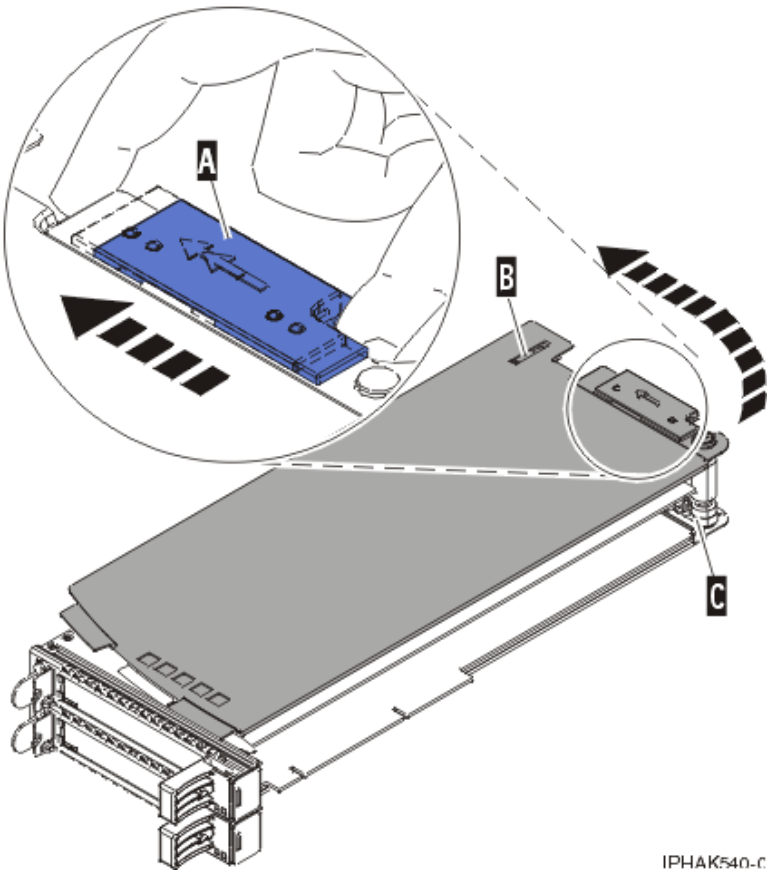


Figure 43. PCI adapter cassette cover replaced

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 162.
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.

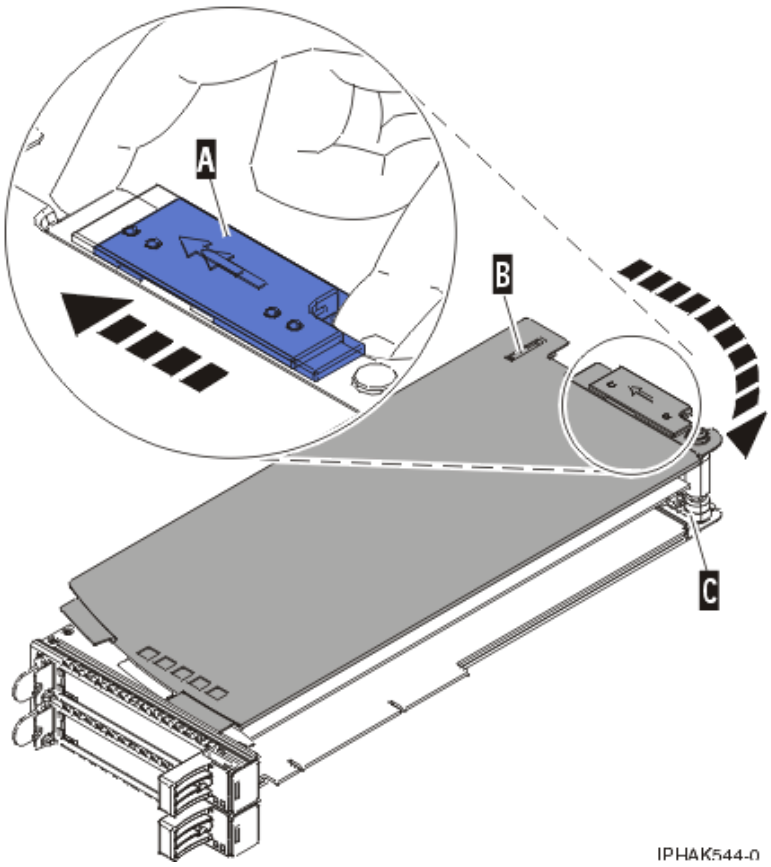


Figure 44. PCI adapter cassette cover removed

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 57.
      - 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 45 on page 62.
   b. Rotate the adapter toward the top of the cassette and into place.
   c. Close the tailstock clamp.

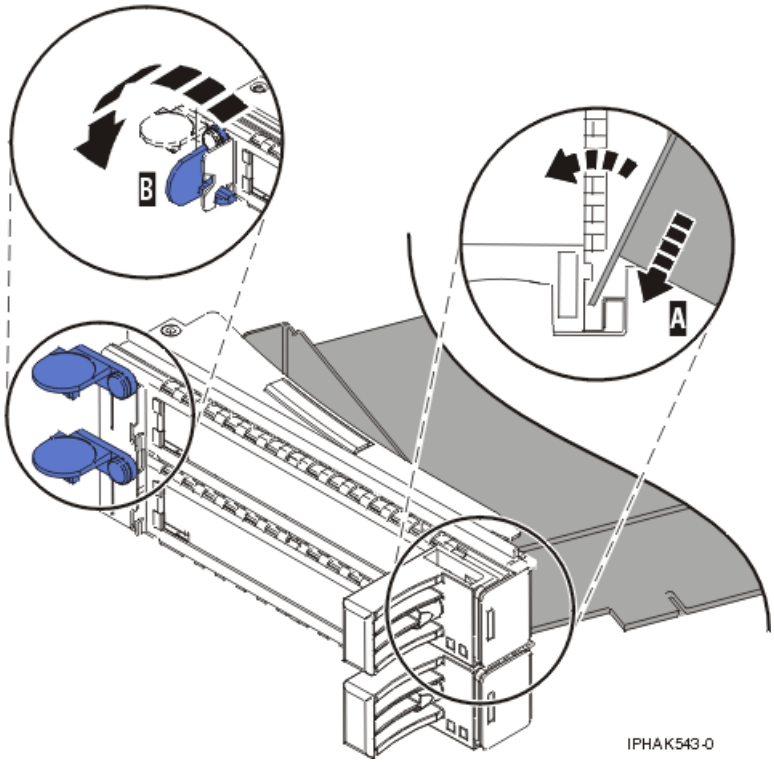


Figure 45. Adapter replaced in the PCI adapter cassette

d. Position the adapter retainers to support the adapter, and then rotate the retainer clip **B** into the closed position. See Figure 45.

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 46 on page 63.

   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.

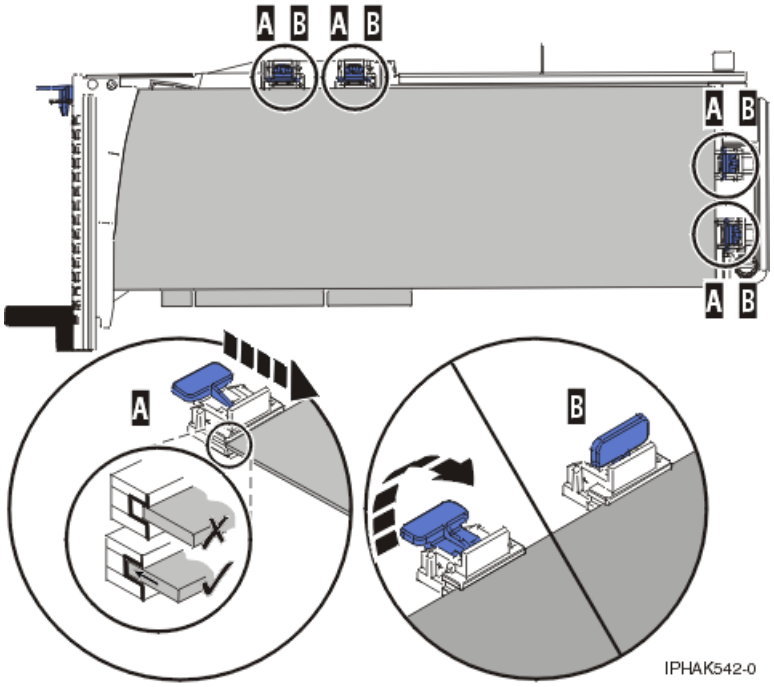


Figure 46. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

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.

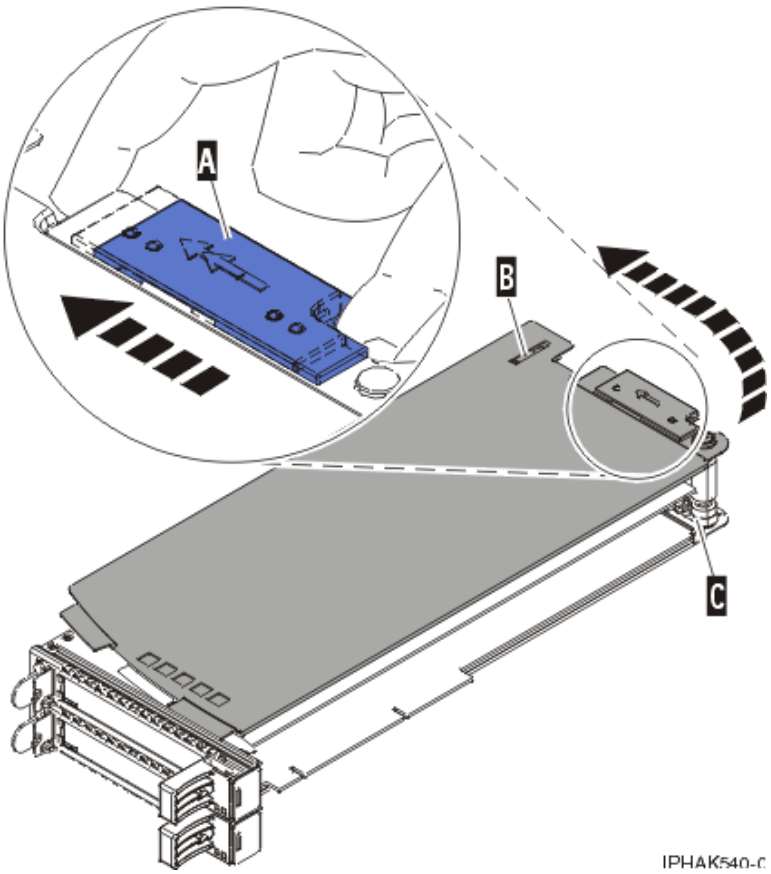


Figure 47. PCI adapter cassette cover replaced

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.

PCI adapter double-wide cassette, generation 2.5 cassette

You can remove or place a PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller in a generation 2.5, double-wide cassette.

Placing a PCI adapter in a double-wide, generation 2.5 cassette

You can place a PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller or PCI-X DDR 1.5 GB cache SAS RAID Adapter in a generation 2.5, double-wide cassette. Use the procedure in this topic to perform this task.

About this task

This procedure is for use by service providers.

Attention: Do not touch exposed electronic components on the adapter during this procedure or short them with any type of metal object.

Before you begin: Ensure that you have the following tools and parts:

- Phillips screwdriver
- Needle-nose pliers
- Complete cassette-assembly, FRU 44V5205*

  - The cassette assembly contains extra screws or clips. Some of these parts are left over after the assembly.
- One of the following double-wide adapters:
  - PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller, FRU 42R6578*, or later.
  - PCI-X DDR 1.5 GB cache SAS RAID Adapter, FRU 44V5193*, or later.

The cassette assembly can also be ordered with the double-wide adapter already installed using one of the following FRUs:

- PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller, FRU 44V4608*, or later.
- PCI-X DDR 1.5 GB cache SAS RAID Adapter, FRU 44V7627*, or later.

*Designed to comply with RoHS requirement

Figure 48 shows the PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller and the main parts that make up the cassette assembly. The PCI-X DDR 1.5 GB cache SAS RAID Adapter looks similar and the same illustrations are used for both adapters.

Some steps refer to the adapter tail stock, which is the front end of the adapter with the external connectors. The other end of the adapter is referred to in the steps as the rear of the adapter.

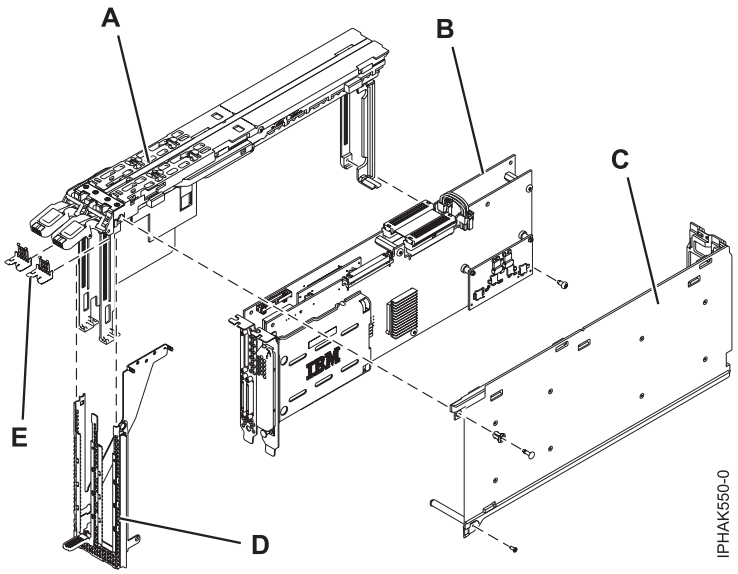


Figure 48. PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller and the main parts that make up the cassette assembly

(A) Cassette assembly
(B) Double-wide adapter
(C) Cover
(D) Face plate
(E) Metal clips

To place the double-wide adapter in the cassette assembly, do the following steps:

Procedure

1. Remove the adapter handle **(B)** and the spacer **(A)** between the two halves of the adapter. Optionally, you can also remove the cache battery cover. See Figure 49 on page 66.

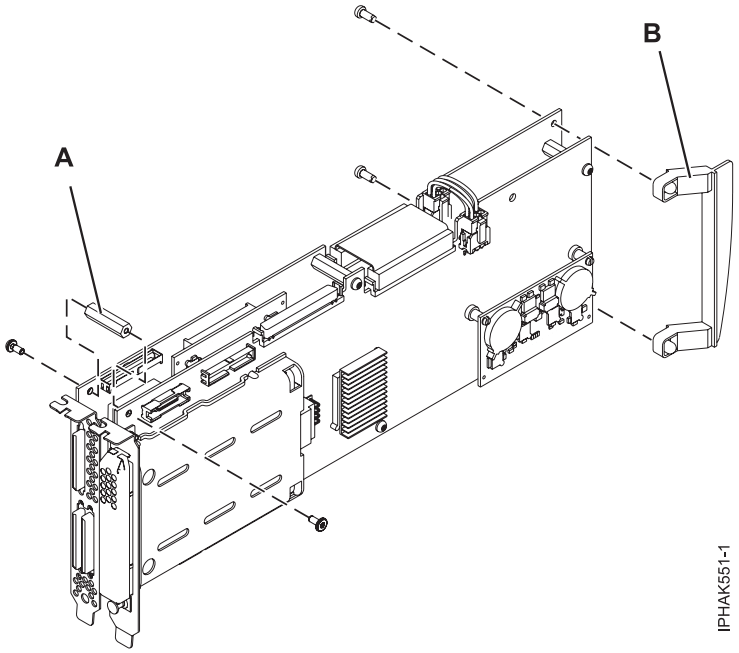


Figure 49. Removing the adapter handle and spacer

2. On a PCI-X DDR 1.5 GB cache SAS RAID Adapter, remove the plastic grid **(C)** from the plastic standoffs, but leave the standoffs in place. See Figure 50.

   Attention: Do not touch exposed electronic components on the adapter during this procedure or short them with any type of metal object.

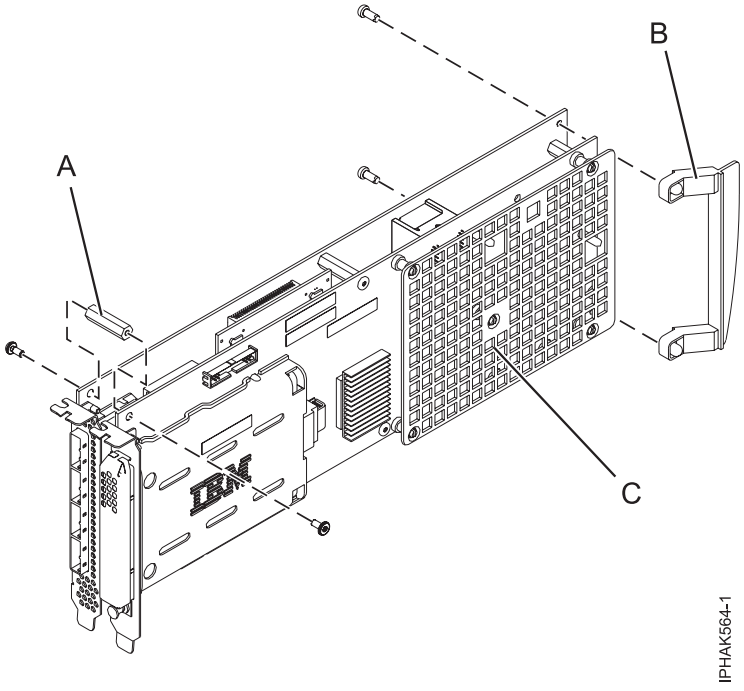


Figure 50. Removing the plastic grid from a PCI-X DDR 1.5 GB cache SAS RAID Adapter

3. Align the double-wide adapter with the cassette assembly so that the spacer **(A)** on the cassette assembly fits between the two sides of the double-wide adapter. Place the cassette onto the adapter.

See Figure 51.

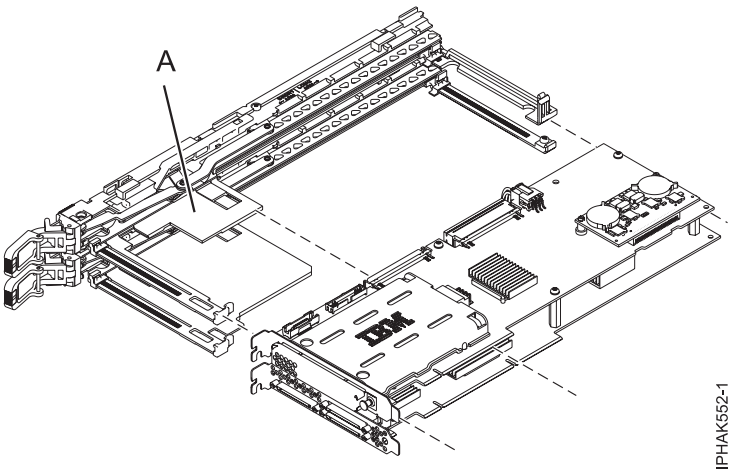


Figure 51. Placing the double-wide adapter in the cassette assembly

4. With the levers on the cassette assembly fully extended out, attach all four corners of the cassette assembly to the double-wide adapter as described in the following substeps:
   a. Insert the top of the double-wide adapter tail stock into the notches in the cassette assembly, and then secure the bottom of the double-wide adapter tail stock to the cassette assembly. See Figure 52.

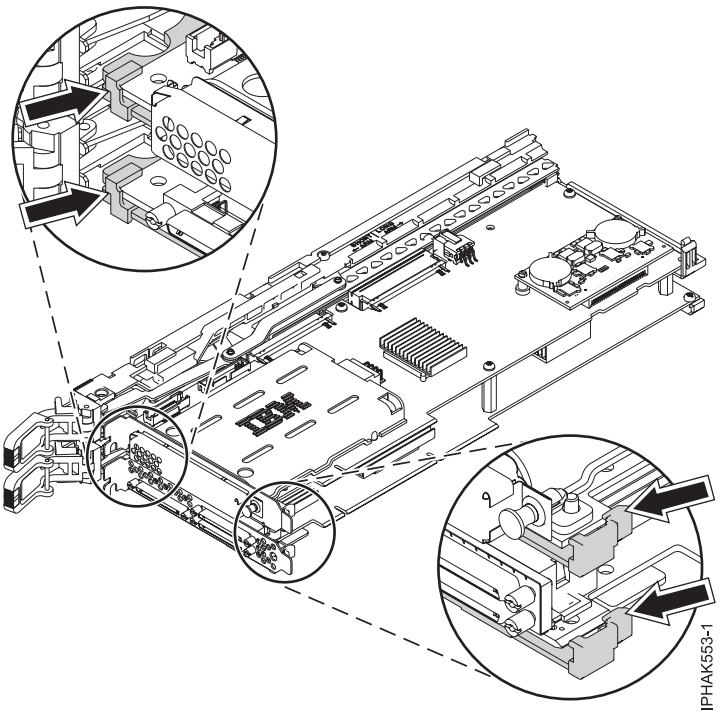


Figure 52. Placing the double-wide adapter in the cassette assembly

   b. Attach the notches of the rear arms of the cassette assembly at the rear end of the double-wide adapter. See Figure 53 on page 68. When you attach the upper, right part of the cassette assembly to the adapter, you might need to adjust the slider to set it in place.

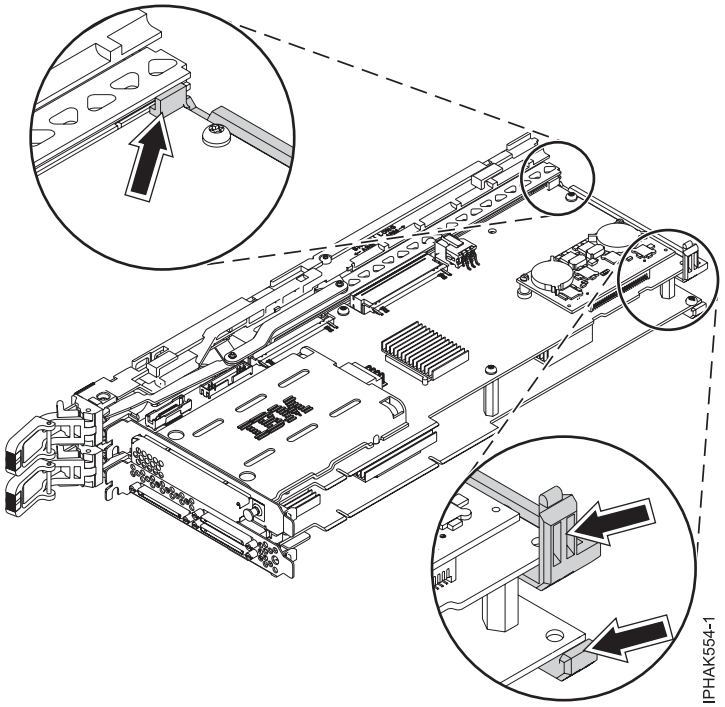


Figure 53. Placing the double-wide adapter in the cassette assembly

5. Secure the lower, rear arm of the cassette assembly to the rear end of the double-wide adapter using the small screw. See Figure 54.

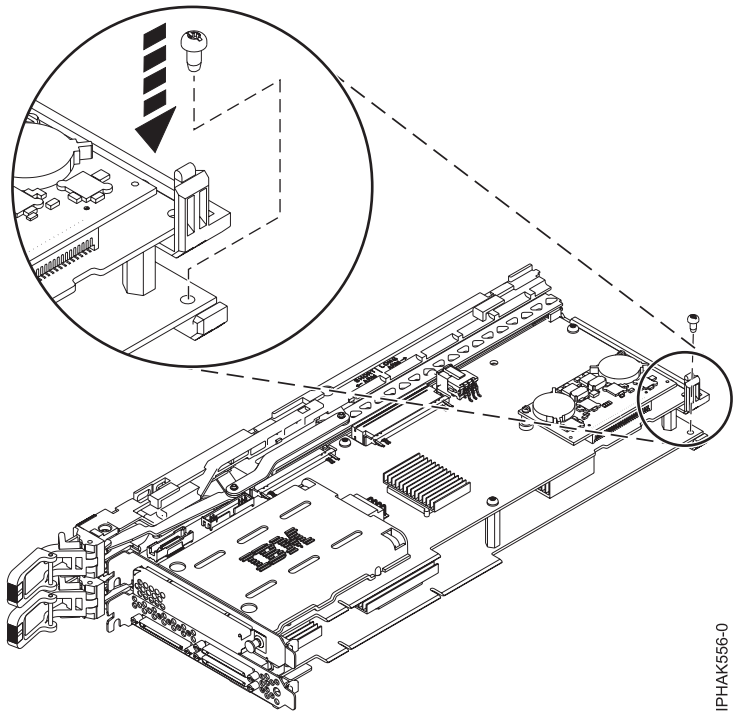


Figure 54. Securing the lower, rear arm of the cassette assembly

6. Install the cover: See Figure 55 on page 69.

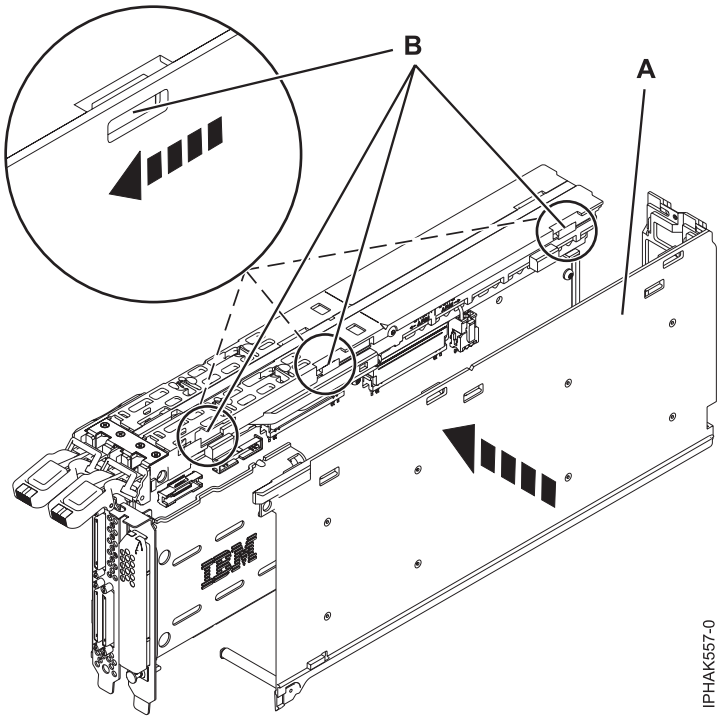


Figure 55. Installing the cover

a. Place the cover **(A)** on the cassette assembly and align the hole on the cover with the tabs **(B)** on the assembly.
b. Slide the cover toward the locking arms until the holes and tabs click into place.

   The cover might be difficult to slide. If you grasp the left end of the cassette assembly and the right end of the cover, you can use enough force to press the cover onto the cassette assembly.

7. Attach the face plate to the front of the cassette assembly as shown in Figure 56 on page 70. Then, insert the tab at the bottom of the cassette cover assembly into the notch on the face plate as shown in Figure 57 on page 70.

   Tips:

   - Starting at the bottom, slide the face plate up into the double-wide cassette assembly.
   - Spread the openings in the face late as you slide it on.
   - Be sure to align the bottom tabs **(B)** on the adapter tail stock with the cutouts **(C)** in the bottom of the face plate.
   - Ensure that the top of the face plate inserts into the notches on both the front and sides of the cassette assembly.
   - When you attach the face plate to notch **(A)**, adjust the cassette cover to make room for the face place to connect.

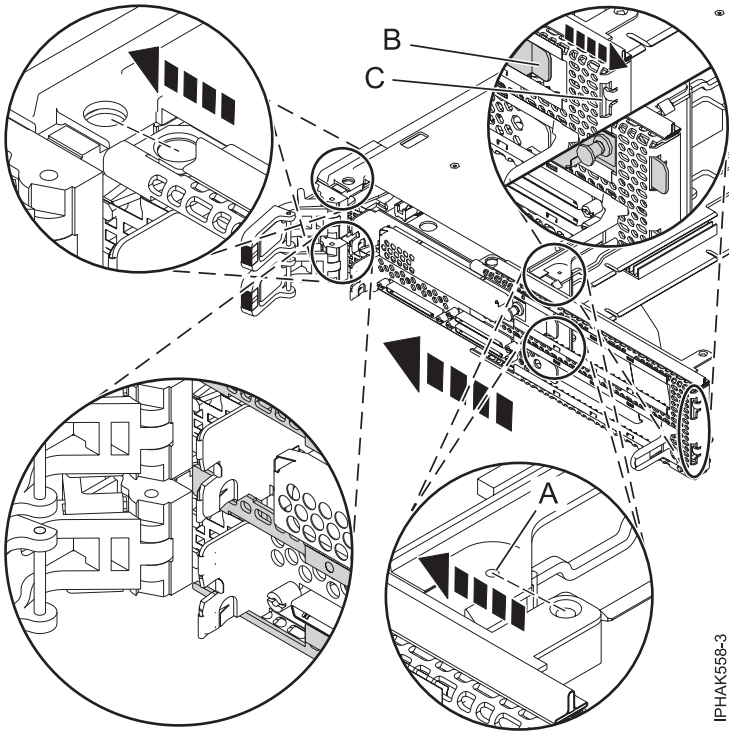


Figure 56. Attaching the face plate

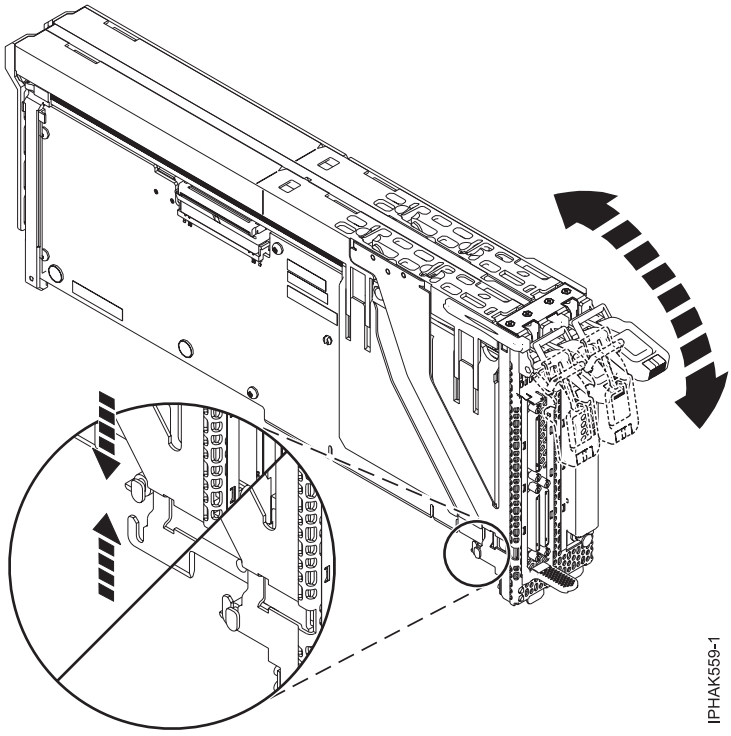


Figure 57. Attaching the face plate

8. Press the outer arms of the face plate assembly into place. See Figure 58 on page 71.

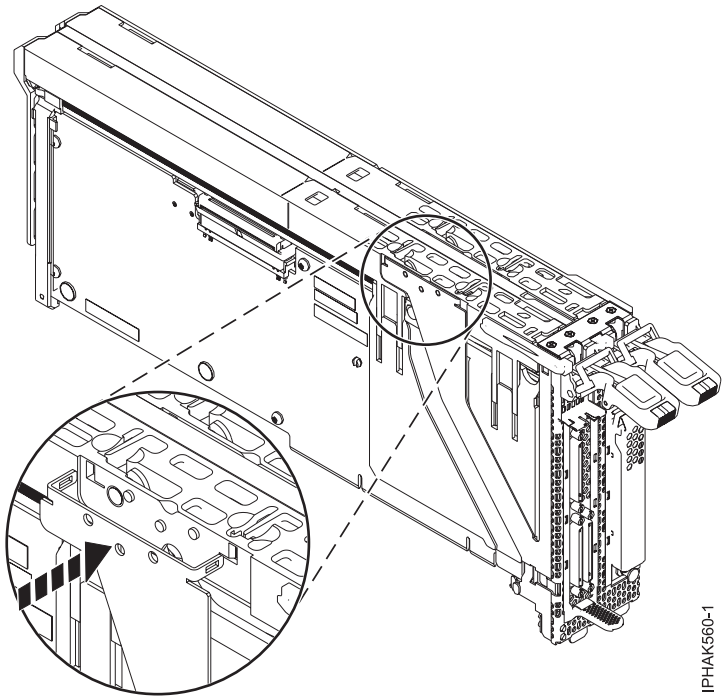


Figure 58. Attaching the face plate

9. Attach the push pin **(A)** to the top of cassette assembly by the tail stock and press into place. See Figure 59.
10. Secure the small, Phillips screw **(B)** into the bottom of the tail stock. See Figure 59.
11. Secure the small, Phillips screw **(C)** at the rear of the cassette assembly. See Figure 59.

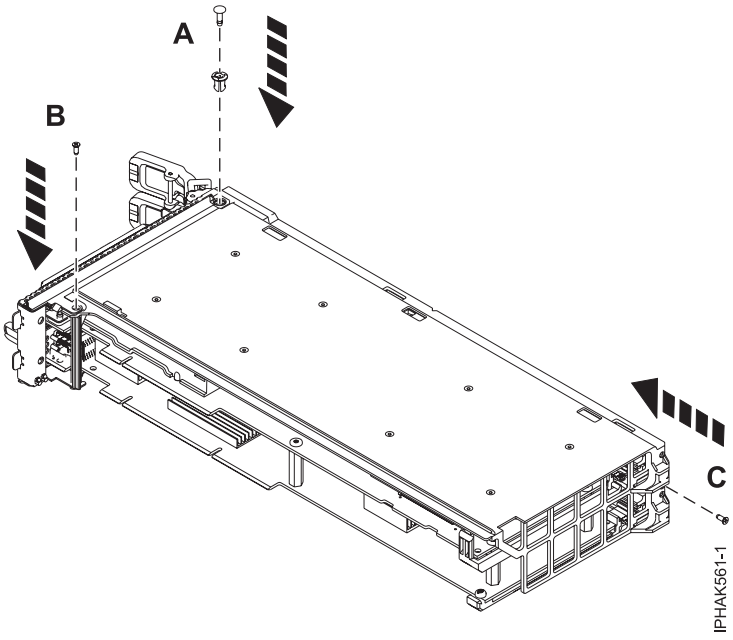


Figure 59. Attaching the push pin and screws

12. Raise the locking arms and insert the two metal clips into the front of the assembly as described in these substeps:

a. Insert the top of the clips first in behind the two small metal tabs just below each lever assembly.
b. Press the bottom of the clips onto the adapter tail stock tabs.
c. Ensure that the locking arms move without obstructions.

See Figure 60.

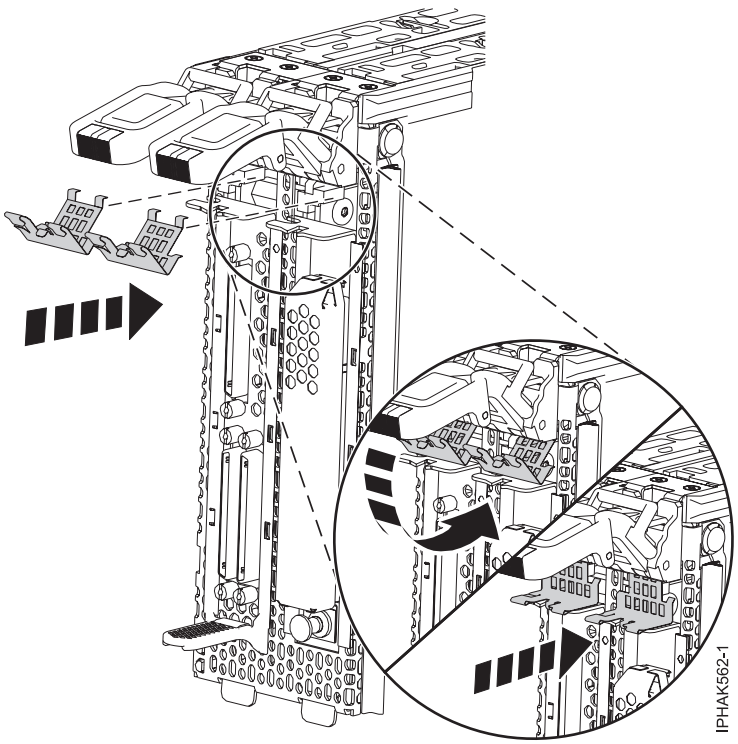


Figure 60. Inserting the two metal clips into the front of the assembly

13. If you removed the cache-battery cover in step 1 on page 65 (optional) and you have not already done so, put the cover back on.
14. Install the cassette assembly into the I/O expansion unit as described in the following substeps:

    a. Ensure the locking arms **(A)** are down.
    b. Carefully slide the cassette assembly all the way into the I/O expansion unit. As you slide the cassette assembly in, keep applying downward pressure to the locking arms to tilt the back of the assembly upward as it is going in.
    c. Ensure that the cassetted adapter is positioned in the I/O expansion unit so that the bottom of the tail stock goes through the openings in the chassis. If they are not aligned, the adapter cannot not plug into the PCI connector.
    d. Secure the cassette assembly by rotating the locking arms up.
    e. Press down on the top of the tail stock brackets to dock the back part of the adapter into the PCI connector on the chassis.

    See Figure 61 on page 73.

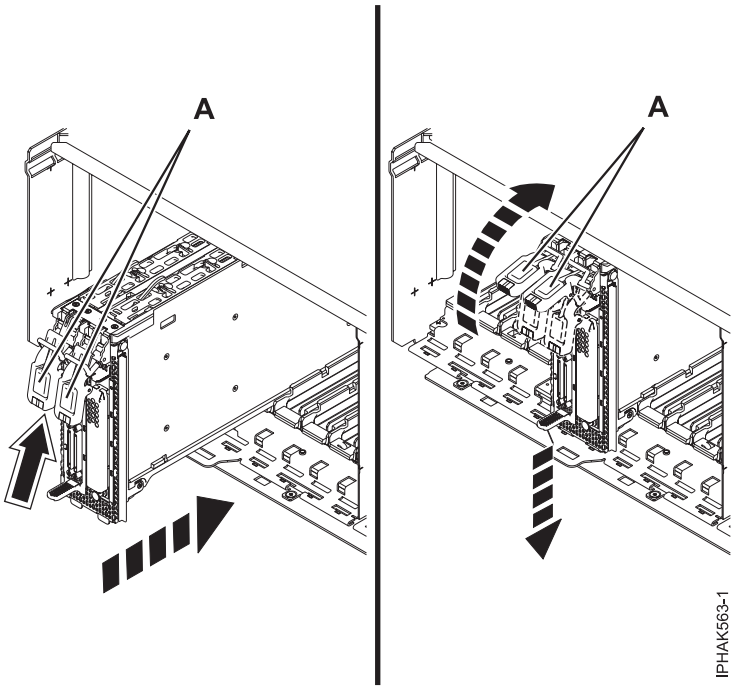


Figure 61. Installing the cassette assembly into the I/O expansion unit

Removing a PCI adapter from a double-wide, generation 2.5 cassette

You can remove a PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller or PCI-X DDR 1.5 GB cache SAS RAID Adapter from a generation 2.5, double-wide cassette.

About this task

This procedure is for use by service providers.

Attention: Do not touch exposed electronic components on the adapter during this procedure or short them with any type of metal object.

Before you begin: Ensure that you have the following tools and parts:

- Phillips screwdriver
- Needle-nose pliers
- Complete cassette-assembly, FRU 44V5205*
  - The cassette assembly contains extra screws or clips. Some of these parts are left over after the assembly.
- One of the following double-wide adapters:
  - PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller, FRU 42R6578*, or later.
  - PCI-X DDR 1.5 GB cache SAS RAID Adapter, FRU 44V5193*, or later.

The cassette assembly can also be ordered with the double-wide adapter already installed using one of the following FRUs:

- PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller, FRU 44V4608*, or later.
- PCI-X DDR 1.5 GB cache SAS RAID Adapter, FRU 44V7627*, or later.

*Designed to comply with RoHS requirement

Tip: If you are reassembling an adapter into the cassette, pay close attention to how the pieces come apart.

The following figure shows the PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller and the main parts that make up the cassette assembly. The PCI-X DDR 1.5 GB cache SAS RAID Adapter looks similar and the same illustrations are used for both adapters. Some steps refer to the adapter tail stock, which is the front end of the adapter with the external connectors. The other end of the adapter is referred to in the steps as the rear of the adapter.

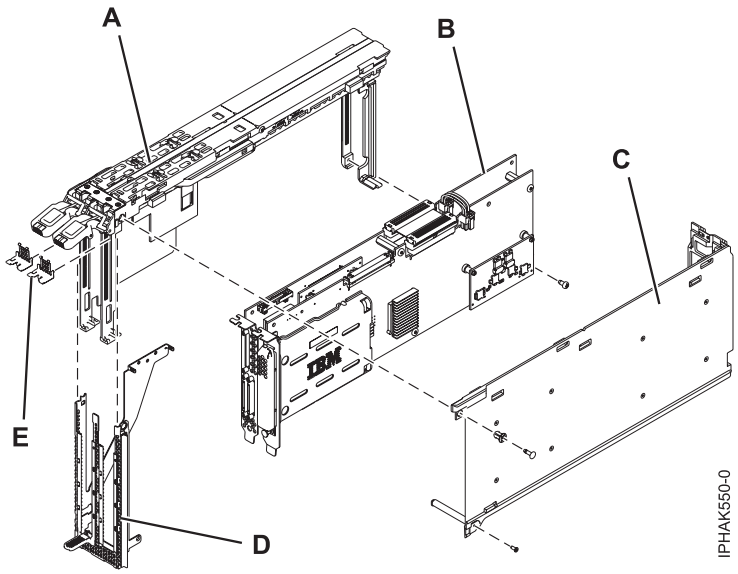


Figure 62. PCI-X double-wide, quad-channel Ultra320 SCSI RAID Controller and the main parts that make up the cassette assembly.

(A) Cassette assembly
(B) Double-wide adapter
(C) Cover
(D) Face plate
(E) Metal clips

To remove the double-wide adapter from the cassette assembly, do the following steps:

Procedure

1. Remove the cassette assembly from the I/O expansion unit:

    a. Ensure that the locking arms **(A)** are down as shown in Figure 63 on page 75.
    b. Lift on the top of the tail stock brackets to undock the back part of the adapter from the PCI connector on the chassis and detach the tail stock from the openings in the chassis.
    c. Carefully slide the cassette assembly all the way out of the I/O expansion unit. See Figure 63 on page 75.

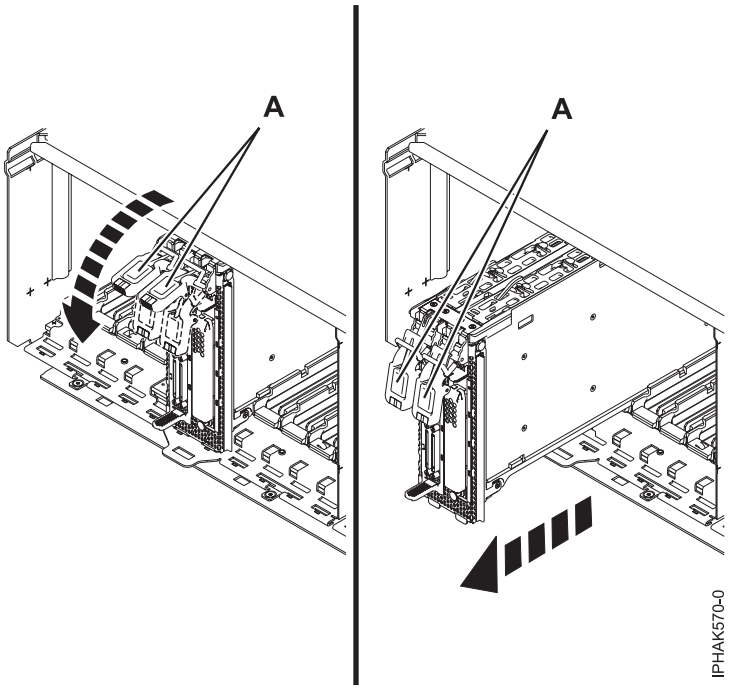


Figure 63. Removing the cassette assembly from the I/O expansion unit

2. Raise the locking arms to the full up position and remove the two metal clips from the front of the assembly. See Figure 64

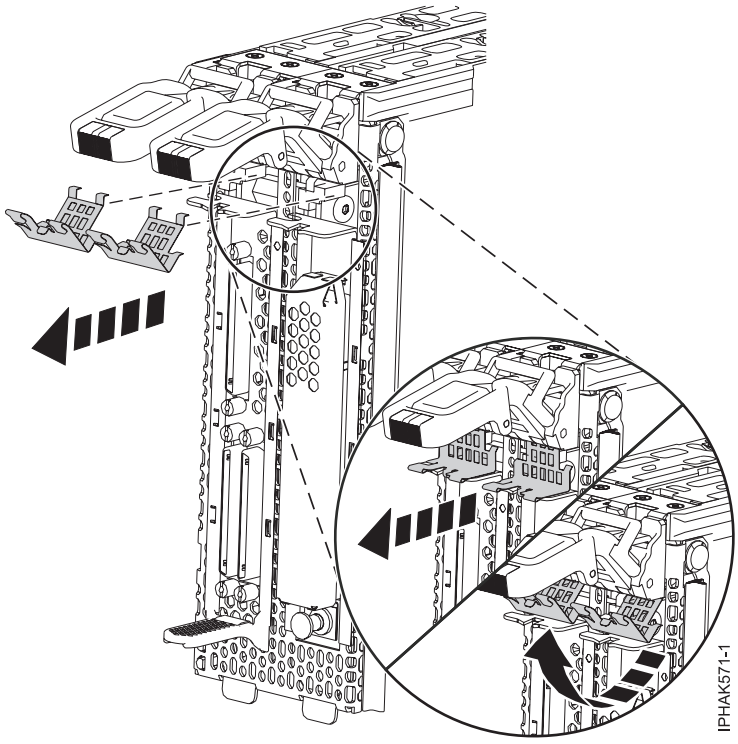


Figure 64. Removing the two metal clips into the front of the assembly

3. Remove the push pin **(A)** from the top of cassette assembly by the tail stock. See Figure 65 on page 76.

4. Remove the screw **(B)** from the bottom of the tail stock. See Figure 65.
5. Remove the screw **(C)** from the rear of the cassette assembly. See Figure 65.

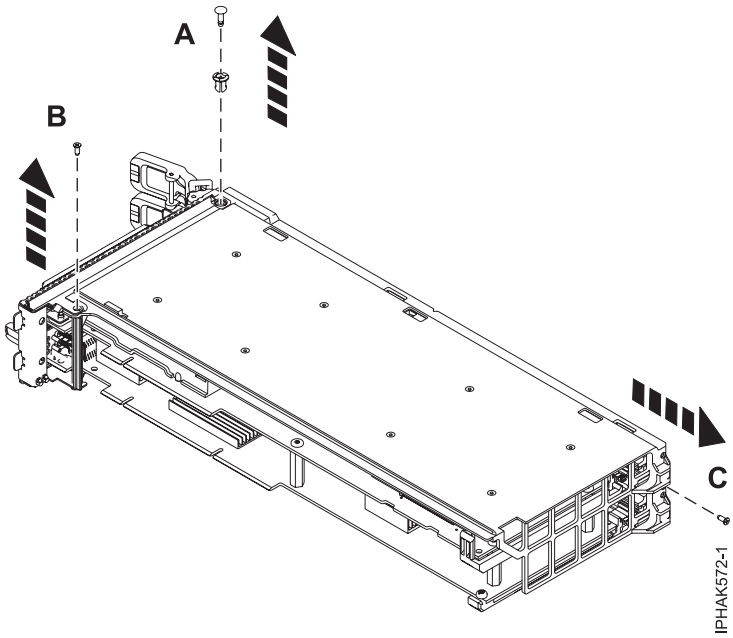


Figure 65. Removing the push pin and screws

6. Detach the outer arms of the face plate assembly by releasing the plastic locking tabs **(A)**. See Figure 66.

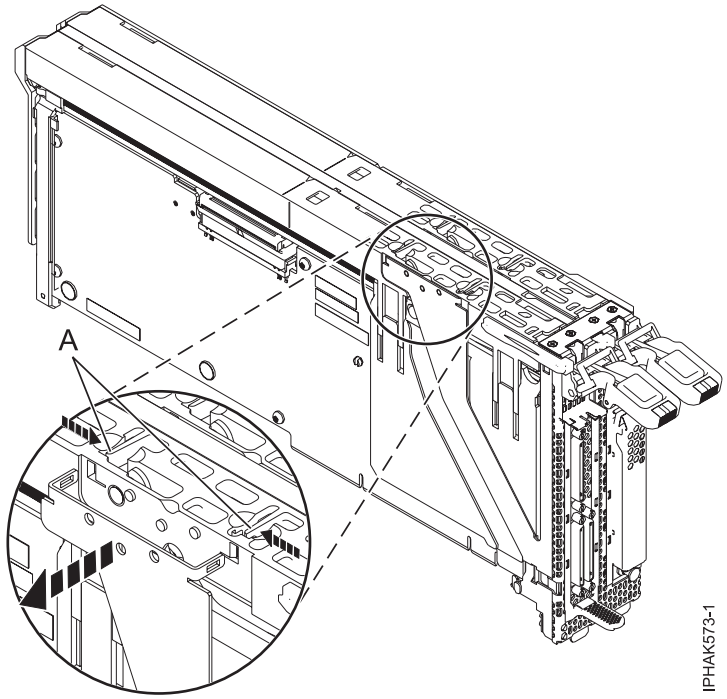


Figure 66. Detaching the face plate

7. Ensure that the locking arms are lowered at the start of this step. Then, detach the tab at the bottom of the cassette assembly from the notches on the face plate and lift on the locking arms. See

Figure 67. Use care not to damage the plastic tab.

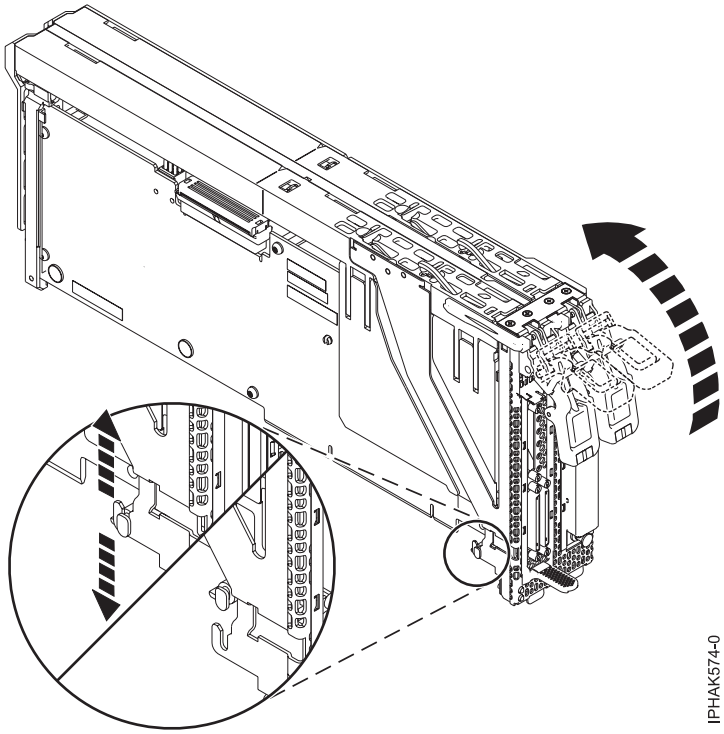


Figure 67. Detaching the face plate

8. Remove the face plate from the front of the cassette assembly by sliding it down. Ensure that the top of the face plate detaches from the notches on both the front and sides of the cassette assembly. See Figure 68 on page 78.

   Important:

   - Press in on the black tab **(A)** to release the metal, bottom, side tab of the face plate. This tab is the same location where you removed a screw in step 4 on page 76
   - While sliding the face plate downwards, you might need to manipulate the top center rail of the face plate for it to continue to slide freely.

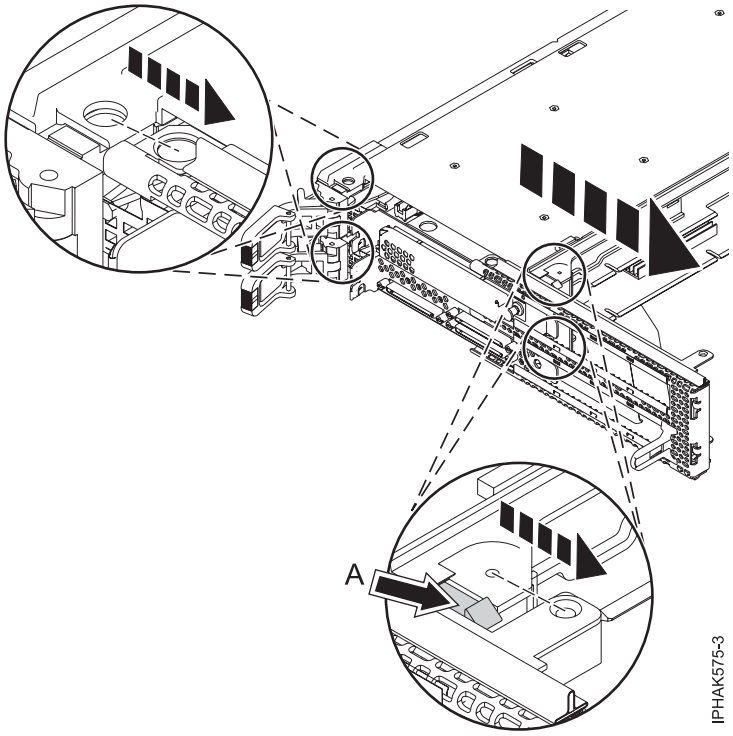


Figure 68. Detaching the face plate

9. Remove the cover:
   a. Slide the cover away from the locking arms until the holes and corresponding tabs detach **(B)**. See Figure 69 on page 79.
   b. Pull the cover away from the adapter **(A)**. See Figure 69 on page 79.

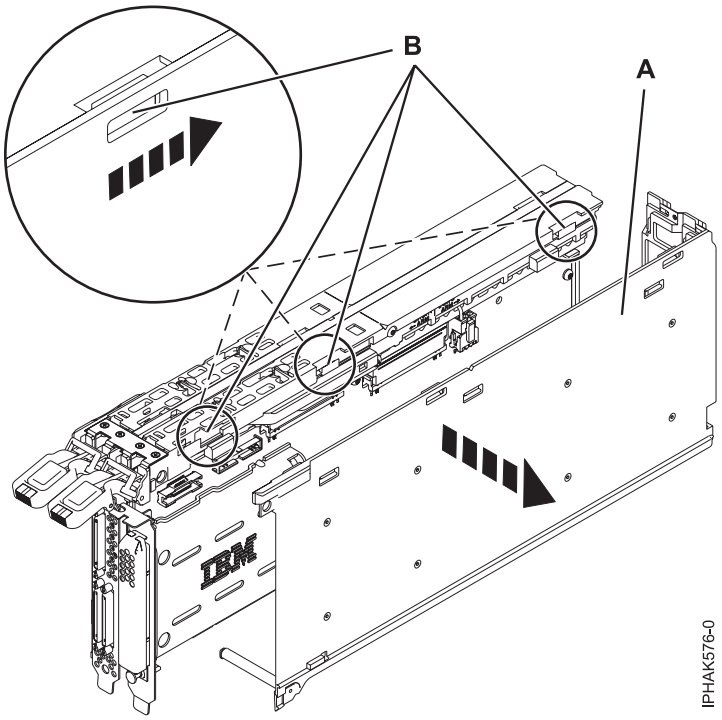


Figure 69. Removing the cover

10. Remove the small screw that secures the lower, rear arm of the cassette assembly from the rear end of the double-wide adapter. See Figure 70.

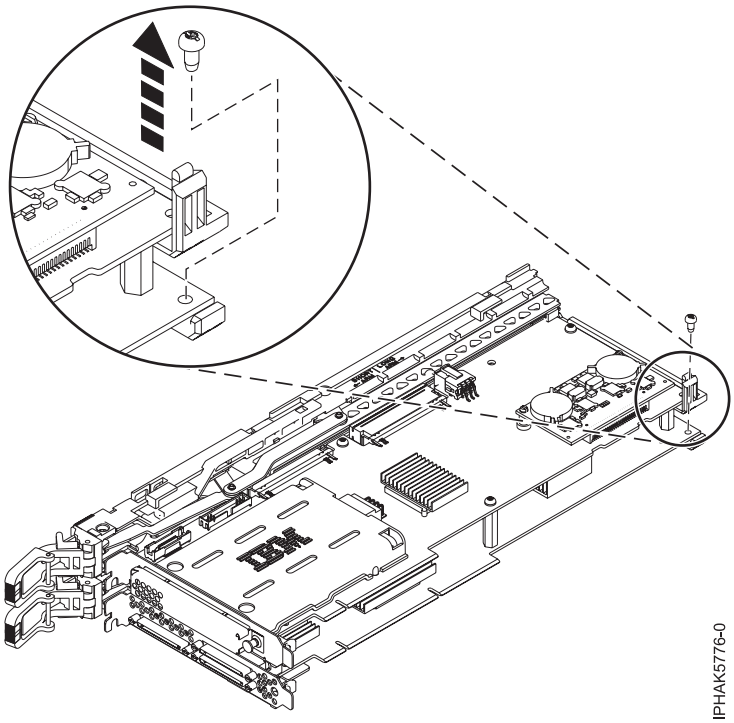


Figure 70. Removing the lower, rear arm of the cassette assembly

11. With the levers on the cassette assembly fully extended out, detach all four corners of the cassette assembly from the double-wide adapter:

a. Remove the top corner of the double-wide adapter tail stock from the notches in the cassette assembly. Then move the double-wide adapter tail stock up to free the bottom of the double-wide adapter tail stock from the cassette assembly. See Figure 71.

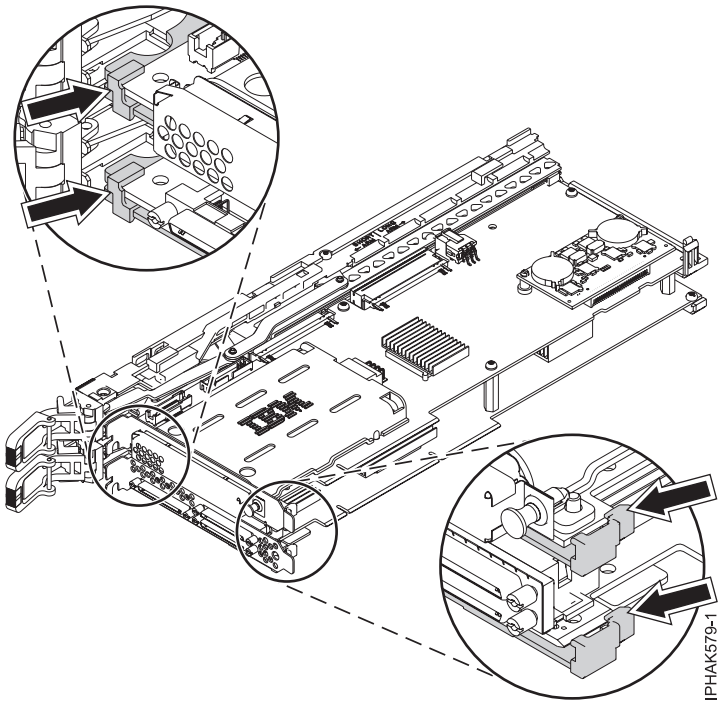


Figure 71. Detaching the corners of the cassette assembly

b. Detach the rear arms of the cassette assembly from the bottom corners of the double-wide adapter. See Figure 72 on page 81.

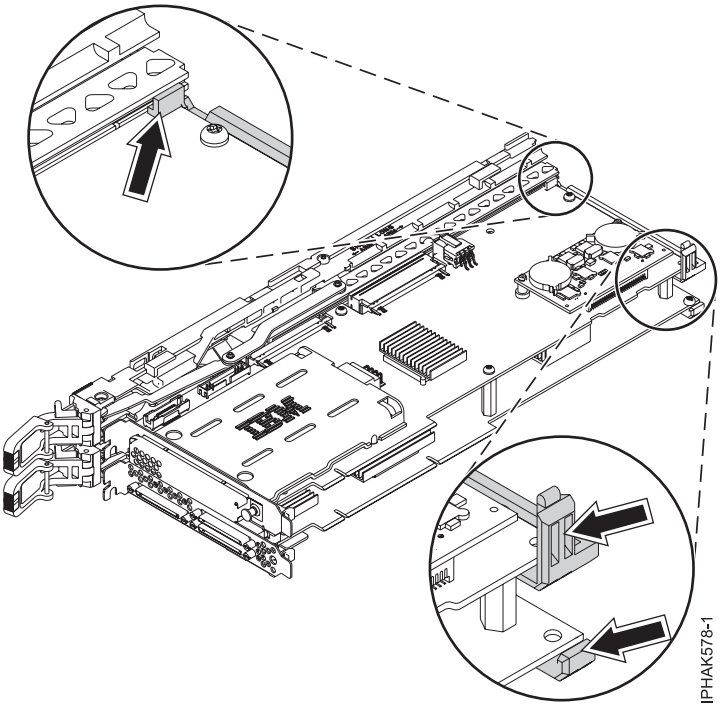


Figure 72. Detaching the rear arms of the cassette assembly

12. Pull the double-wide adapter away from the cassette assembly and carefully place it on an ESD protective surface. See Figure 73.

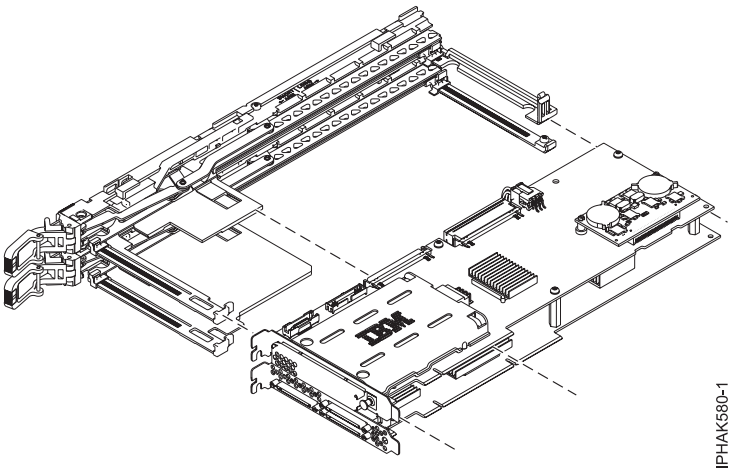


Figure 73. Pulling the double-wide adapter away from the cassette assembly

Model 57/96 expansion units, PCI adapters and cassettes

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 179

- 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

You can install a PCI adapter.

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
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.

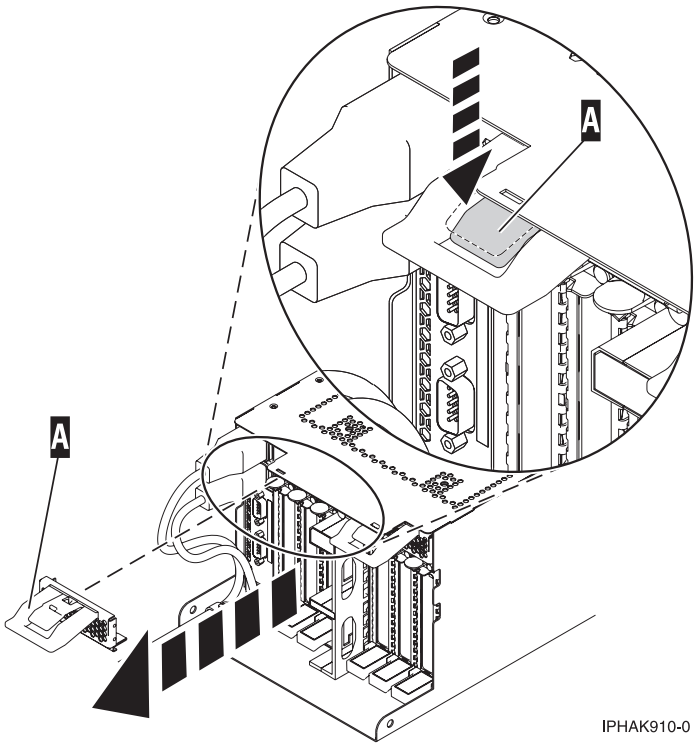


Figure 74. Remove the EMC shield

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

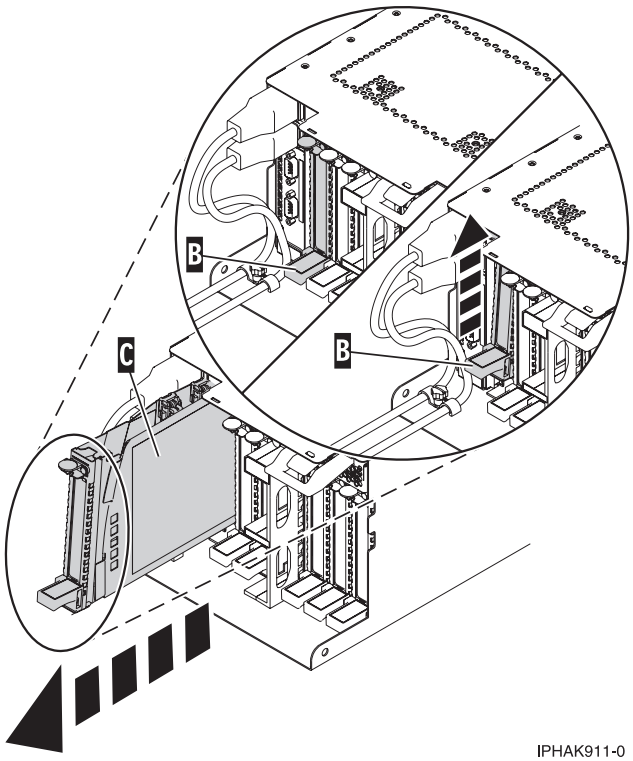


Figure 75. PCI adapter cassette removed from the system unit

8. Install the adapter into the PCI adapter cassette. See the following topics:
   - "PCI adapter single-width, third generation cassette" on page 31
   - "PCI adapter double-wide cassette" on page 57
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.

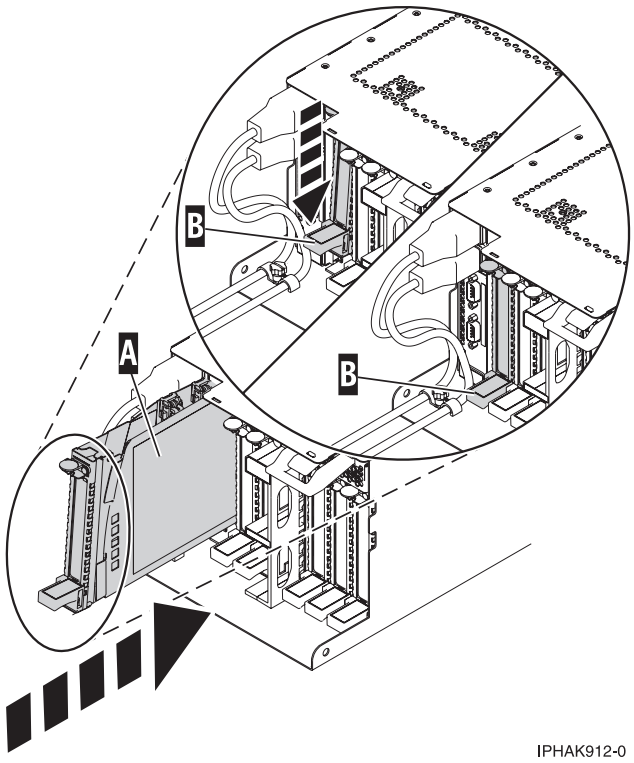


Figure 76. PCI adapter cassette installed in the system unit

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

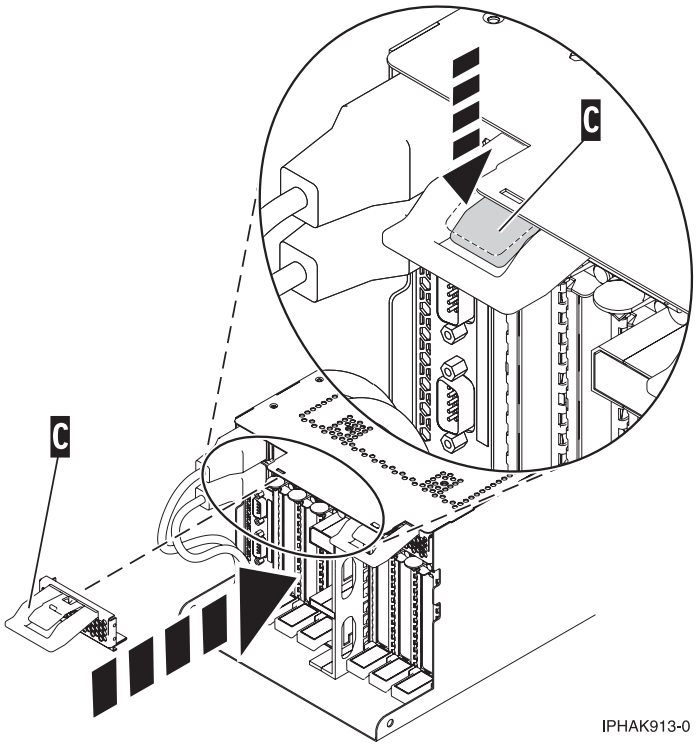


Figure 77. PCI adapter EMC shield in the closed position

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.

Installing a PCI adapter contained in a cassette with the power on in the AIX environment

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

About this task

If your system is managed by the Hardware Management Console (HMC), use the HMC to install 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.

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 a PCI adapter with the system power on in the AIX environment:

Procedure

1. Perform the prerequisite tasks described in “Before you begin” on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
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. Refer to “PCI hot-plug manager access for AIX” on page 175, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.
5. From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter** and press Enter. The Add a Hot-Plug Adapter window displays.
6. Select the appropriate PCI slot from the ones listed on the screen, and press Enter.
7. Locate the PCI adapter slot and cassette you want to use.
8. If the cassette you want to use does not contain a PCI adapter, continue to the next step. If the cassette you want to use does contain an active PCI adapter, see “Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment” on page 96.
9. 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.

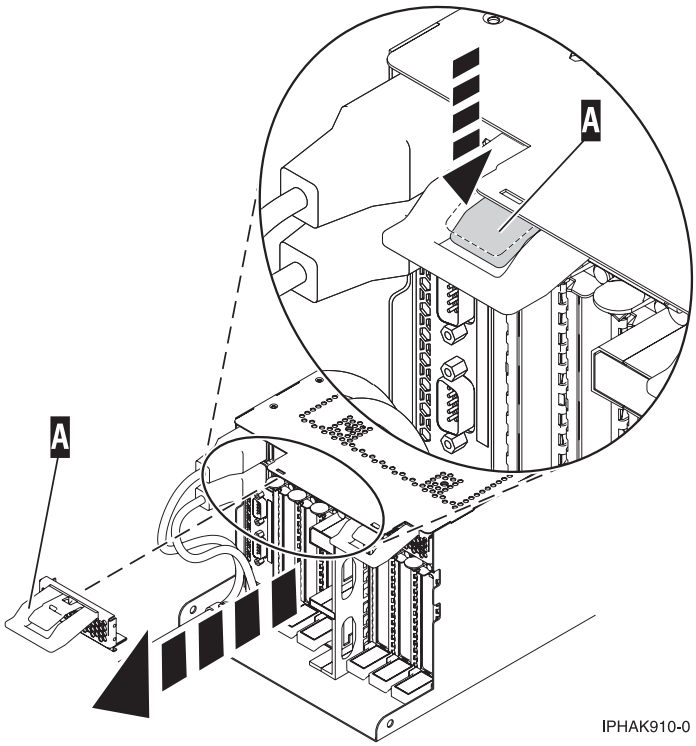


Figure 78. Remove the EMC shield

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

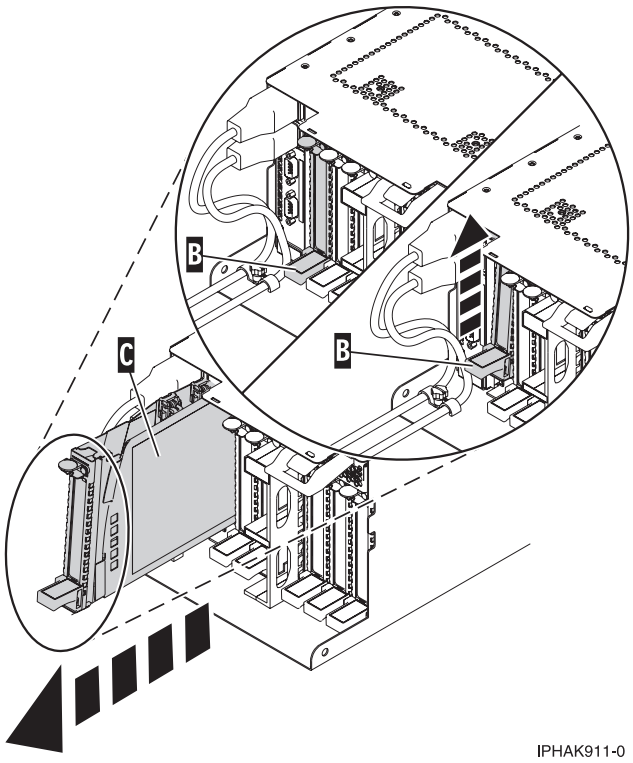


Figure 79. PCI adapter cassette removed from the system unit

10. Install the adapter into the PCI adapter cassette. See the following topics:
    - "PCI adapter single-width, third generation cassette" on page 31
    - "PCI adapter double-wide cassette" on page 57
11. Ensure the lower cassette handle is pressed up toward the retainer clip. This places the adapter in the correct position to be docked in the system.
12. Install the PCI adapter cassette as described in the following substeps: If not, skip to step 13 on page 90
    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.

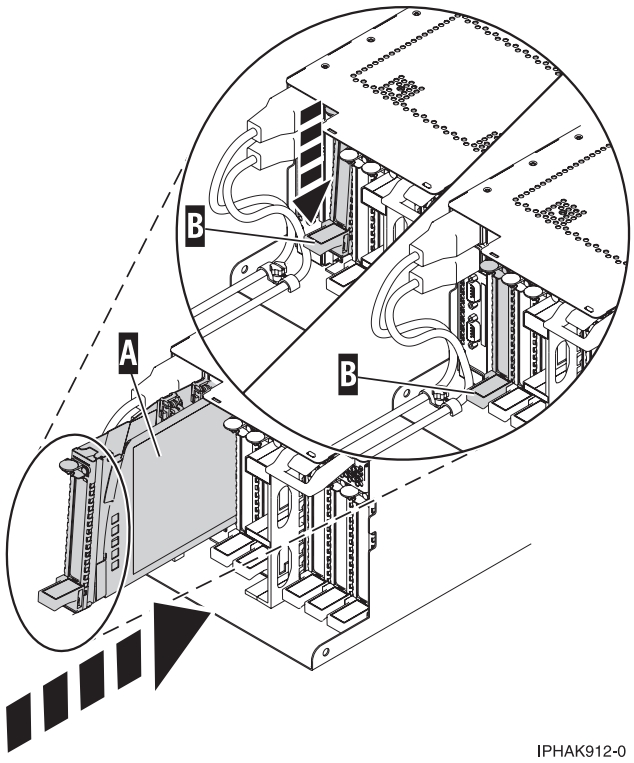


Figure 80. PCI adapter cassette installed in the system unit

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

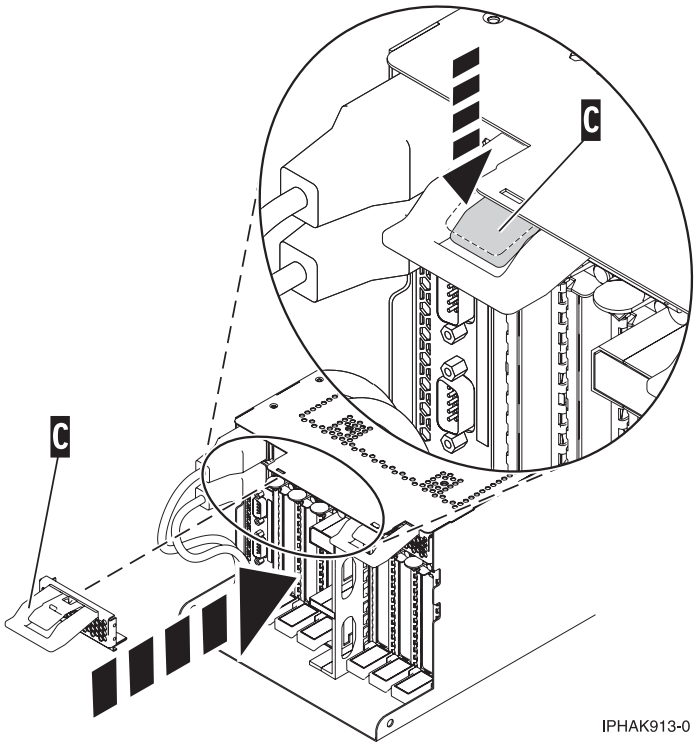


Figure 81. PCI adapter EMC shield in the closed position

13. Run the **cfgmgr** command to configure the adapter.
14. Verify that the new resource is functional. See Verify the installed part.

Results

Installing a PCI adapter contained in a cassette with the power on in the Linux envirnoment

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

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.

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 a PCI adapter with the system power on in the Linux environment:

Procedure

1. Perform prerequisite tasks as described in “Before you begin” on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
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. Log in to the system console as the root user.
5. Use the lsslot tool to list the hot-plug PCI slots that are available in the server or partition:

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

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

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

   Select the appropriate empty PCI slot from the ones listed by the command.
6. 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.

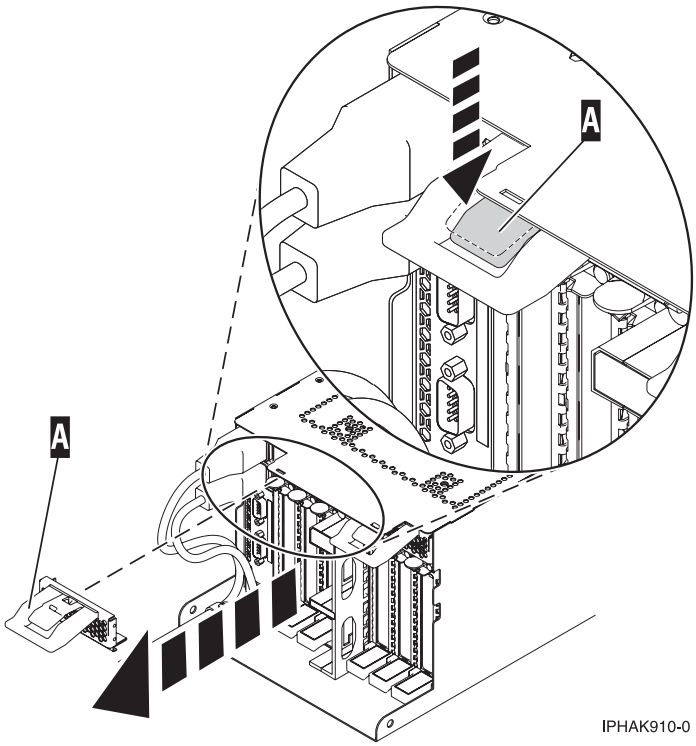


Figure 82. Remove the EMC shield

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

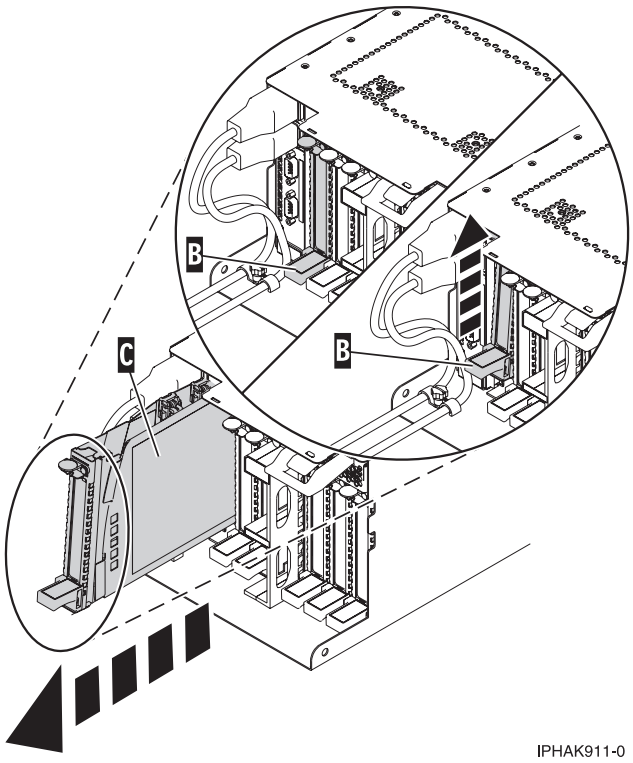


Figure 83. PCI adapter cassette removed from the system unit

7. Install the adapter into the PCI adapter cassette. See the following topics:
   - "PCI adapter single-width, third generation cassette" on page 31
   - "PCI adapter double-wide cassette" on page 57
8. 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.
9. Run the **drmgr** command to enable an adapter to be installed.

   For example, to install an adapter in slot U7879.001.DQD014E-P1-C3, run:

   ```
   drmgr -c pci -r -s locationcode
   ```

   The following displays:

   ```
   The visual indicator for the specified PCI slot has been set to the
   identify state. Press Enter to continue or enter x to exit.
   ```
10. Press Enter.

    The following displays:

    ```
    The visual indicator for the specified PCI slot has been set to the
    action state. Insert the PCI card into the identified slot, connect any
    devices to be configured and press Enter to continue. Enter x to exit.
    ```
11. Install the PCI adapter cassette as described in the following substeps: If not, skip to step 12 on page 94.
    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.

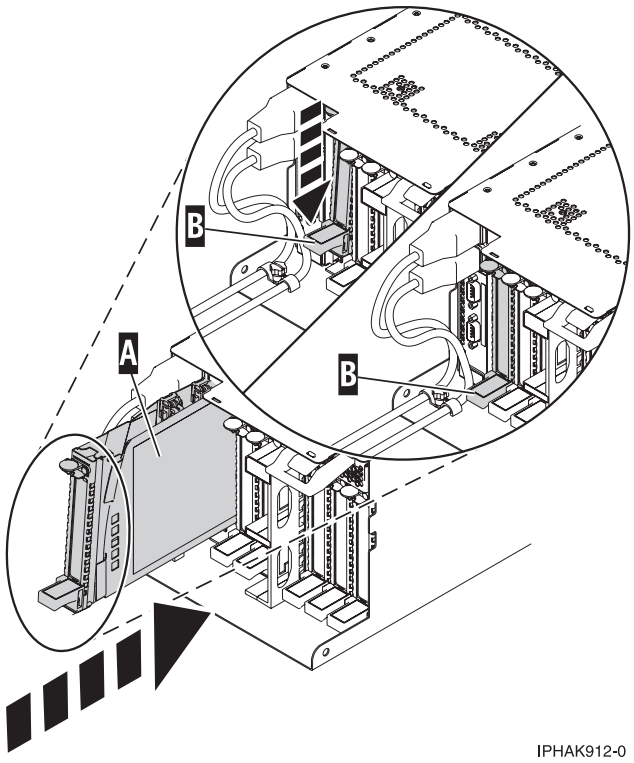


Figure 84. PCI adapter cassette installed in the system unit

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

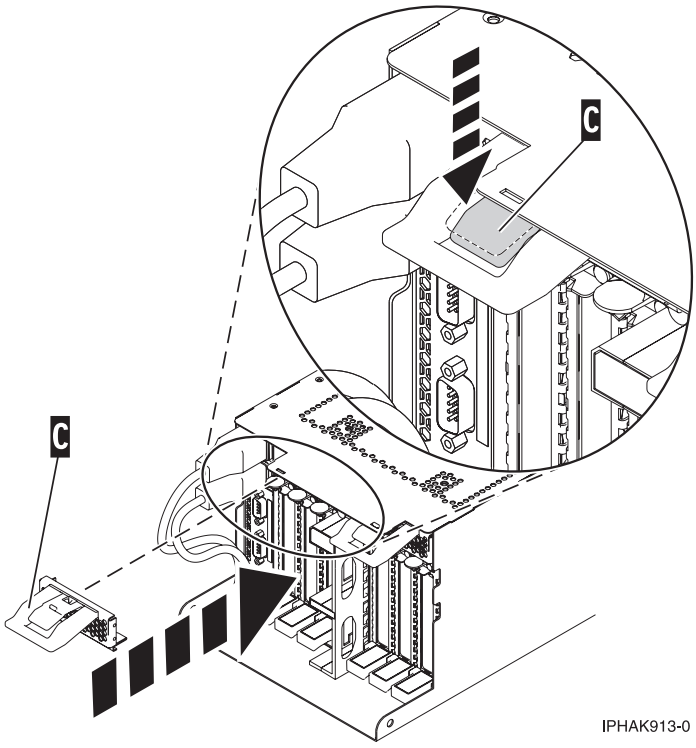


Figure 85. PCI adapter EMC shield in the closed position

12. Use the **lsslot** command to verify that U7879.001.DQD014E-P1-C3 is occupied.

    Enter **lsslot -c pci -s U7879.001.DQD014E-P1-C3**

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

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

Removing a PCI adapter contained in a cassette from the system

You can remove a PCI adapter.

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 180.

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

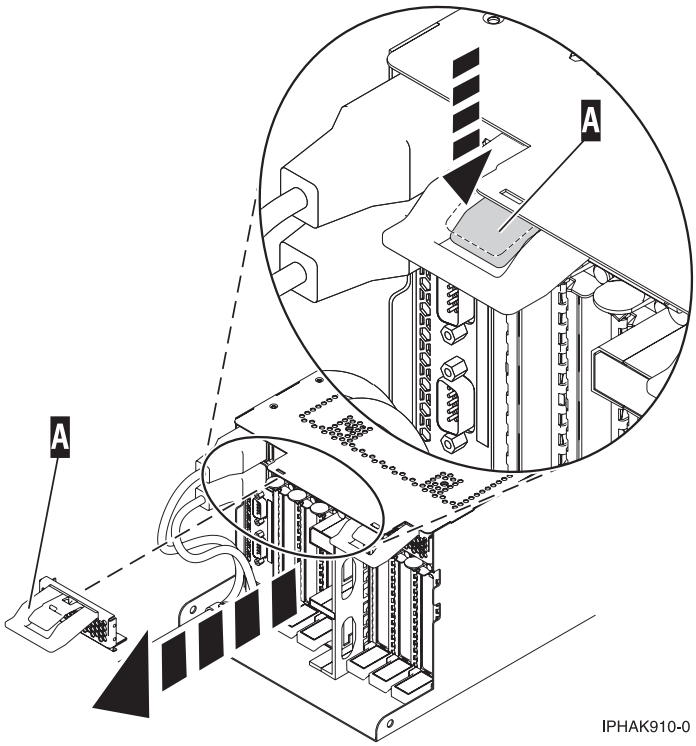


Figure 86. Remove the EMC shield

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

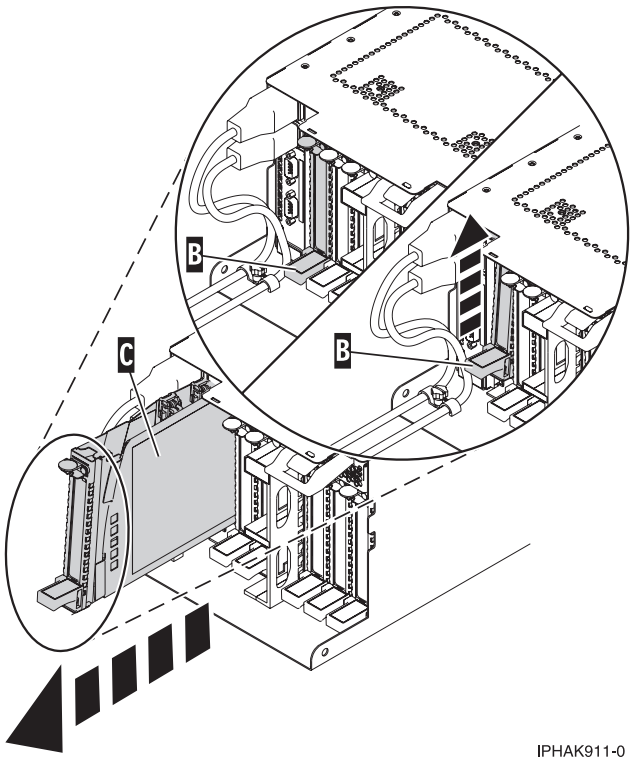


Figure 87. PCI adapter cassette removed from the system unit

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 144.

Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment

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

About this task

Notes:

1. Use this procedure to remove a PCI adapter and leave the slot in the system unit empty.
2. If the adapter that is removed will be placed into a different slot or system, complete this removal procedure, then install the adapter as described in "Installing a PCI adapter contained in a cassette with the power on in the AIX environment" on page 86.
3. Procedures performed on a PCI adapter with the system power on in AIX, also known as hot-plug procedures, require the system administrator to take the PCI adapter offline prior to performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

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 180.

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 on in the AIX environment:

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 162.
2. Determine the location of PCI adapter in the system.
3. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system unit.
4. Ensure that any processes or applications that might use the adapter are stopped.
5. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at AIX command line.
6. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays, press Enter.
7. At the FUNCTION SELECTION menu, select **Task Selection**, then press enter.
8. At the Task Selection list, select **PCI Hot Plug Manager**.
9. Select **Unconfigure a Device**, then press Enter.
10. Press F4 (or Esc +4) to display the **Device Names** menu.
11. Select the adapter you are removing in the **Device Names** menu.
12. Use the Tab key to answer `NO` to **Keep Definition**. Use the Tab key again to answer `YES` to **Unconfigure Child Devices**, then press Enter. The **ARE YOU SURE** screen displays.
13. Press Enter to verify the information. Successful unconfiguration is indicated by the `OK` message displayed next to the Command field at the top of the screen.
14. Press F4 (or Esc +4) twice to return to the **Hot Plug Manager** menu.
15. Select **replace/remove PCI Hot Plug adapter**.
16. Select the slot that has the device to be removed from the system.
17. Select **remove**. A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
18. Label all cables attached to the adapter you plan to remove.
19. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
20. Disconnect all cables attached to the adapter you plan to remove.
21. Before handling any PCI adapter, see "Handling static-sensitive devices" on page 170.
22. 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.

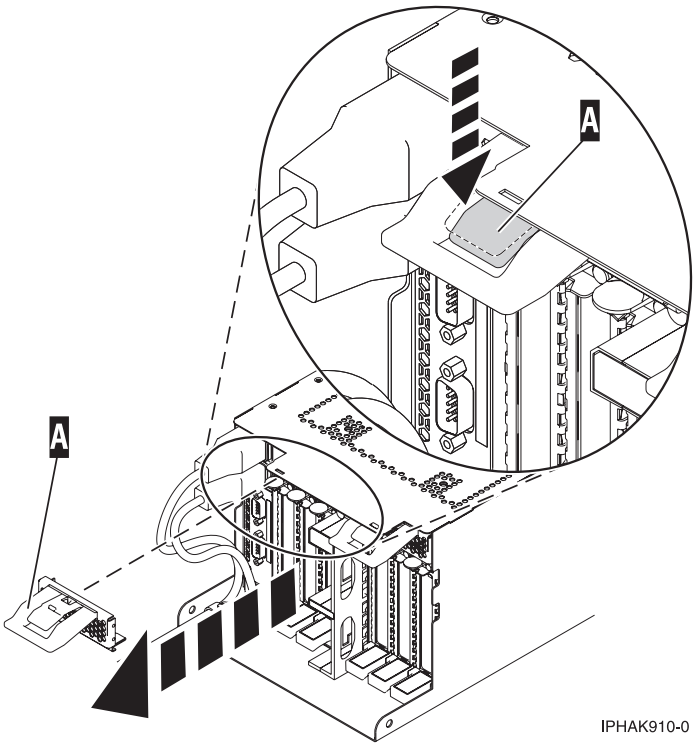


Figure 88. Remove the EMC shield

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

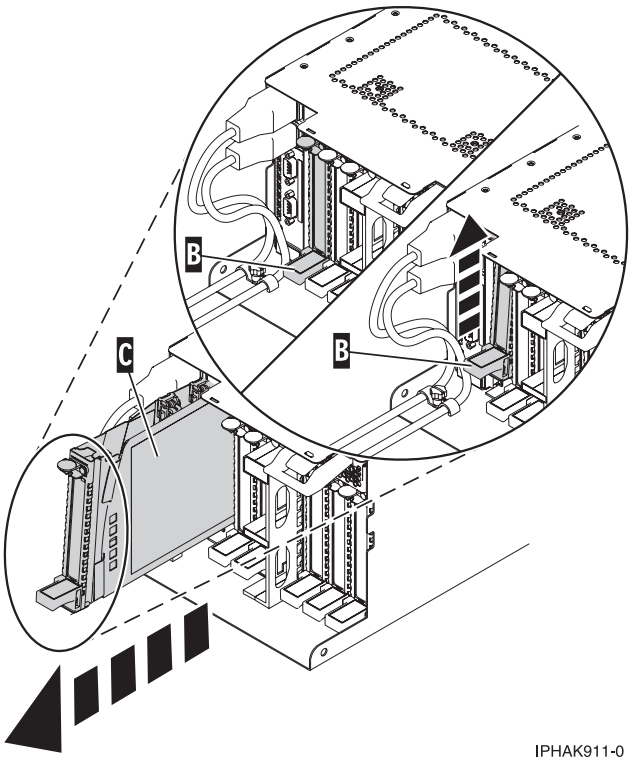


Figure 89. PCI adapter cassette removed from the system unit

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

    Note: The cover will have a label on it.
24. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the `OK` message displayed next to the Command field at the top of the screen.
25. If you have other adapters to remove, press the F3 key to return to the PCI Hot-Plug Manager menu and then return to step 20 on page 97.

    or

    If you do not have other adapters to remove, continue with the next step.
26. Press F10 to exit the Hot-Plug Manager.
27. Run the **diag -a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
28. Place an empty cassette into the unused PCI slot for proper air flow. The procedure is complete.
    - To install an adapter in the system, see "Installing a PCI adapter contained in a cassette with the power on in the AIX environment" on page 86.

Removing a PCI adapter contained in a cassette from the system with the power on in the Linux environment

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

About this task

If your system is managed by the Hardware Management Console (HMC), use the HMC to complete the steps for removing a PCI adapter. For instructions, see "Removing a part by using the HMC" on page 180.

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 on in the Linux environment:

Procedure

1. Ensure that the system meets the "Prerequisites for hot-plugging PCI adapters in Linux" on page 178.
2. Verify that the Linux, hot-plug PCI tools are installed. See "Verifying that the hot-plug PCI tools are installed for Linux" on page 178.
3. Perform the prerequisite tasks as described in "Before you begin" on page 162.
4. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
5. Determine the location of PCI adapter in the system.
6. Label, and then disconnect all cables attached to the adapter you plan to remove.
7. Run the **drmgr** command to enable an adapter to be removed:

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

   ```
   drmgr -c pci -r -s locationcode
   ```

   Follow the instructions on the display to complete the task.
8. Remove the PCI adapter cassette from the system. Follow these steps:
   a. Remove the PCI adapter EMC shield **(A)** as shown in the following figure.

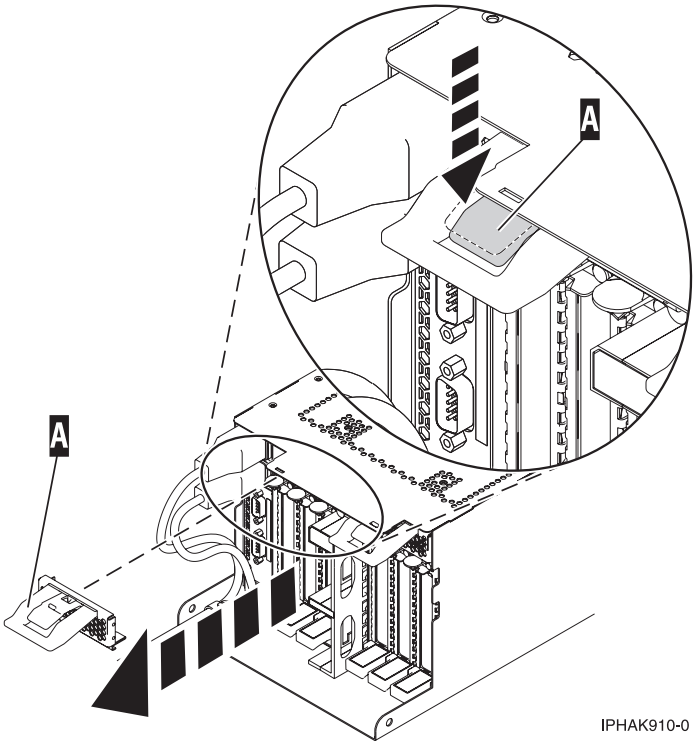


Figure 90. Remove the EMC shield

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

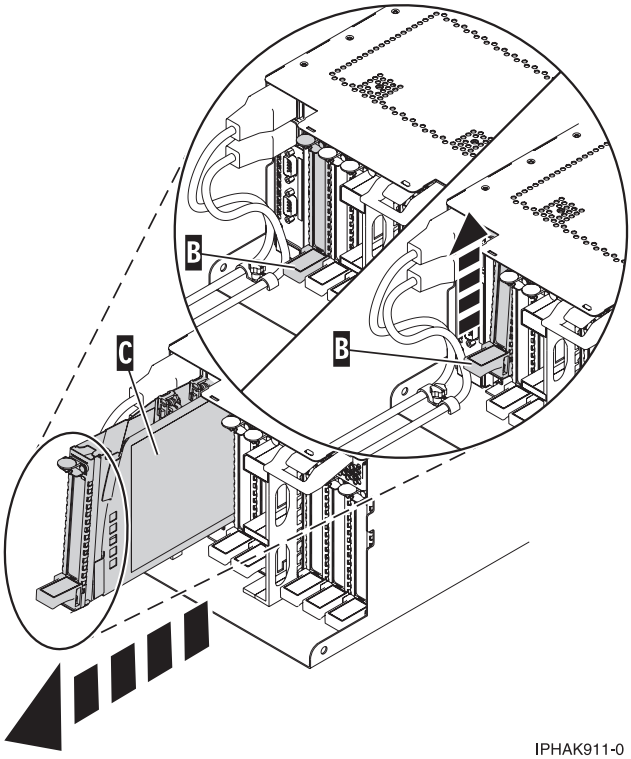


Figure 91. PCI adapter cassette removed from the system unit

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

   Note: The cover will have a label on it.
10. Remove the adapter from the PCI adapter cassette.

Results

To replace the adapter in the system, see "Replacing a PCI adapter contained in a cassette in the system with the power on in the Linux environment" on page 109.

Replacing a PCI adapter contained in a cassette in the system

You can replace a PCI adapter.

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 179
- 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.

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 94 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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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 31
   - "PCI adapter double-wide cassette" on page 57
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.

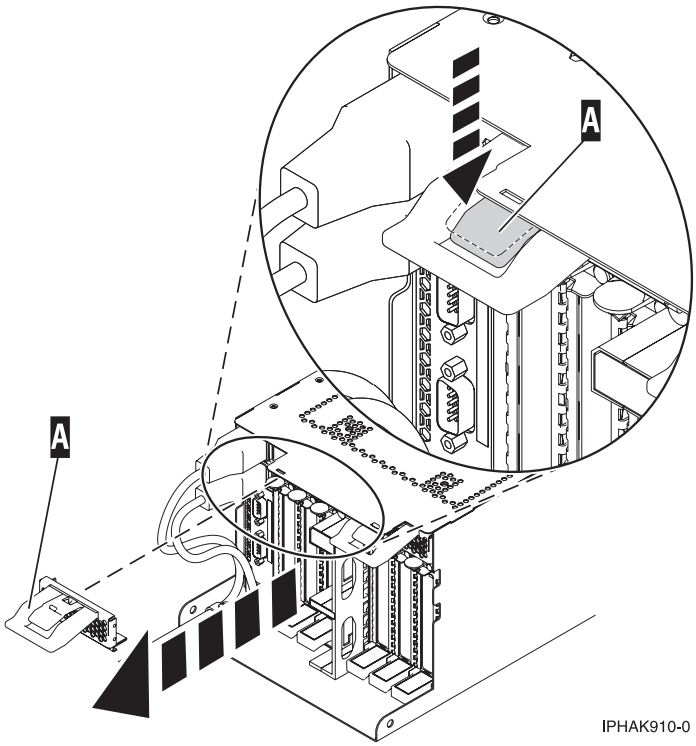


Figure 92. Remove the EMC shield

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.

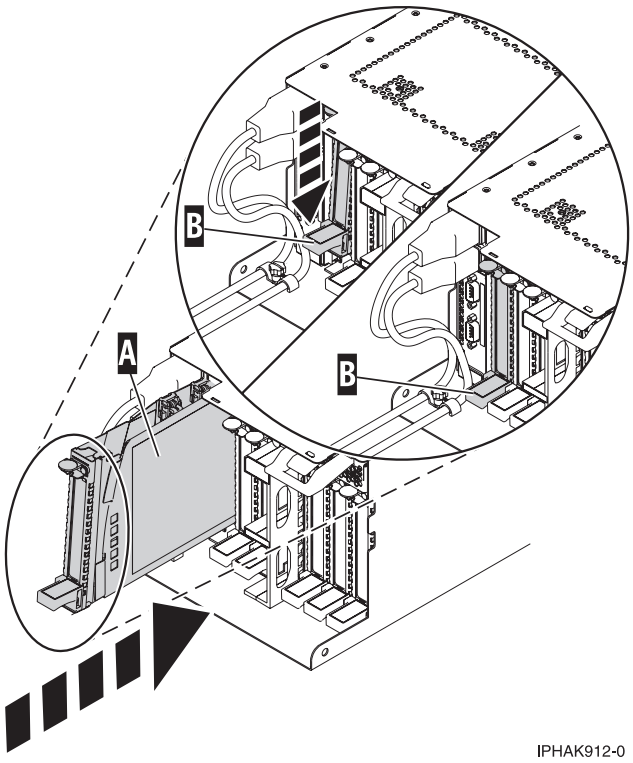


Figure 93. PCI adapter cassette installed in the system unit

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

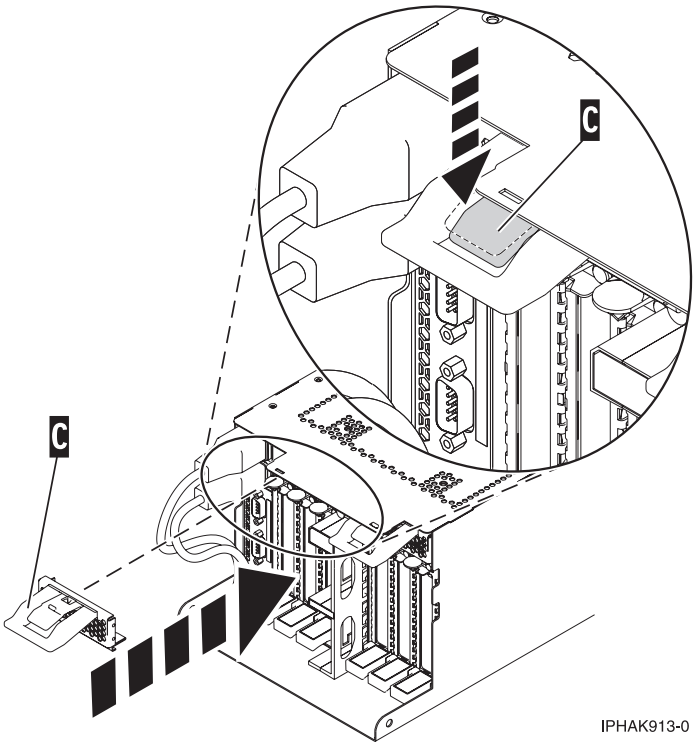


Figure 94. PCI adapter EMC shield in the closed position

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.

Removing and replacing a PCI adapter contained in a cassette in the system with the power on in the AIX environment

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

About this task

Important:

1. Use this procedure if you intend to remove a failing PCI adapter and replace it with the same type of adapter.
2. If you plan to remove a failing adapter and leave the slot empty, see "Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment" on page 96.
3. This procedure should not be used to remove an existing adapter and install a different type of adapter. To install a different adapter, remove the existing adapter as described in "Removing a PCI adapter contained in a cassette from the system with the power on in the AIX environment" on page 96, and then install the new adapter as described in "Installing a PCI adapter contained in a cassette with the power on in the AIX environment" on page 86.
4. Procedures performed on a PCI adapter with the system power on in AIX, also known as hot-plug procedures, require the system administrator to take the PCI adapter offline prior to performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

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 on in the AIX environment:

Procedure

1. Perform the prerequisite tasks as described in "Before you begin" on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
3. Determine the location of the PCI adapter in the system.
4. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system unit.
5. Ensure that any processes or applications that might use the adapter are stopped.
6. Enter the system diagnostics by logging in as root user or as the celogin user, type **diag** at AIX command line.
7. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays, press Enter.
8. At the FUNCTION SELECTION menu, select **Task Selection**, and then press enter.
9. At the Task Selection list, select **PCI Hot Plug Manager**.
10. Select **Unconfigure a Device**, and then press Enter.

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

    Note: A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
19. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
20. Label, and then disconnect all cables attached to the adapter you plan to remove.
21. 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.

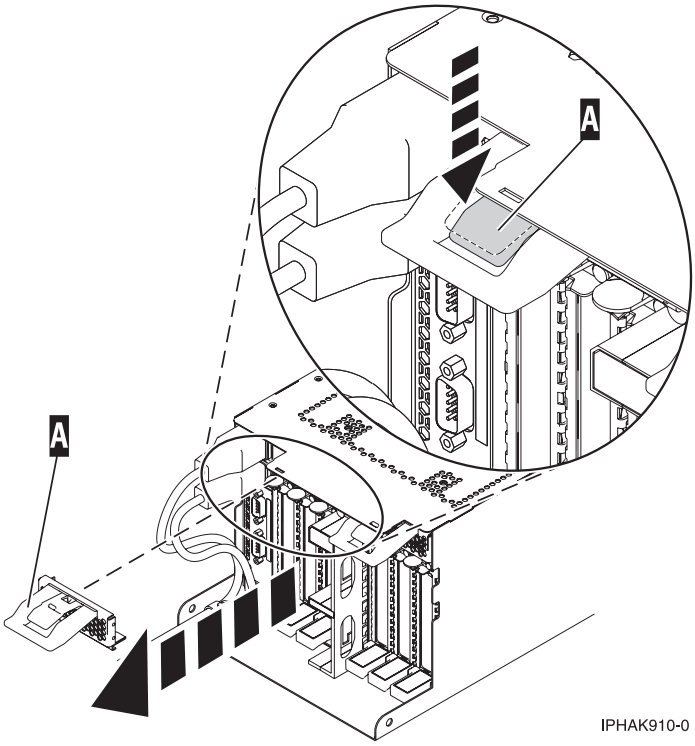


Figure 95. Remove the EMC shield

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

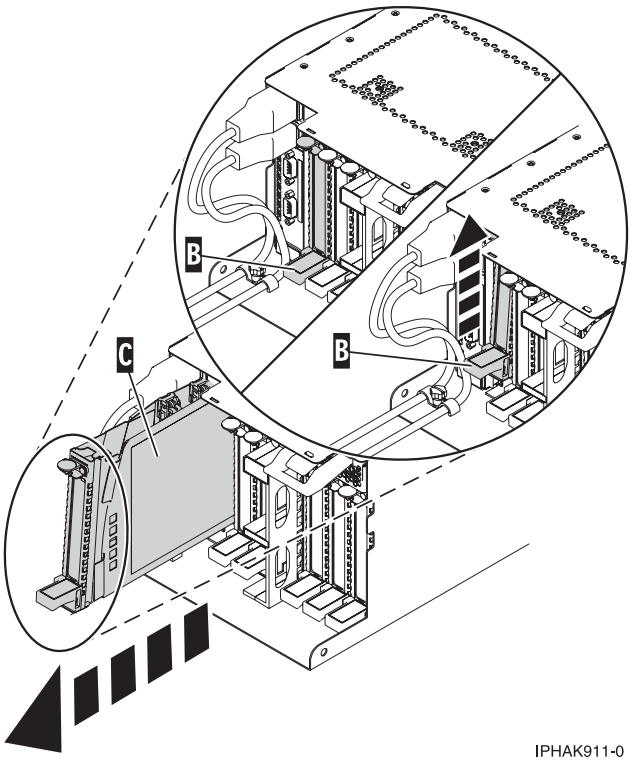


Figure 96. PCI adapter cassette removed from the system unit

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

    Note: The cover will have a label on it.
23. Install the adapter into the PCI adapter cassette. See the following topics:
    - "PCI adapter single-width, third generation cassette" on page 31
    - "PCI adapter double-wide cassette" on page 57
24. At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
25. 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.
26. 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.

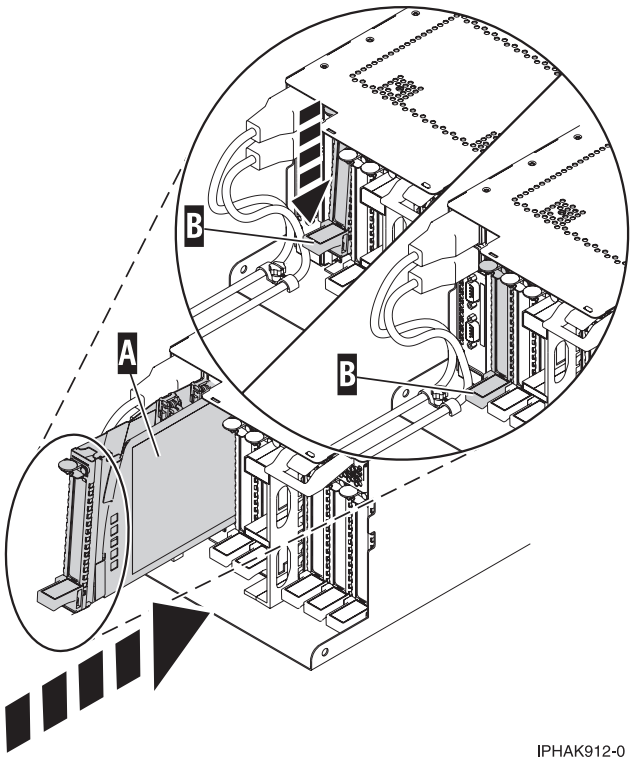


Figure 97. PCI adapter cassette installed in the system unit

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

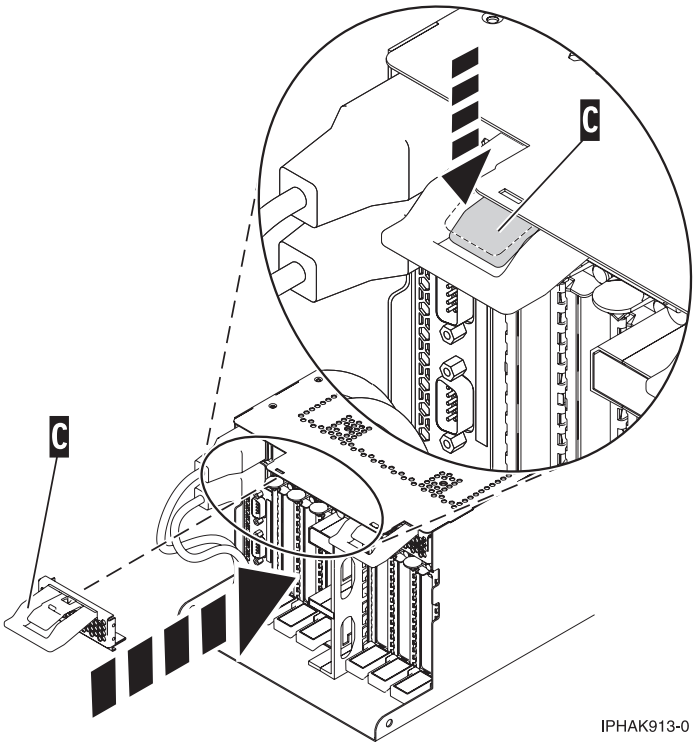


Figure 98. PCI adapter EMC shield in the closed position

27. Press Enter and continue to follow the screen instructions until you receive a message that the replacement is successful. Successful replacement is indicated by the OK message displayed next to the **Command** field at the top of the screen.
28. Press the F3 (or Esc+3) key to return to the **PCI Hot-Plug Manager** menu.
29. Press the F3 (or Esc+3) key to return to the **TASK** selection list.
30. Select **Log Repair Action**.
31. Select the resource just replaced, press Enter, press Commit (F7 or ESC 7), and then press Enter.
32. Press F3 (or Esc+3) to return to **TASK Selection List**.
33. Select **Hot Plug Task**, press enter.
34. Select **PCI Hot Plug Manager**, and then select **Configure a defined device**, and then press Enter.
35. Select the device just replaced from the list, and then press Enter. The device is now configured.
36. Press the F10 key to exit the diagnostic program.
37. Verify the PCI adapter by using the following instructions:
    a. Did you replace the adapter with the system power on?
       - Yes - Go to the next step.
       - No - Load the diagnostic program by doing the following:
         – If AIX is available, boot AIX, log in as root or CELOGIN, and then enter the **diag** command.
    b. Type the **diag** command if you are not already displaying the diagnostic menus
    c. Select **Advance Diagnostic Routines**, and then select **Problem Determination**.
    d. Select the name of the resource just replaced from the menu. If the resource just replaced is not shown, choose the resource associated with it. Press Enter, and then press **Commit** ((F7 or Esc+7)).
    e. Did the Problem Determination identify any problems?
       - No: Continue to the next step.
       - Yes: A problem is identified
         – If you are a customer, record the error information, and then contact your service provider.
         – If you are an authorized service provider, return to map 210-5.
38. Press the F10 key to exit the diagnostic program.

Replacing a PCI adapter contained in a cassette in the system with the power on in the Linux environment

You can replace a PCI adapter.

About this task

You must have already completed the procedure “Removing a PCI adapter contained in a cassette from the system with the power on in the Linux environment” on page 99 in order to have the slot powered off.

Note: Use this procedure only when you are replacing an adapter with an identical adapter. If you are replacing an adapter with an adapter that is not identical to the adapter removed, go to “Removing a PCI adapter contained in a cassette from the system with the power on in the Linux environment” on page 99 and “Installing a PCI adapter contained in a cassette with the power on in the Linux envirnoment” on page 90.

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 on in the Linux environment:

Procedure

1. Perform prerequisite tasks as described in "Before you begin" on page 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
3. If the adapter needs to be placed in the PCI adapter cassette, see "PCI adapter single-width and double-width cassettes" on page 144..
4. At the back of the system, lift the cassette cover flap and 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. Run the **drmgr** command to enable an adapter to be replaced:

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

   ```
   drmgr -c pci -r -s locationcode
   ```

   Follow the instructions on the display to complete the task.
7. 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.

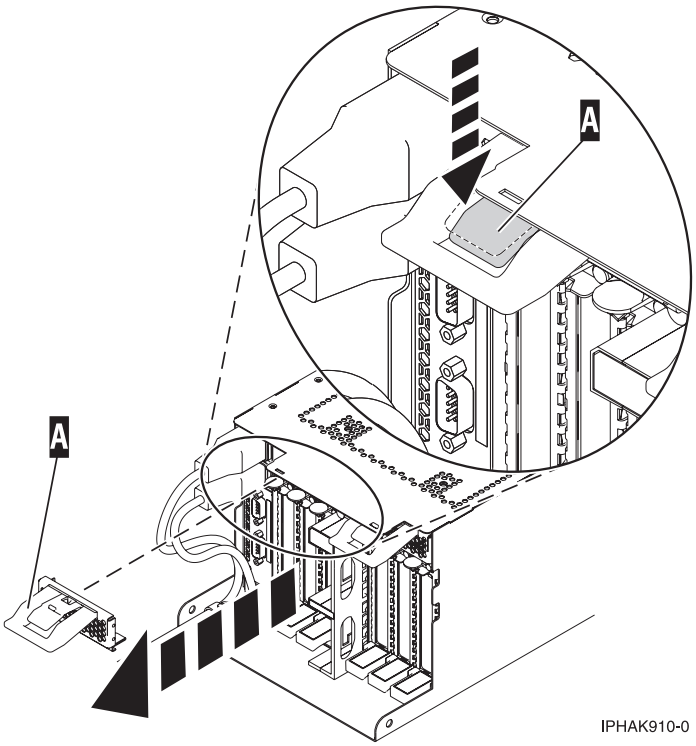


Figure 99. Remove the EMC shield

   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.

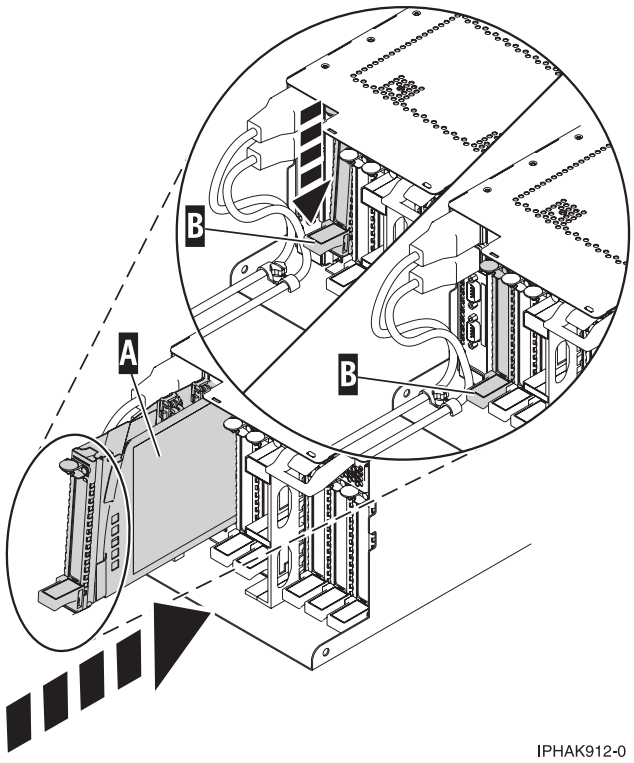


Figure 100. PCI adapter cassette installed in the system unit

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

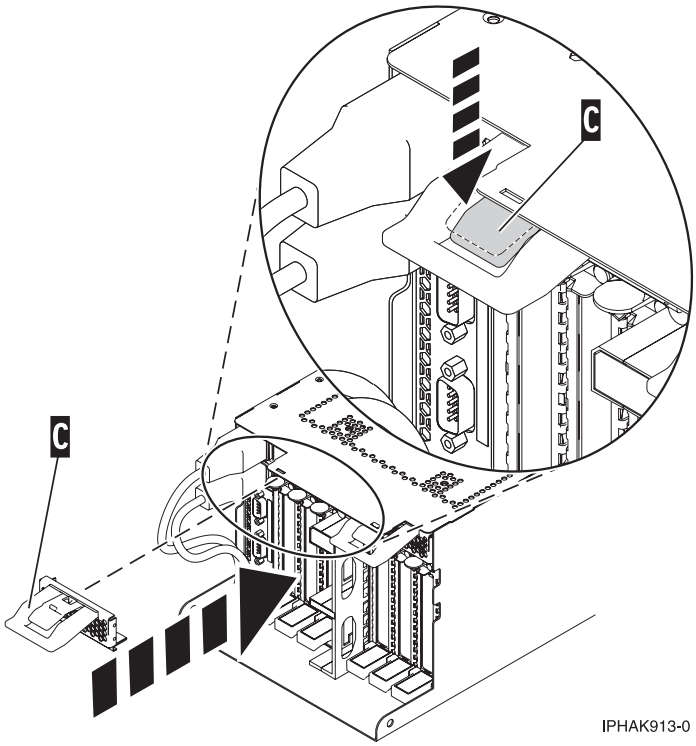


Figure 101. PCI adapter EMC shield in the closed position

8. Run the lsslot command to verify that the slot is occupied.

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

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

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

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
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.

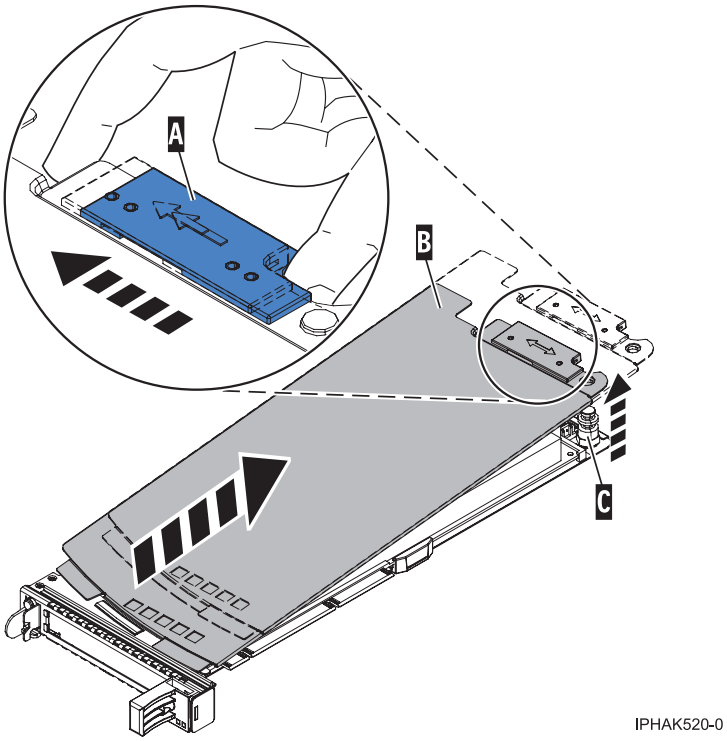


Figure 102. PCI adapter single-width cassette cover removed

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 41.
      - 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 26 on page 33.

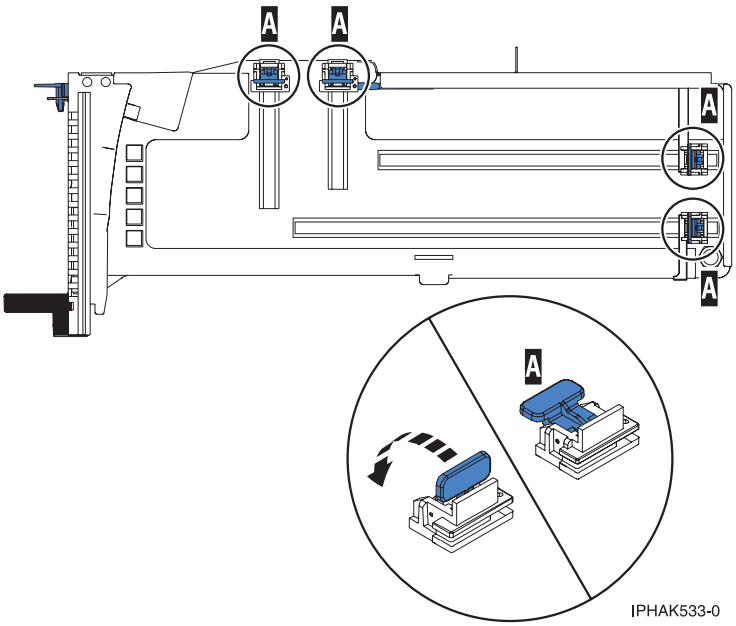


Figure 103. Adapter retainers

   c. Rotate the tailstock clamp into the open position.

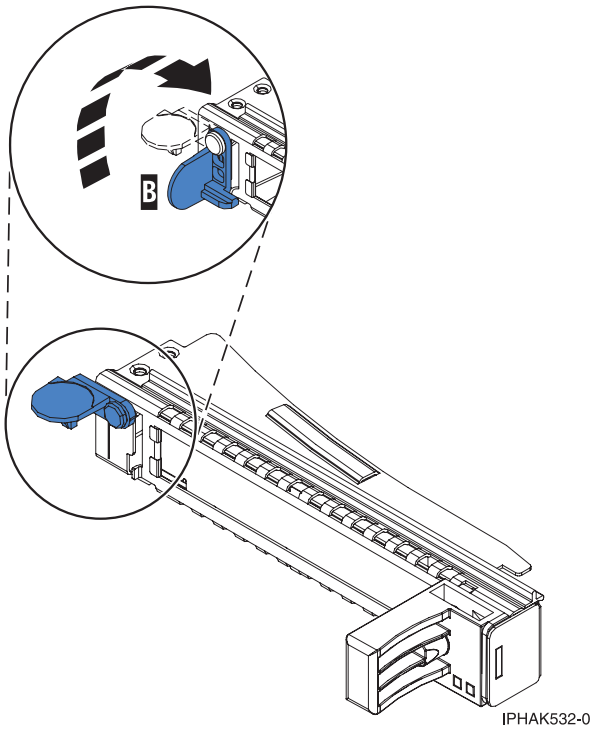


Figure 104. Tailstock clamp in the open position

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 28 on page 34.
   b. Rotate the adapter toward the top of the cassette and into place.
   c. Close the tailstock clamp **(B)**. See Figure 28 on page 34.

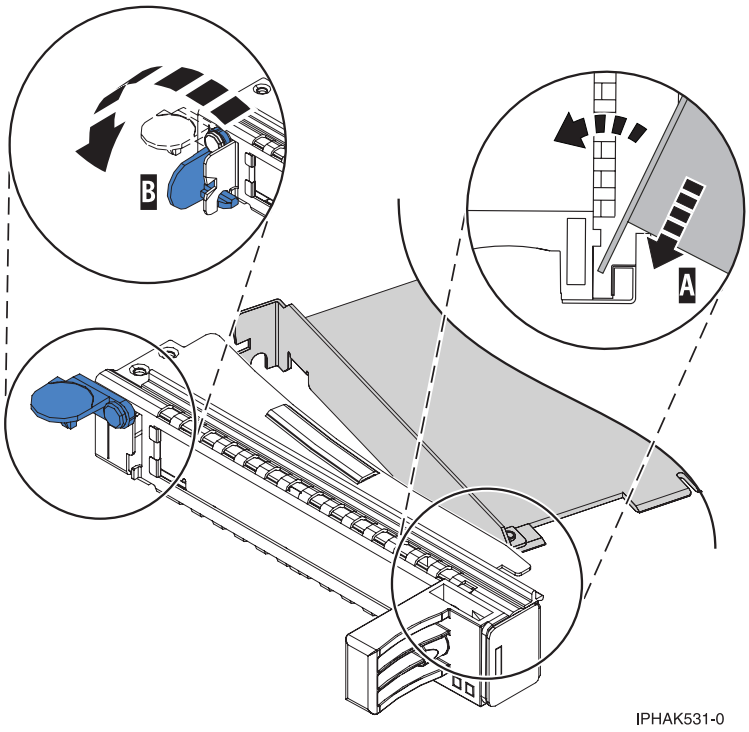


Figure 105. Adapter removed from the PCI adapter single-width cassette

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 29 on page 35.

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.

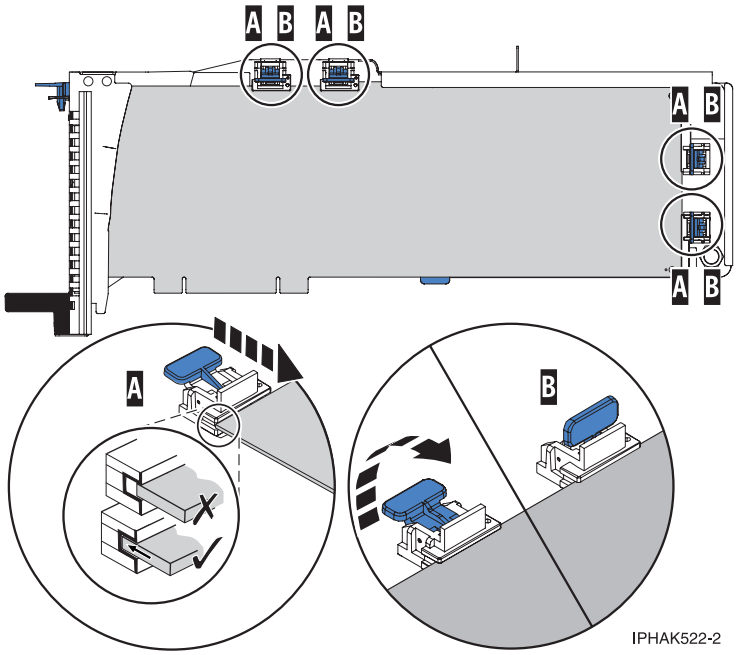


Figure 106. Large adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for medium-length adapters

a) Remove the adapter stabilizer **(C)**. See Figure 30 on page 36.

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.

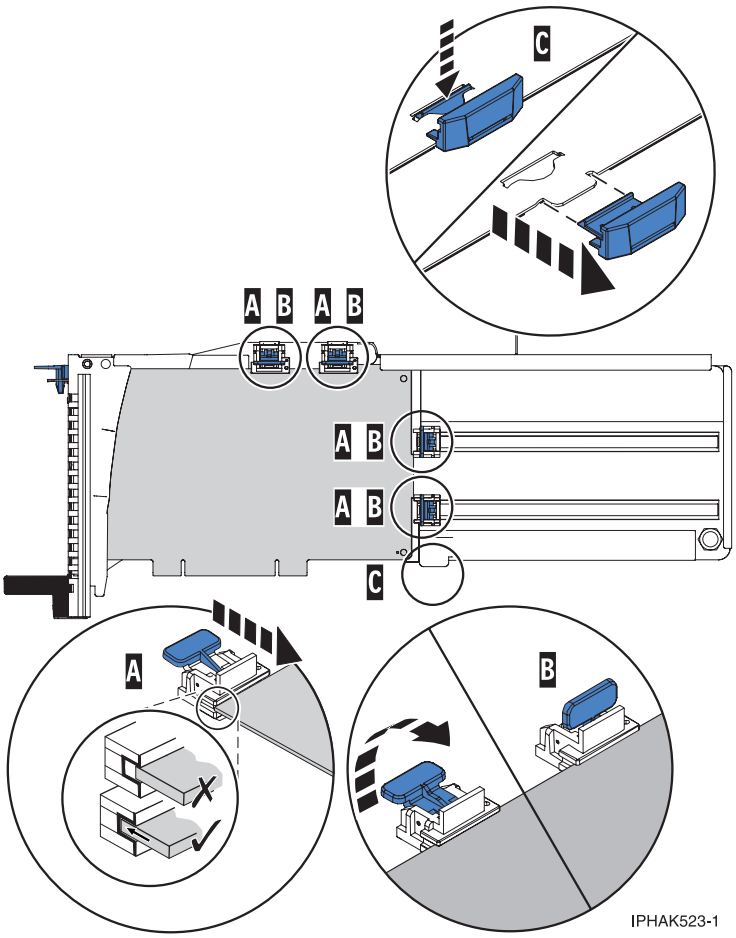


Figure 107. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for small adapters

a) Remove the adapter stabilizer **(C)**. See Figure 31 on page 37.

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.

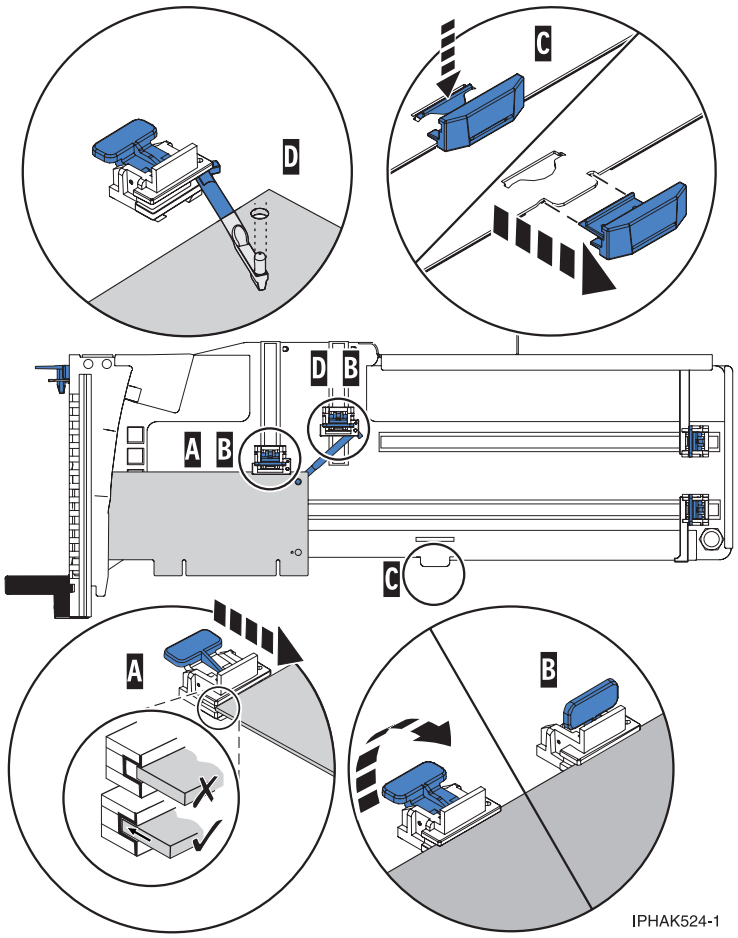


Figure 108. Small adapter in the PCI adapter cassette with the supports and the hookarm in place

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.

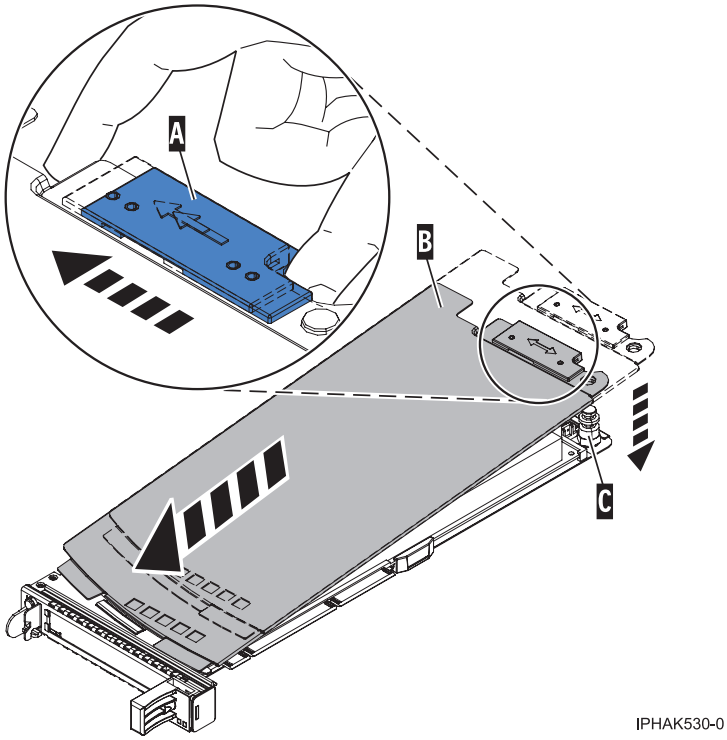


Figure 109. PCI adapter cassette cover replaced

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

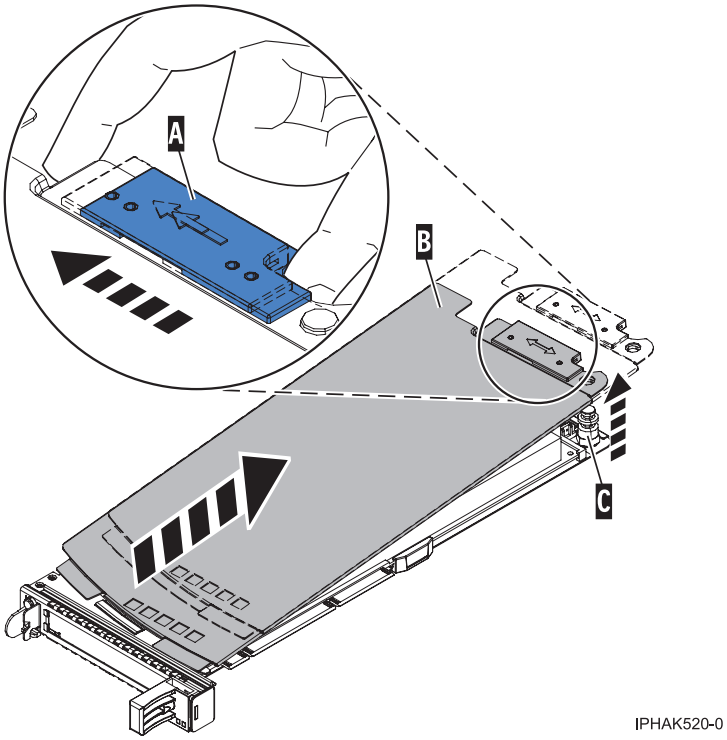


Figure 110. PCI adapter single-width cassette cover removed

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 34 on page 40.
   b. Rotate the adapter toward the top of the cassette and into place.
   c. Close the tailstock clamp **(B)**. See Figure 34 on page 40.

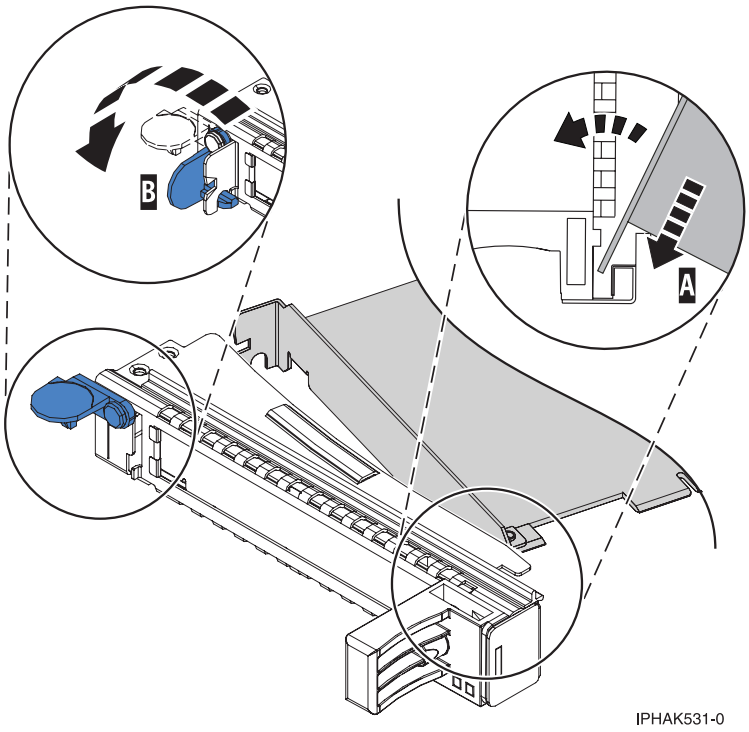


Figure 111. Placing the PCI adapter single-width cassette

d. Position the adapter retainer to support the adapter.

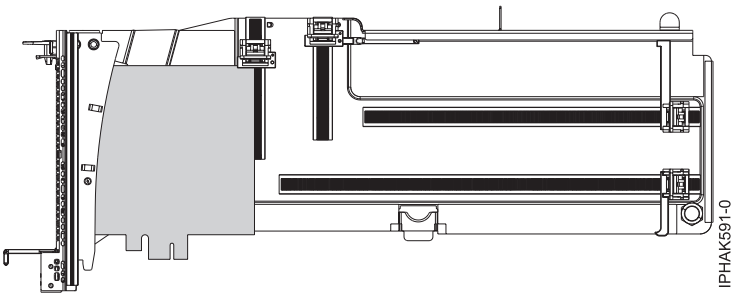


Figure 112. Side view of adapter in cassette

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.

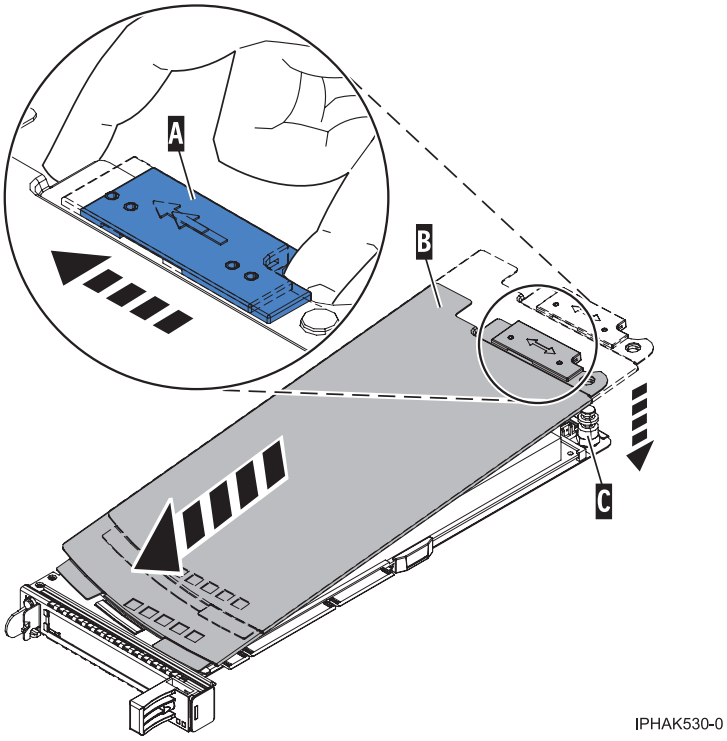


Figure 113. PCI adapter cassette cover replaced

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

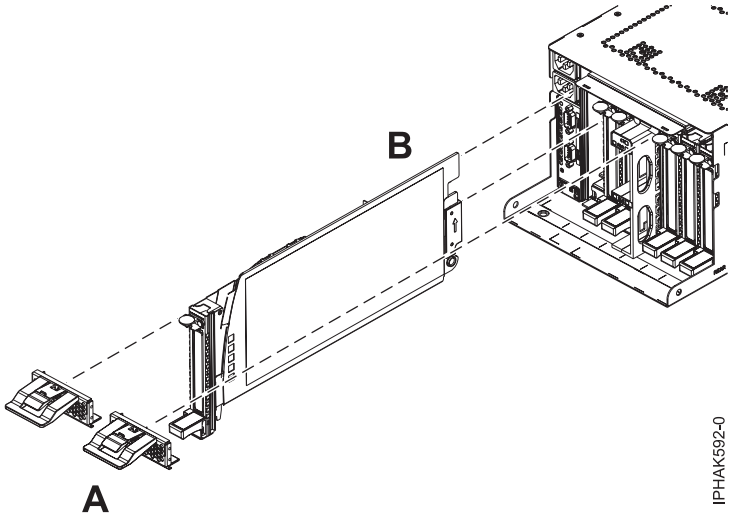


Figure 114. Replace the cassette and install the EMC grill

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see “Safety notices” on page 165 and “Handling static-sensitive devices” on page 170.
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.

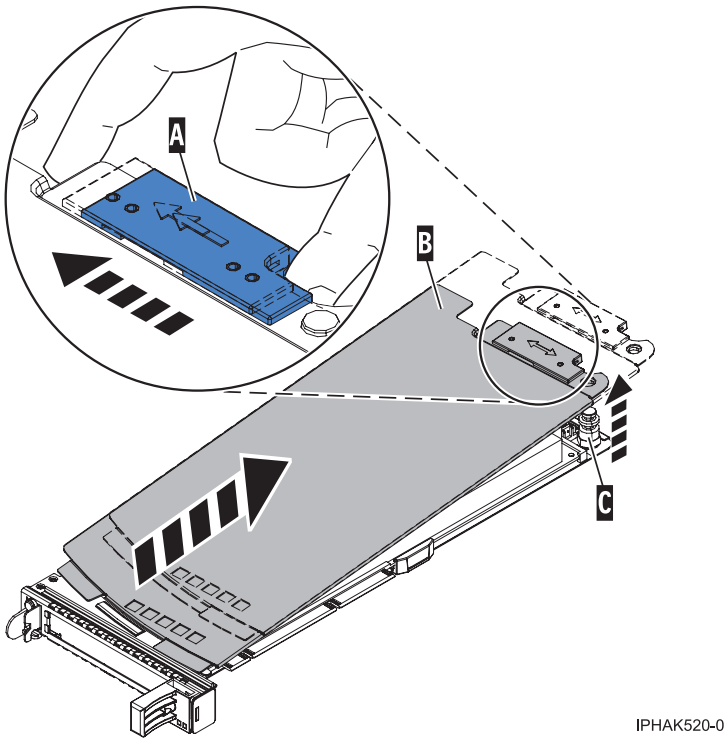


Figure 115. PCI adapter cassette cover removed

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 39 on page 43.

      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.

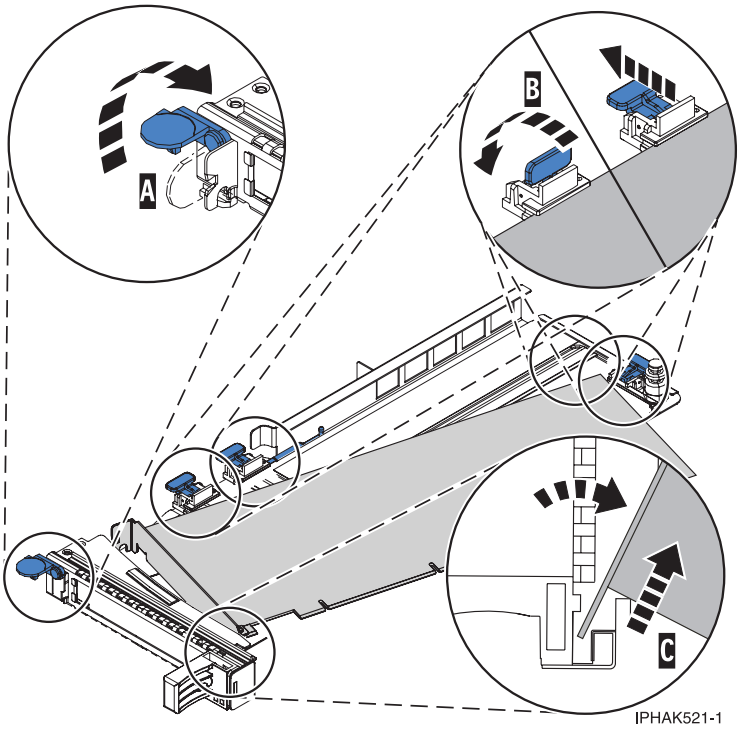


Figure 116. Adapter removed from the PCI adapter cassette

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 31.
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.

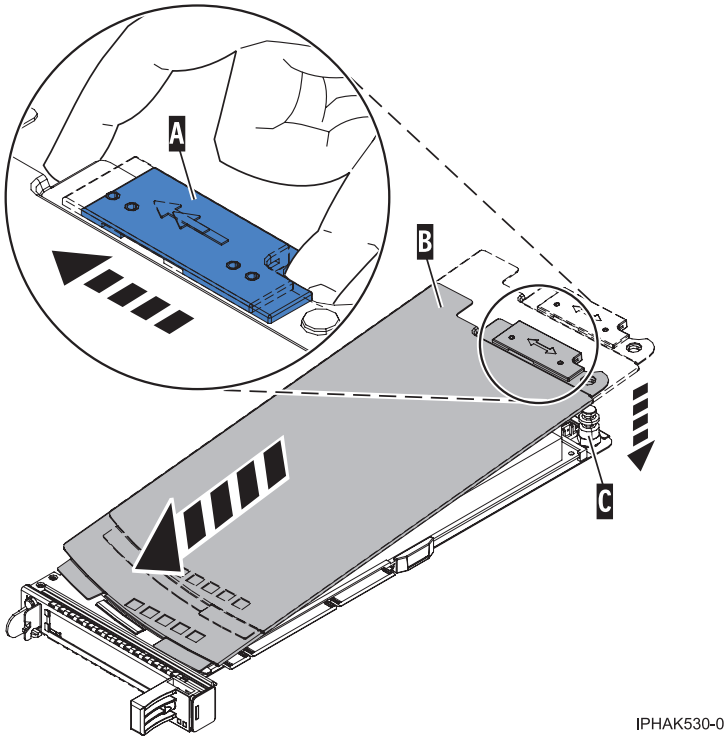


Figure 117. PCI adapter cassette cover replaced

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

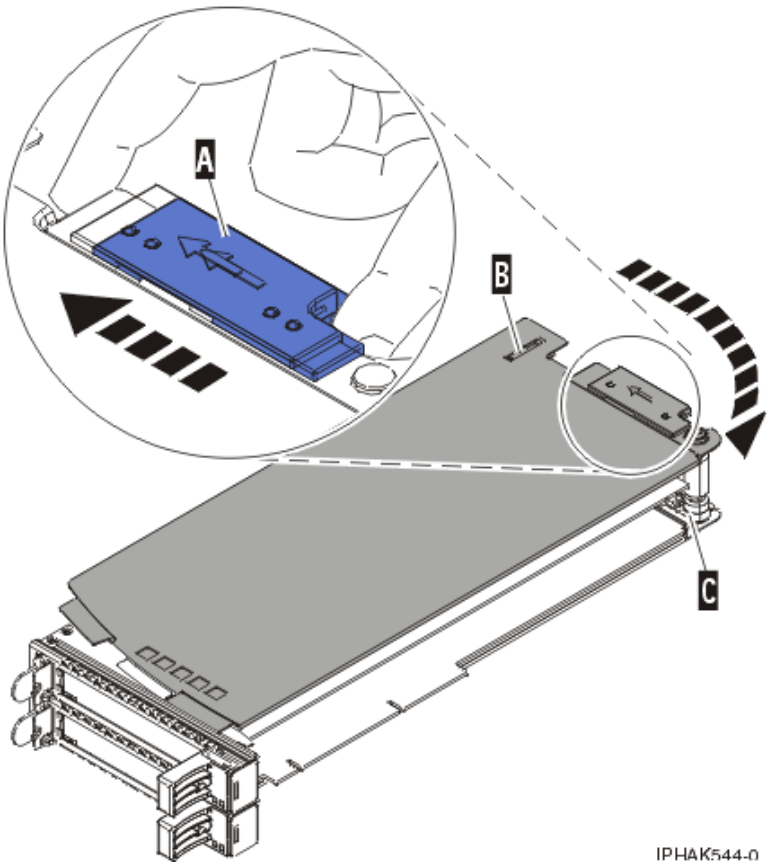


Figure 118. PCI adapter cassette cover removed

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 42 on page 59.

      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.

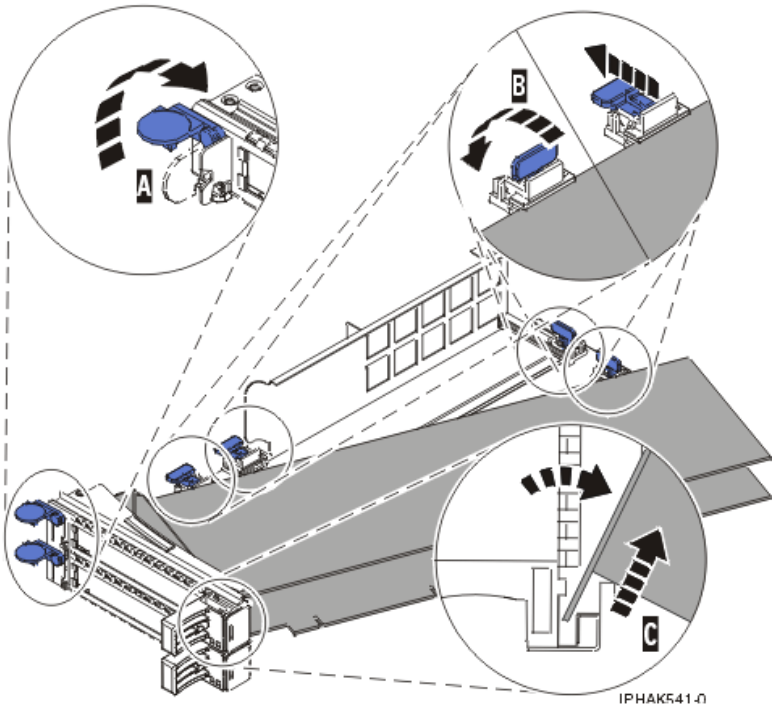


Figure 119. Adapter removed from the PCI adapter cassette

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 60.

   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.

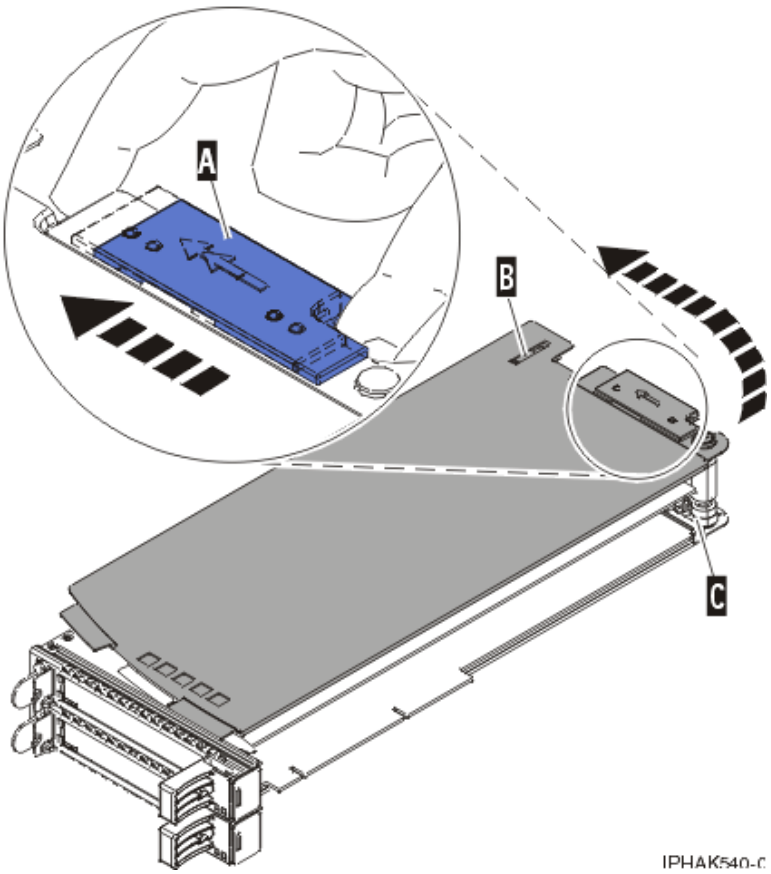


Figure 120. PCI adapter cassette cover replaced

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 162.
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.

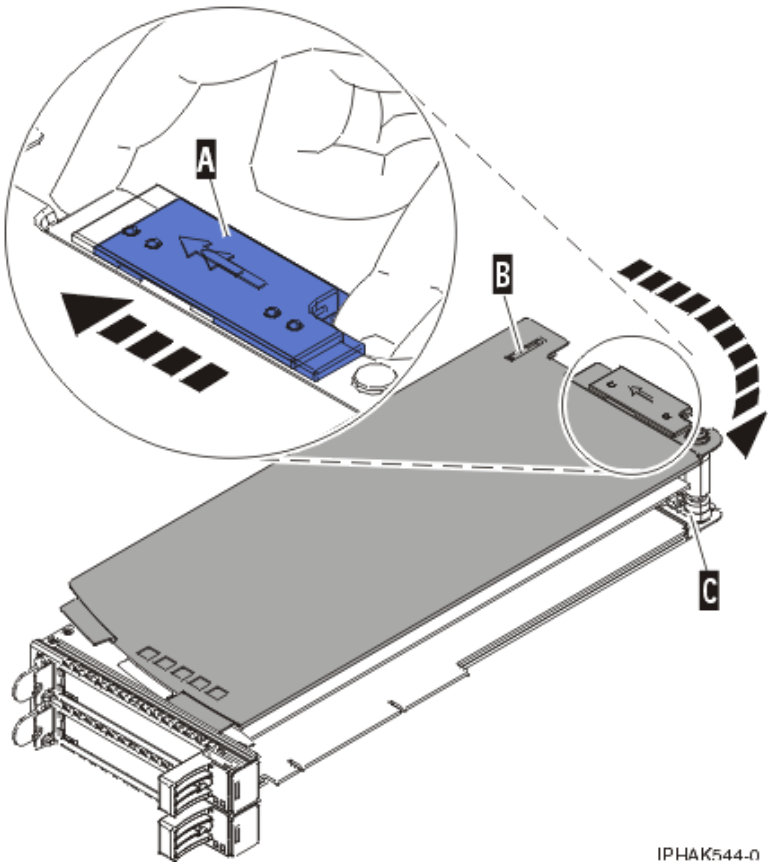


Figure 121. PCI adapter cassette cover removed

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 57.
      - 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 45 on page 62.
   b. Rotate the adapter toward the top of the cassette and into place.
   c. Close the tailstock clamp.

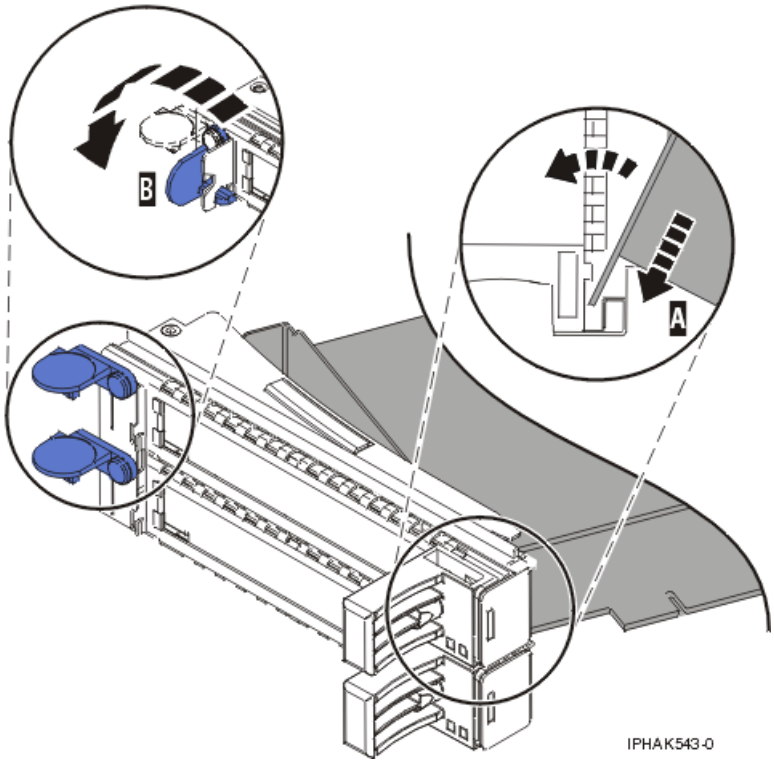


Figure 122. Adapter replaced in the PCI adapter cassette

d. Position the adapter retainers to support the adapter, and then rotate the retainer clip **B** into the closed position. See Figure 45 on page 62.

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 46 on page 63.

   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.

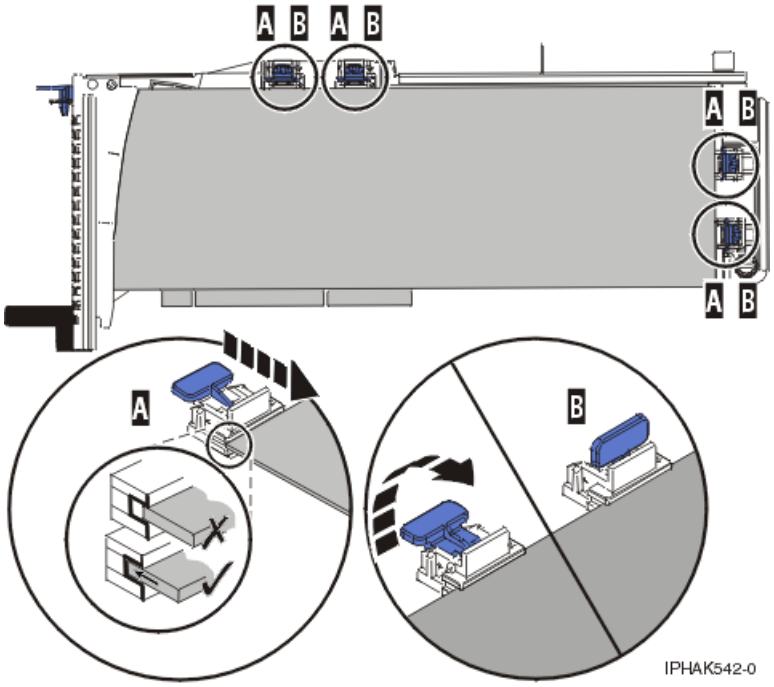


Figure 123. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

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.

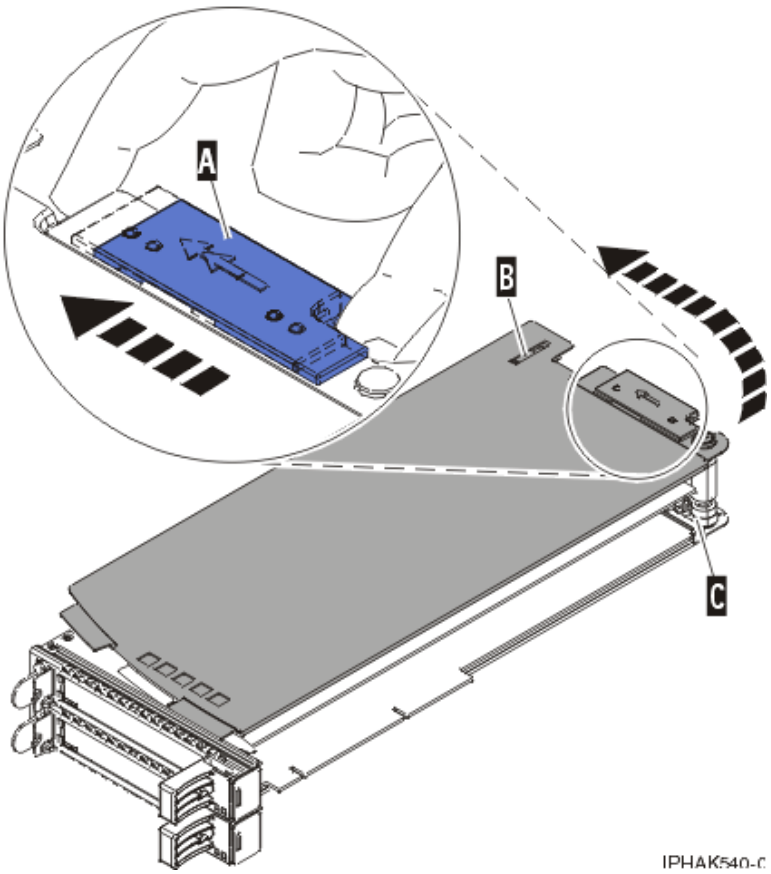


Figure 124. PCI adapter cassette cover replaced

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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 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 132.

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 137.
4. Install the adapter into the PCI adapter cassette. Refer to "PCI adapter single-width and double-width cassettes" on page 144.
5. Install the PCI adapter cassette in the system. Refer to "Installing a PCI adapter contained in a cassette."
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.

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.

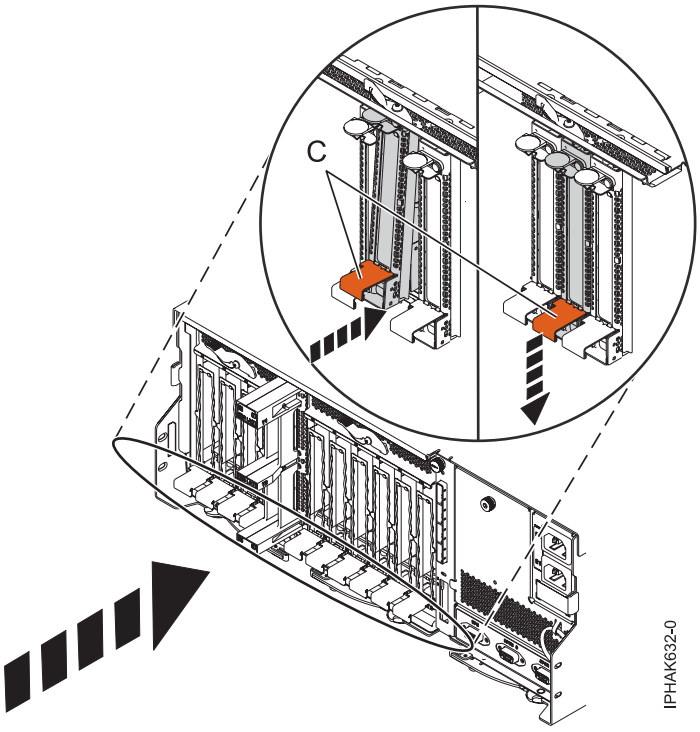


Figure 125. Installing the PCI adapter cassette

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

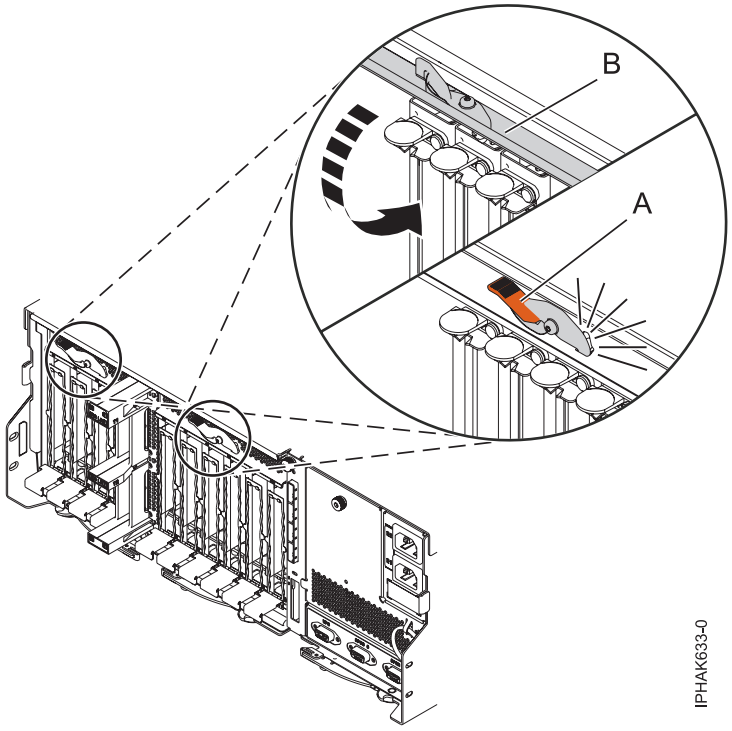


Figure 126. Closing the access door

5. Return to the procedure that sent you here.

Installing a PCI adapter contained in a cassette with the power on in the AIX environment

You can install a PCI adapter cassette in a 58/02 or 58/77 expansion unit that is running the AIX environment with the system power on.

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 132.

About this task

To install an adapter with the system power on in the AIX environment, do the following steps:

Procedure

1. Refer to "PCI hot-plug manager access for AIX" on page 175, and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.
2. From the PCI Hot-Plug Manager menu, select **Add a PCI Hot-Plug Adapter** and press Enter. The Add a Hot-Plug Adapter window displays.
3. Select the appropriate PCI slot from the ones listed on the screen, and press Enter.
4. Locate the PCI adapter slot and cassette you want to use.
5. If the cassette you want to use does not contain a PCI adapter, continue to the next step. If the cassette you want to use does contain an active PCI adapter, see "Removing a PCI adapter contained in a cassette from the expansion unit with the power on in AIX" on page 139.
6. Remove the PCI adapter cassette from the system. Refer to "Removing a PCI adapter cassette from the expansion unit" on page 137.

7. Install the adapter into the PCI adapter cassette. Refer to “PCI adapter single-width and double-width cassettes” on page 144.
8. Follow the instructions on the screen to install the adapter until the LED for the specified PCI slot is set to the Action state. See “Component LEDs” on page 177.
9. Install the PCI adapter cassette in the system. Refer to “Installing a PCI adapter contained in a cassette” on page 133.
10. Run the **cfgmgr** command to configure the adapter.
11. Verify that the new resource is functional. See Verify the installed part.

Installing a PCI adapter contained in a cassette with the power on in the Linux environment

You can install a PCI adapter cassette in a 58/02 or 58/77 expansion unit that is running the Linux environment with the system power on.

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 132.

About this task

To install an adapter with the system power on in the Linux environment, do the following steps:

Procedure

1. Log in to the system console as the root user.
2. Use the lsslot tool to list the hot-plug PCI slots that are available in the server or logical partition:

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

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

   ```
   Slot                  Description                       Devices
   U7879.001.DQD014E-P1-C1 PCI-X capable, 64 bit, 133MHz slot Empty
   U7879.001.DQD014E-P1-C4 PCI-X capable, 64 bit, 133MHz slot Empty
   U7879.001.DQD014E-P1-C5 PCI-X capable, 64 bit, 133MHz slot Empty
   ```

   Select the appropriate empty PCI slot from the ones listed by the command.
3. Remove the PCI adapter cassette from the system. Refer to “Removing a PCI adapter cassette from the expansion unit” on page 137.
4. Install the adapter into the PCI adapter cassette. Refer to “PCI adapter single-width and double-width cassettes” on page 144.
5. 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.
6. Run the **drmgr** command to enable an adapter to be installed.

   For example, to install an adapter in slot U7879.001.DQD014E-P1-C3, run:

   ```
   drmgr -c pci -r -s locationcode
   ```

   The following displays:

   ```
   The visual indicator for the specified PCI slot has been set to the
   identify state. Press Enter to continue or enter x to exit.
   ```
7. Press Enter.

   The following displays:

   ```
   The visual indicator for the specified PCI slot has been set to the
   action state. Insert the PCI card into the identified slot, connect any
   devices to be configured and press Enter to continue. Enter x to exit.
   ```

8. Install the PCI adapter cassette in the system. Refer to “Installing a PCI adapter contained in a cassette” on page 133.
9. Use the **lsslot** command to verify that U7879.001.DQD014E-P1-C3 is occupied.

   Enter `lsslot -c pci -s U7879.001.DQD014E-P1-C3`

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

```
Slot                  Description                       Devices
U7879.001.DQD014E-P1-C3 PCI-X capable, 64 bit, 133MHz slot 0001:40:01.0
```

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 132.

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.”
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 144.

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)**.

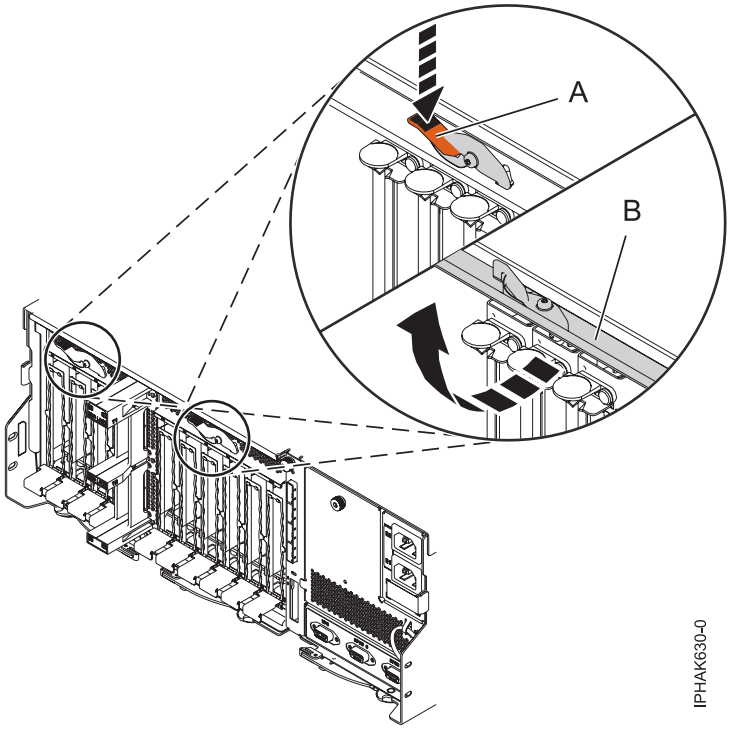


Figure 127. Opening the access door

2. Lift up the lower cassette handle **(C)** and pull the cassette out of the unit.

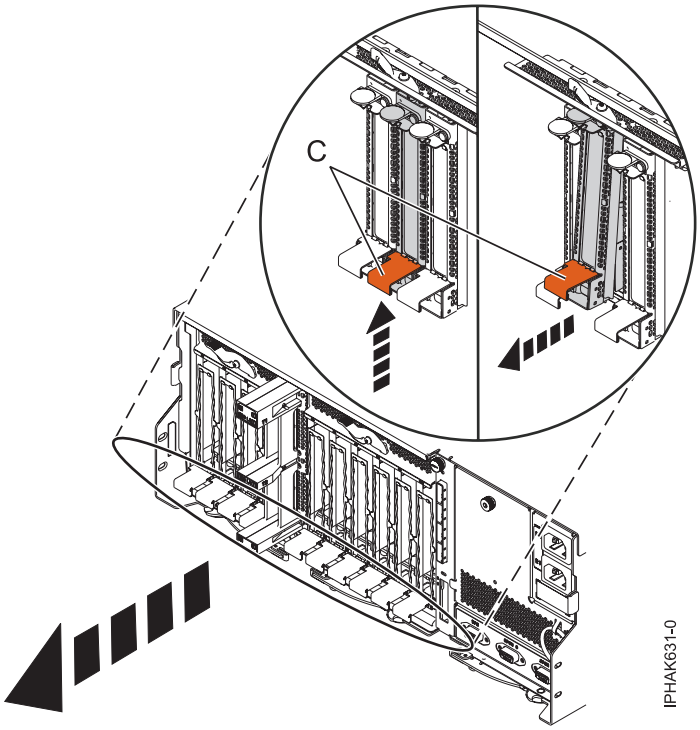


Figure 128. Removing a PCI adapter cassette

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.

Removing a PCI adapter contained in a cassette from the expansion unit with the power on in AIX

You can remove or replace a PCI adapter cassette from the 58/02 or 58/77 expansion unit that is running the AIX operating system with the system power on.

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 132.

About this task

Notes:

1. Use this procedure to remove a PCI adapter and leave the slot in the system unit empty.
2. If the adapter that is removed will be placed into a different slot or system, complete this removal procedure, and then install the adapter as described in "Installing a PCI adapter contained in a cassette with the power on in the AIX environment" on page 135.
3. Procedures performed on a PCI adapter with the system power on in AIX, also known as hot-plug procedures, require the system administrator to take the PCI adapter offline prior to performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

To remove an adapter, do the following steps:

Procedure

1. If you are removing a failing PCI adapter, see Identifying a failing part. If you are removing the PCI adapter for other reasons, continue to the next step.
2. Determine the location of PCI adapter in the system.
3. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system unit.
4. Ensure that any processes or applications that might use the adapter are stopped.
5. Enter the system diagnostics by logging in as root user or as the celogin user, and type **diag** at the AIX command line.
6. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays, press Enter.
7. At the FUNCTION SELECTION menu, select **Task Selection**, and then press Enter.
8. At the Task Selection list, select **PCI Hot Plug Manager**.
9. Select **Unconfigure a Device**, and then press Enter.
10. Press F4 (or press Esc+4) to display the **Device Names** menu.
11. Select the adapter you are removing in the **Device Names** menu.
12. Use the Tab key to answer `NO` to **Keep Definition**. Use the Tab key again to answer `YES` to **Unconfigure Child Devices**, and then press Enter. The **ARE YOU SURE** screen displays.
13. Press Enter to verify the information. Successful unconfiguration is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.
14. Press F4 (or press Esc+4) twice to return to the **Hot Plug Manager** menu.
15. Select **Replace/remove PCI Hot Plug adapter**.

16. Select the slot that has the device to be removed from the system.
17. Select **Remove**. A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
18. Label all cables that are attached to the adapter that you plan to remove.
19. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
20. Disconnect all cables attached to the adapter that you plan to remove.
21. Remove the PCI adapter cassette from the system. Refer to "Removing a PCI adapter cassette from the expansion unit" on page 137.
22. Place the cassette with the cover facing up on an approved ESD surface.
23. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the message `OK`, which is displayed next to the **Command** field at the top of the screen.
24. If you have other adapters to remove, press the F3 key to return to the PCI Hot-Plug Manager menu, and then return to step 20.

    If you do not have other adapters to remove, continue with the next step.
25. Press F10 to exit the Hot-Plug Manager.
26. Run the **diag -a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
27. To remove the adapter from the cassette, see "PCI adapter single-width and double-width cassettes" on page 144.
28. Place an empty cassette into the unused PCI slot for proper air flow.

Removing a PCI adapter contained in a cassette from the expansion unit with the power on in Linux

You can remove a PCI adapter cassette from the 58/02 or 58/77 expansion unit that is running the Linux operating system with the system power on.

Before you begin

Do the following actions before beginning the procedure:

- Follow the steps in "Preparing to install, remove, or replace a PCI adapter cassette" on page 132.
- Ensure that the system meets the "Prerequisites for hot-plugging PCI adapters in Linux" on page 178.
- Verify that the Linux, hot-plug PCI tools are installed. See "Verifying that the hot-plug PCI tools are installed for Linux" on page 178

About this task

To remove an adapter, do the following steps:

Procedure

1. Determine the location of the PCI adapter in the system.
2. Label and then disconnect all cables attached to the adapter you plan to remove.
3. Run the **drmgr** command to enable an adapter to be removed:

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

   ```
   drmgr -c pci -r -s locationcode
   ```

   Follow the instructions on the display to complete the task.
4. Remove the PCI adapter cassette from the system. Refer to "Removing a PCI adapter cassette from the expansion unit" on page 137.
5. Place the cassette with the cover facing up on an approved ESD surface.

6. To remove an adapter from the cassette, refer to “PCI adapter single-width and double-width cassettes” on page 144.

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

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

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 137 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 144.
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 133.
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.

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

You can remove or replace a PCI adapter cassette from the 58/02 or 58/77 expansion unit that is running the AIX operating system with the system power on.

Before you begin

Before you begin: Prepare to replace a PCI adapter cassette. See “Preparing to install, remove, or replace a PCI adapter cassette” on page 132.

About this task

Important:

- Use this procedure if you intend to remove a failing PCI adapter and replace it with the same type of adapter. If you plan to remove a failing adapter and leave the slot empty, see “Removing a PCI adapter contained in a cassette from the expansion unit with the power on in AIX” on page 139.
- Do not use this procedure to remove an existing adapter and install a different type of adapter. To install a different adapter, remove the existing adapter as described in “Removing a PCI adapter

contained in a cassette from the expansion unit with the power on in AIX" on page 139, and then install the new adapter as described in "Installing a PCI adapter contained in a cassette with the power on in the AIX environment" on page 135.

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

To replace an adapter, do the following steps:

Procedure

1. Determine the location of the PCI adapter in the system.
2. Record the slot number and location of each adapter being removed.

   Note: Adapter slots are numbered on the rear of the system unit.
3. Ensure that any processes or applications that might use the adapter are stopped.
4. Enter the system diagnostics by logging in as root user or as the celogin user, and type **diag** at the AIX command line.
5. When the DIAGNOSTIC OPERATING INSTRUCTIONS menu displays, press Enter.
6. At the FUNCTION SELECTION menu, select **Task Selection**, and then press Enter.
7. At the Task Selection list, select **PCI Hot Plug Manager**.
8. Select **Unconfigure a Device**, and then press Enter.
9. Press F4 (or Esc+4) to display the **Device Names** menu.
10. Select the adapter that you are removing in the **Device Names** menu.
11. Use the Tab key to answer `YES` to **Keep Definition**. Use the Tab key again to answer `YES` to **Unconfigure Child Devices**, and then press Enter. The **ARE YOU SURE** screen displays.
12. Press Enter to verify the information. Successful unconfiguration is indicated by the message `OK`, which is displayed next to the **Command** field at the top of the screen.
13. Press F3 (or Esc+3) twice to return to the **Hot Plug Manager** menu.
14. Select **Replace/remove PCI Hot Plug adapter**.
15. Select the slot that has the device to be removed from the system.
16. Select **Replace**.

    Note: A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
17. Press Enter. This places the adapter in the action state, meaning it is ready to be removed from the system.
18. Label and then disconnect all cables attached to the adapter that you plan to remove.
19. Remove the PCI adapter cassette from the system. Refer to "Removing a PCI adapter cassette from the expansion unit" on page 137.
20. Place the cassette with the cover facing up on an approved ESD surface.
21. Install the adapter into the PCI adapter cassette. Refer to "PCI adapter single-width and double-width cassettes" on page 144.
22. At the back of the system, lift the cassette cover flap and identify the cassette slot you want to use.
23. Ensure the lower cassette handle is pressed up toward the retainer clip. This places the adapter in the correct position to be docked in the system.
24. Install the PCI adapter cassette in the system. Refer to "Installing a PCI adapter contained in a cassette" on page 133.

25. Press Enter and continue to follow the screen instructions until you receive a message that the replacement is successful. Successful replacement is indicated by the message OK, which is displayed next to the **Command** field at the top of the screen.
26. Press the F3 (or Esc+3) key to return to the **PCI Hot-Plug Manager** menu.
27. Press the F3 (or Esc+3) key to return to the **TASK** selection list.
28. Select **Log Repair Action**.
29. Select the resource just replaced, press Enter, press Commit (F7 or ESC 7), and then press Enter.
30. Press F3 (or Esc+3) to return to **TASK Selection List**.
31. Select **Hot Plug Task**, press Enter.
32. Select **PCI Hot Plug Manager**, and then select **Configure a defined device**, then press Enter.
33. Select the device just replaced from the list, and then press Enter. The device is now configured.
34. Press the F10 key to exit the diagnostic program.
35. Verify the PCI adapter by using the following instructions:
    a. Did you replace the adapter with the system power on?
       - Yes: Go to the next step.
       - No: Load the diagnostic program by doing the following steps:
         – If AIX is available, boot AIX, log in as root or CELOGIN, and then enter the **diag** command.
    b. Type the **diag** command if you are not already displaying the diagnostic menus.
    c. Select **Advance Diagnostic Routines**, and then select **Problem Determination**.
    d. Select the name of the resource just replaced from the menu. If the resource just replaced is not shown, choose the resource associated with it. Press Enter, and then press **Commit** (F7 or Esc+7).
    e. Did the Problem Determination identify any problems?
       - No: Continue to the next step.
       - Yes: A problem is identified
         – If you are a customer, record the error information, and then contact your service provider.
         – If you are an authorized service provider, return to map 210-5.
36. Press the F10 key to exit the diagnostic program.

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

You can replace a PCI adapter cassette from the 58/02 or 58/77 expansion unit that is running the Linux operating system with the system power on.

Before you begin

You must have already completed the procedure “Removing a PCI adapter contained in a cassette from the expansion unit with the power on in Linux” on page 140 to have the slot powered off.

About this task

Note: Use this procedure only when you are replacing an adapter with an identical adapter. If you are replacing an adapter with an adapter that is not identical to the adapter removed, follow the steps in “Installing a PCI adapter contained in a cassette with the power on in the Linux environment” on page 136.

To replace an adapter with the power on in Linux, do the following steps:

Procedure

1. If the adapter needs to be placed in the PCI adapter cassette, see “PCI adapter single-width and double-width cassettes” on page 144.

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. Run the **drmgr** command to enable an adapter to be replaced:

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

   ```
   drmgr -c pci -r -s locationcode
   ```
5. Follow the instructions on the display to complete the task. When you are instructed to insert the adapter in the adapter slot, see "Installing a PCI adapter cassette" on page 133.
6. Run the **lsslot** command to verify that the slot is occupied.

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

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

   ```
   Slot                  Description                       Devices
   U7879.001.DQD014E-P1-C3 PCI-X capable, 64 bit, 133MHz slot 0001:40:01.0
   ```

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

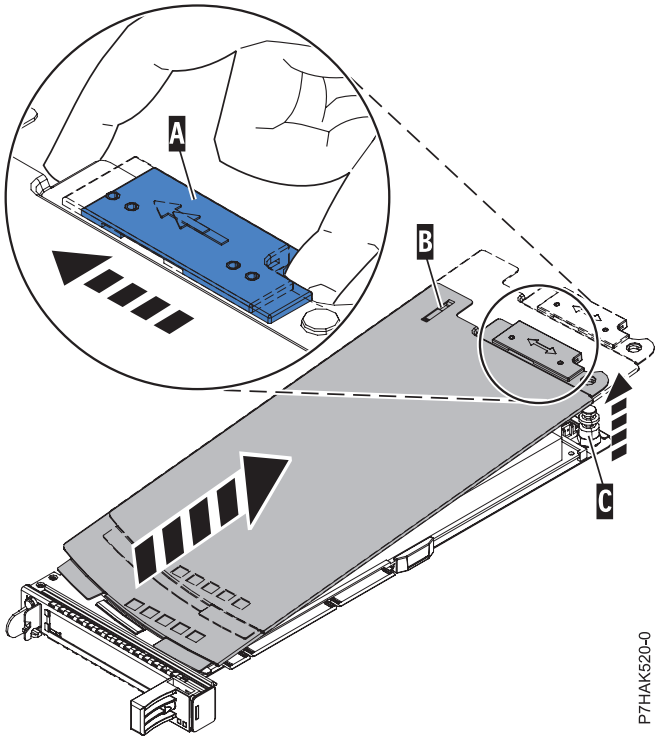


Figure 129. PCI adapter cassette cover removed

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 130 on page 146.

      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.

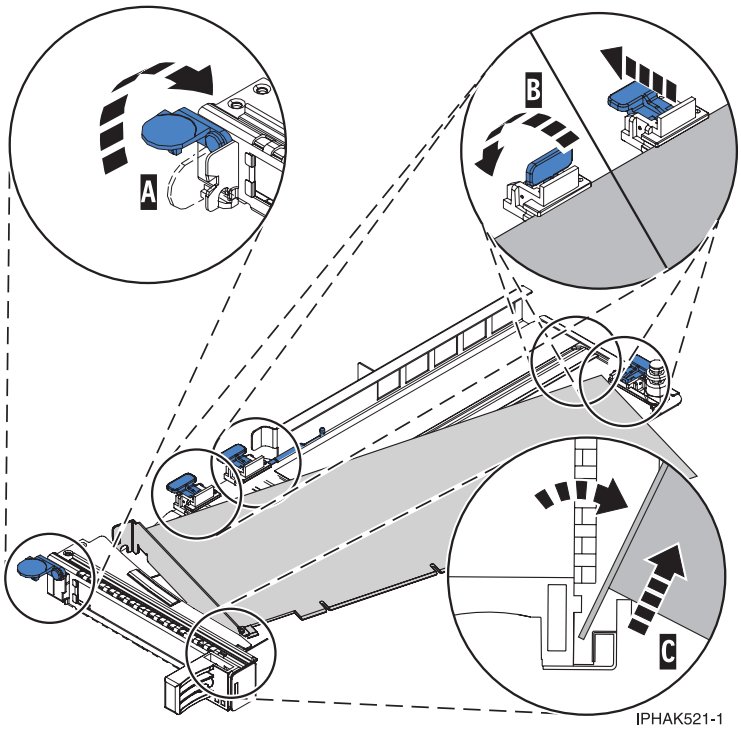


Figure 130. Adapter removed from the PCI adapter cassette

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 147.

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.

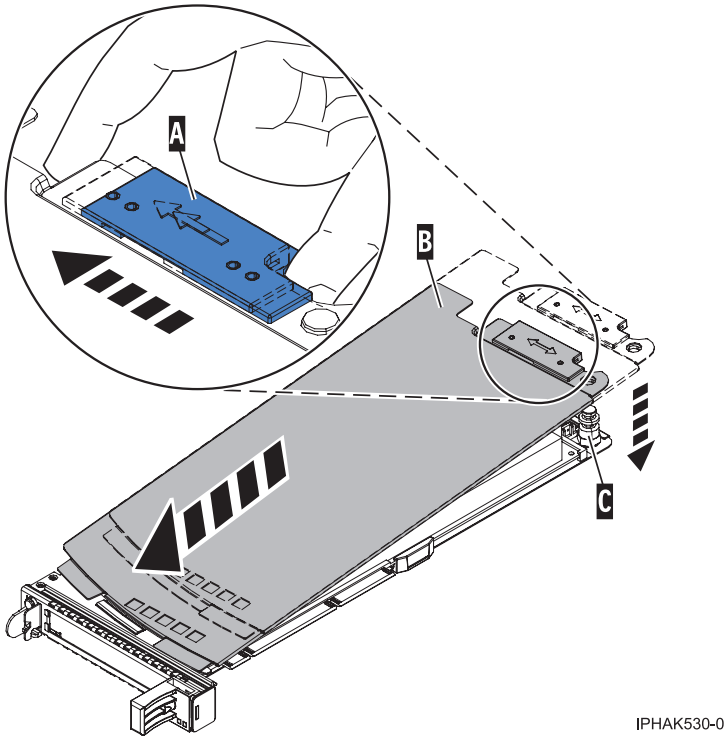


Figure 131. PCI adapter cassette cover replaced

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

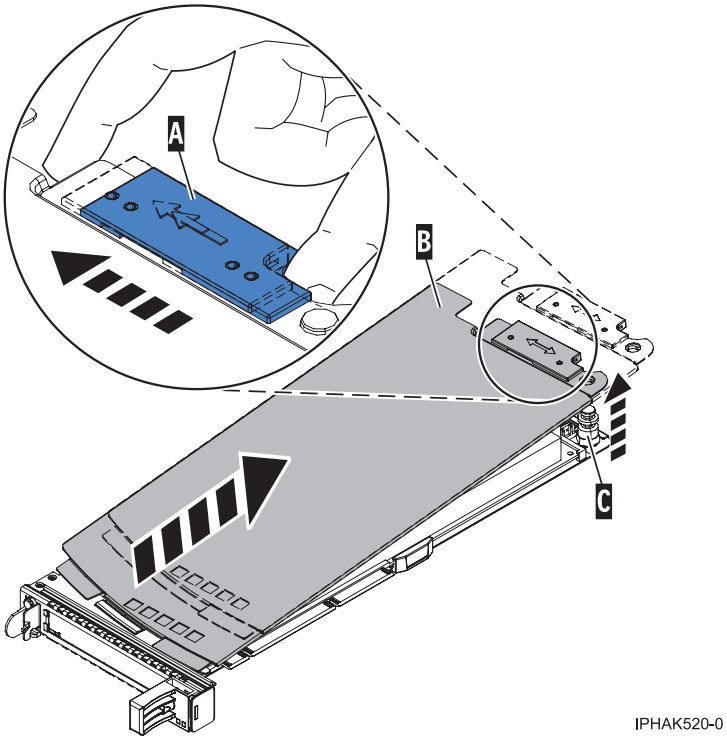


Figure 132. PCI adapter single-width cassette cover removed

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 144.
      - 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 133 on page 149.

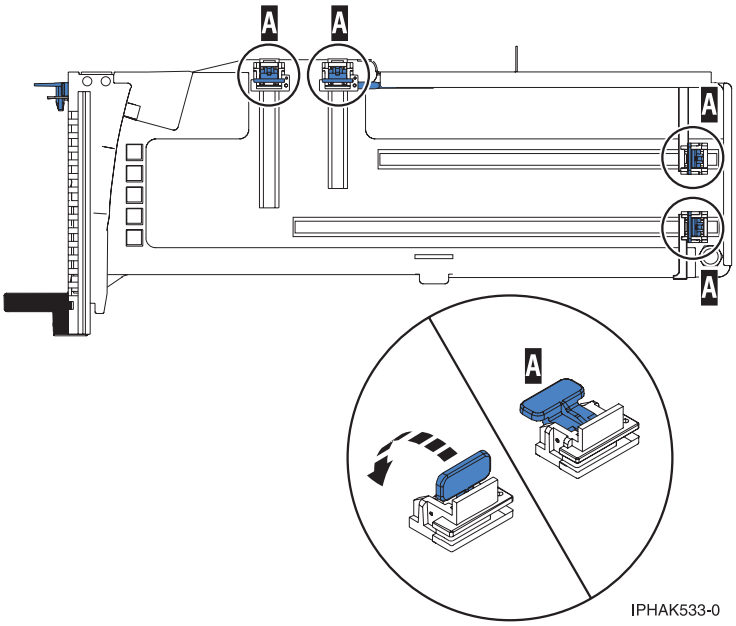


Figure 133. Adapter retainers

c. Rotate the tailstock clamp into the open position.

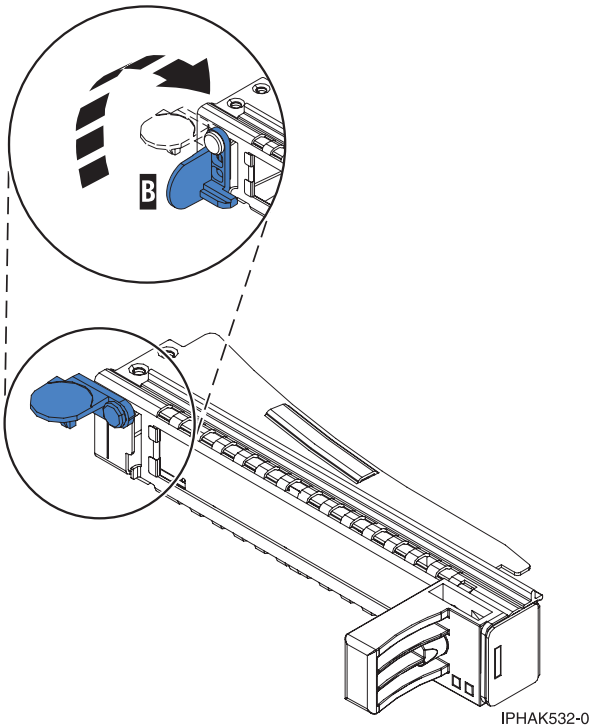


Figure 134. Tailstock clamp in the open position

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 135 on page 150.
   b. Rotate the adapter toward the top of the cassette and into place.

c. Close the tailstock clamp **(B)**. See Figure 135.

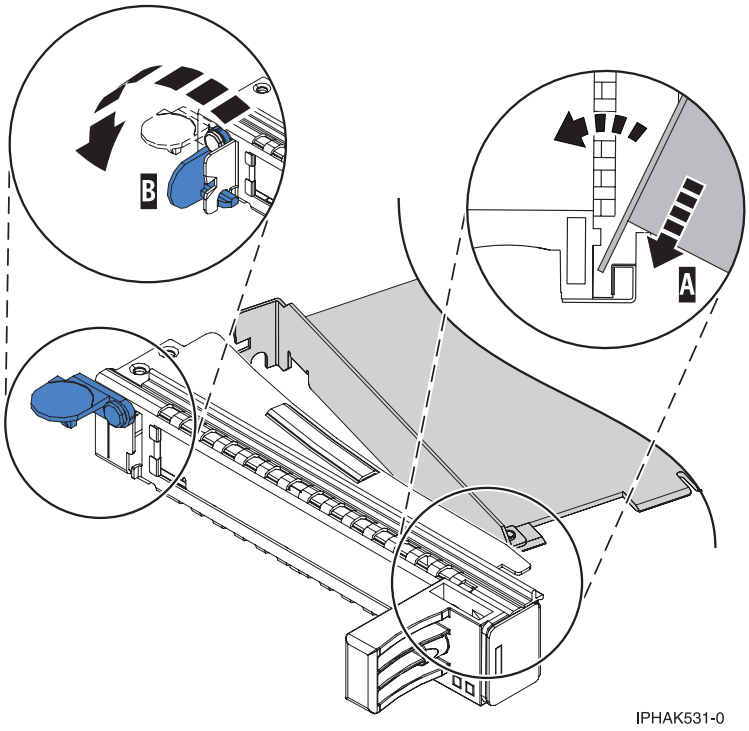


Figure 135. Adapter removed from the PCI adapter single-width cassette

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 136 on page 151.

      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.

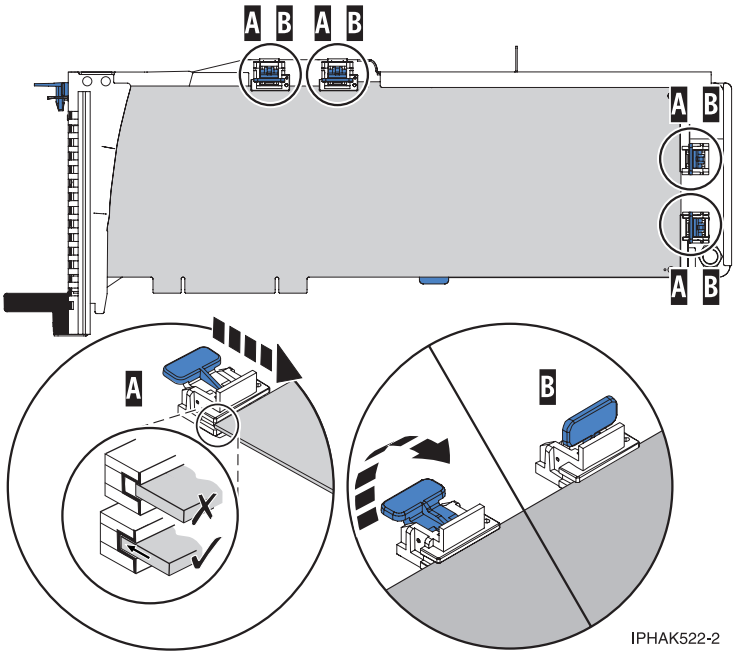


Figure 136. Large adapter in the PCI adapter cassette with the supports and stabilizer in place

Adapter-cassette retainer placement for medium-length adapters

a) Remove the adapter stabilizer **(C)**. See Figure 137 on page 152.

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.

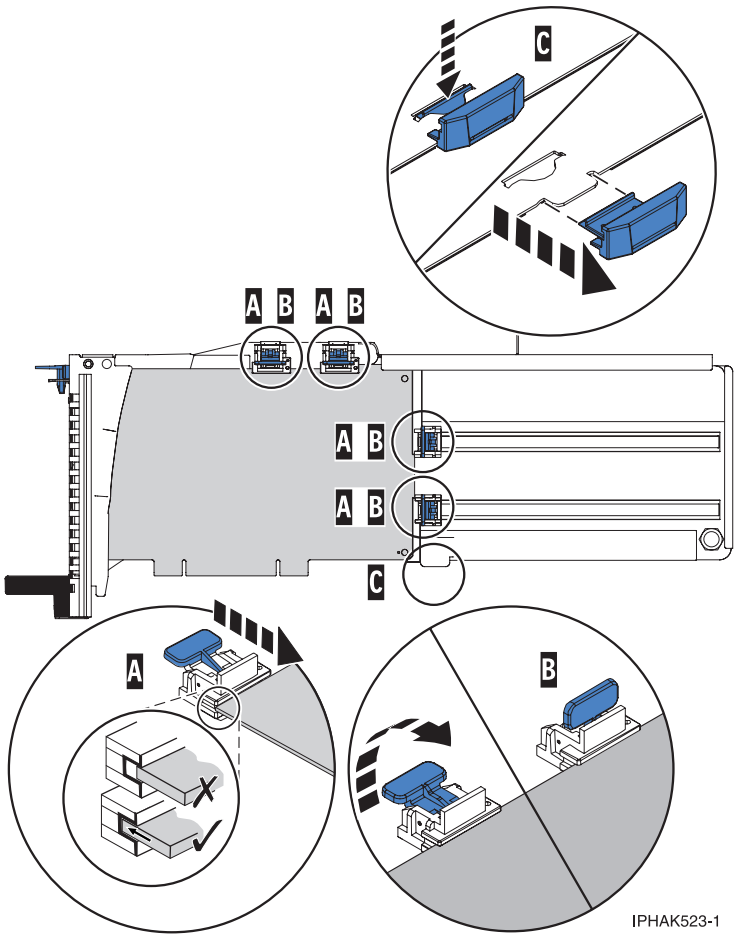


Figure 137. Medium-length adapter in the PCI adapter cassette with the supports in place

Adapter-cassette retainer placement for small adapters

a) Remove the adapter stabilizer **(C)**. See Figure 138 on page 153.

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.

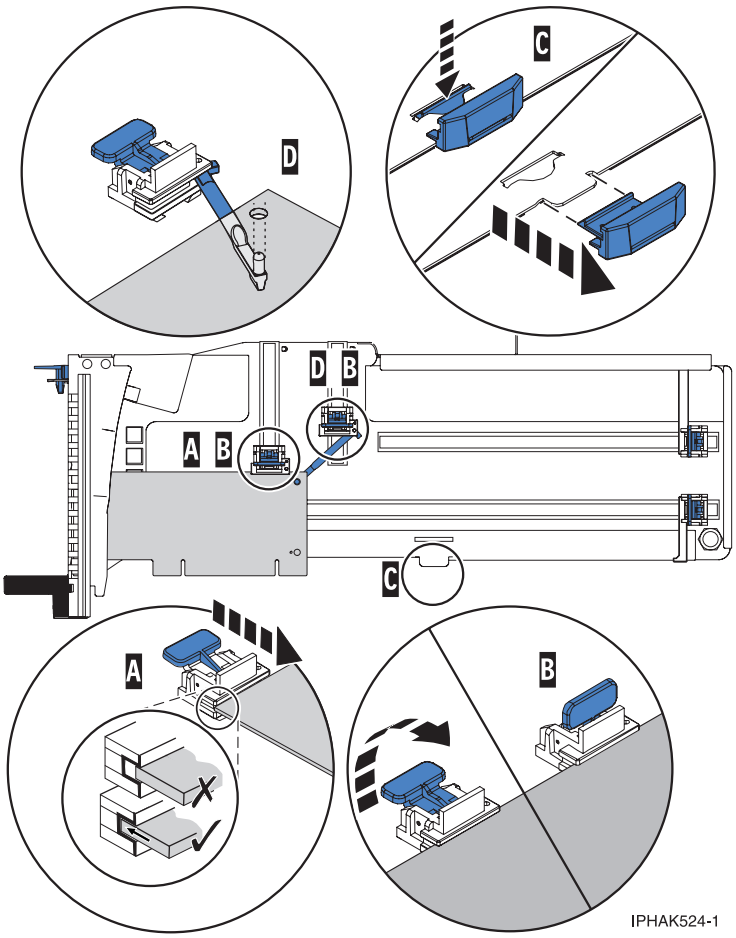


Figure 138. Small adapter in the PCI adapter cassette with the supports and the hookarm in place

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.

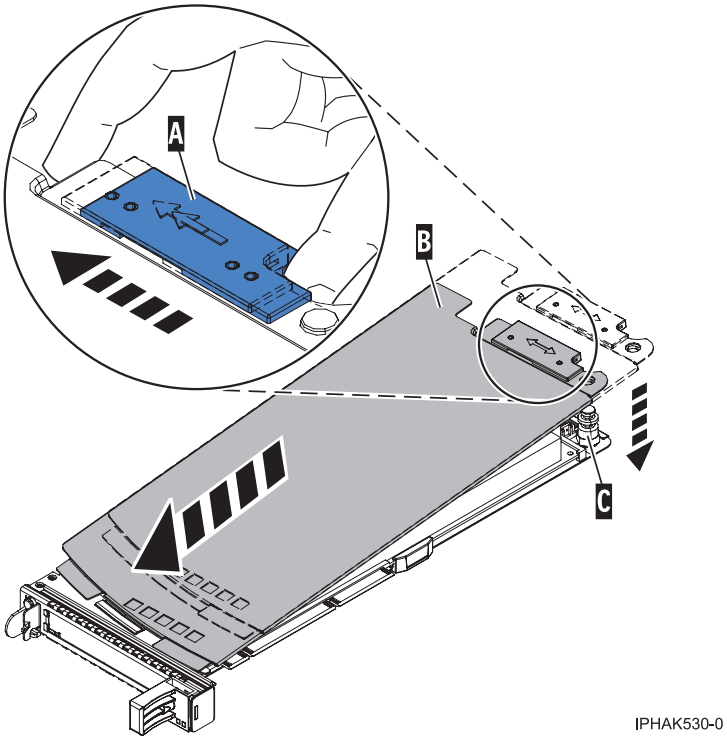


Figure 139. PCI adapter cassette cover replaced

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 162.
2. Take appropriate precautions for avoiding electric shock and handling static-sensitive devices. For information, see "Safety notices" on page 165 and "Handling static-sensitive devices" on page 170.
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.

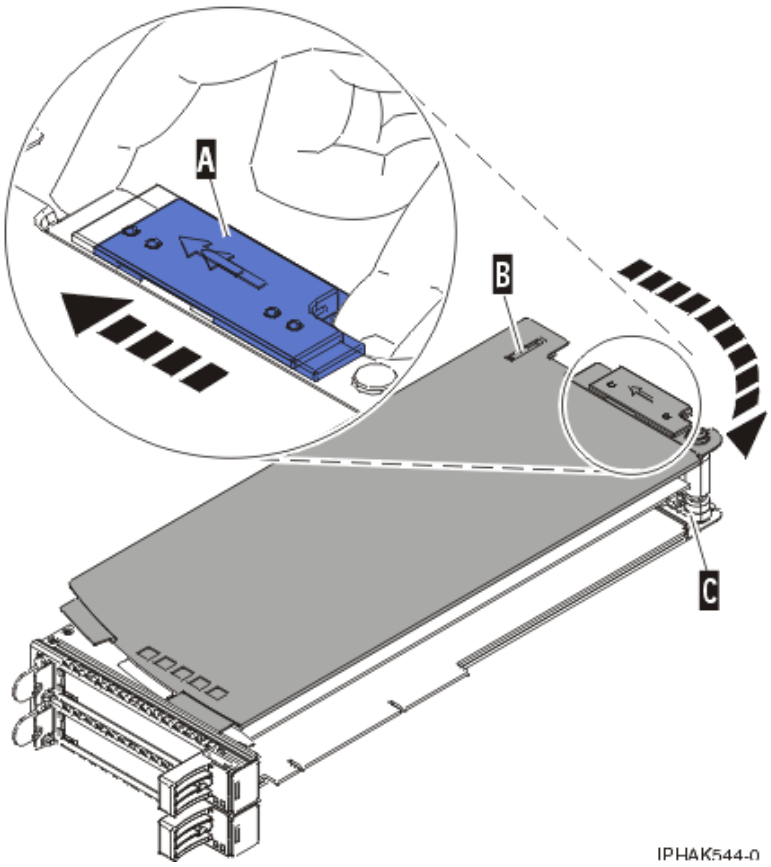


Figure 140. PCI adapter cassette cover removed

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 141 on page 156. If you are removing a PCIe RAID and SSD SAS adapter, see Figure 142 on page 156.

      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)**.

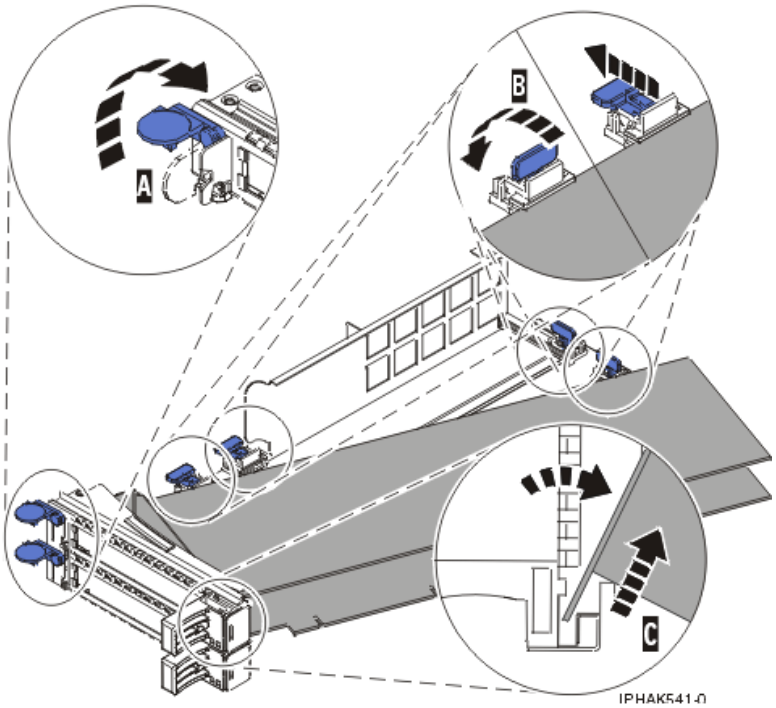


Figure 141. Adapter removed from the PCI adapter cassette

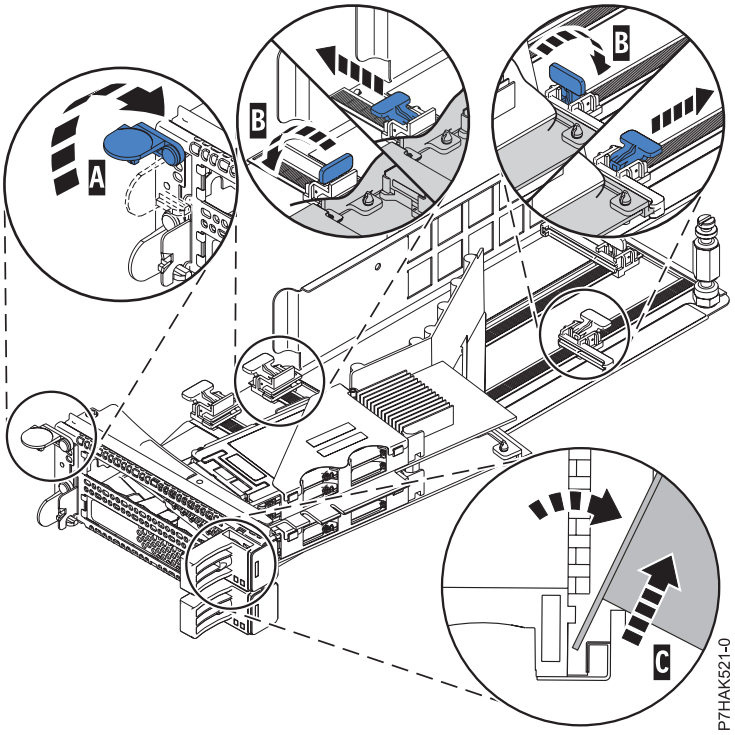


Figure 142. PCIe RAID and SSD SAS adapter removed from the PCI adapter cassette

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.

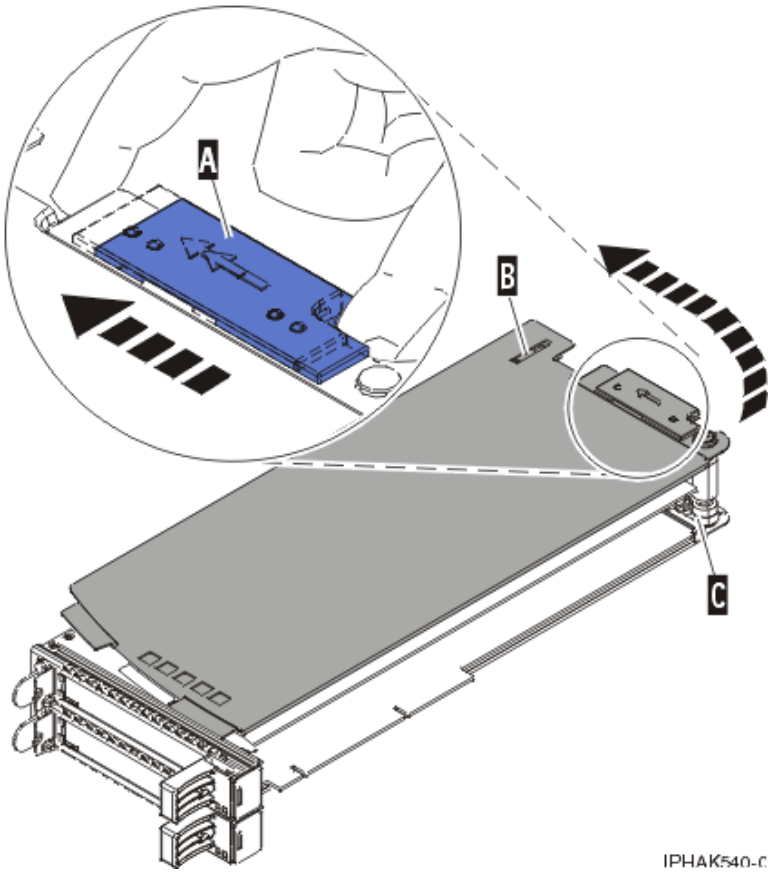


Figure 143. PCI adapter cassette cover replaced

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 162.
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.

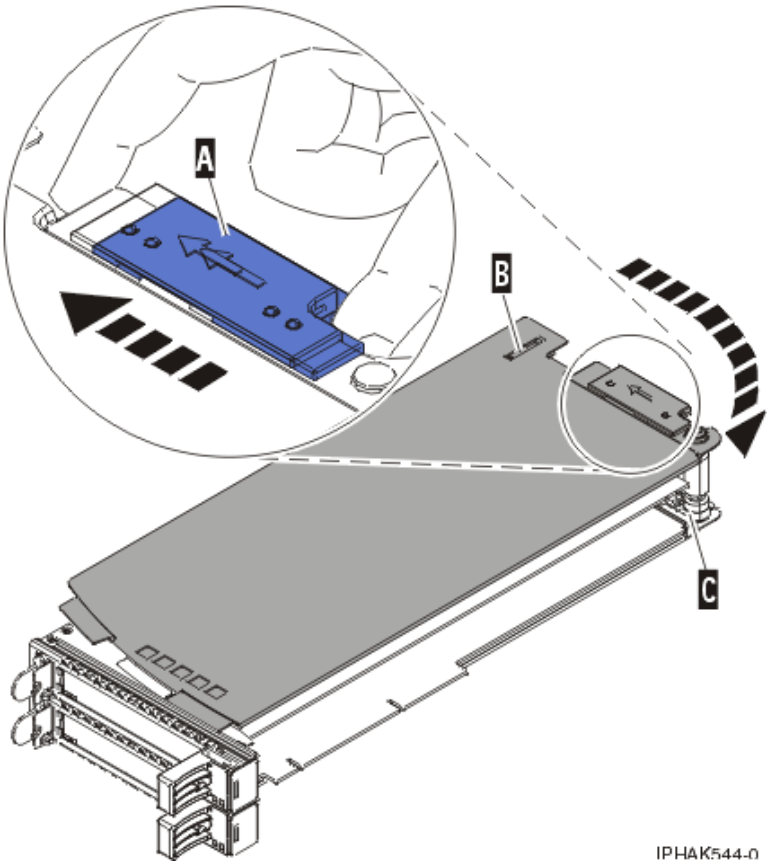


Figure 144. PCI adapter cassette cover removed

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 154.
      - 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.

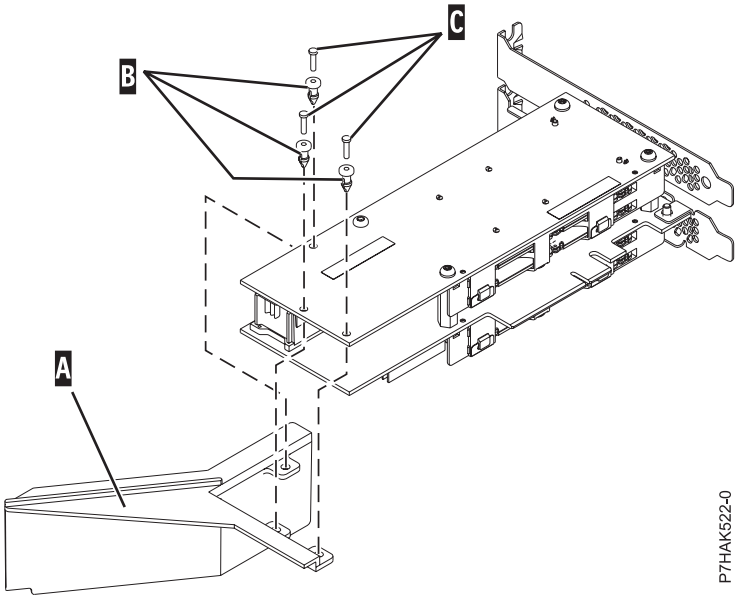


Figure 145. Installing an air dam onto the new PCIe RAID and SSD SAS adapter

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 146 on page 160. For a PCIe RAID and SSD SAS adapter, see Figure 147 on page 160.
   b. Rotate the adapter toward the top of the cassette and into place.
   c. Close the tailstock clamp **(C)**.

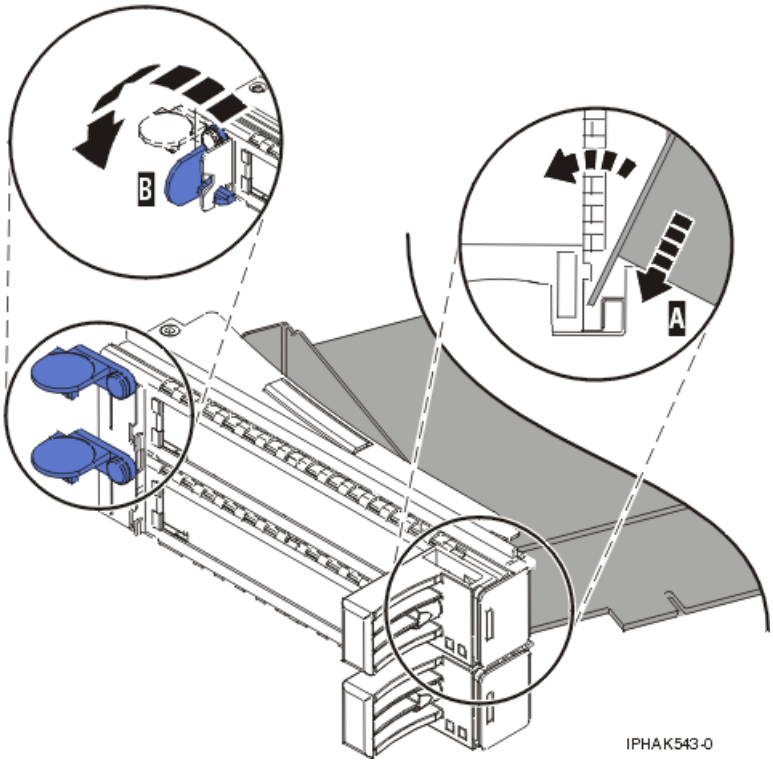


Figure 146. Adapter replaced in the PCI adapter cassette

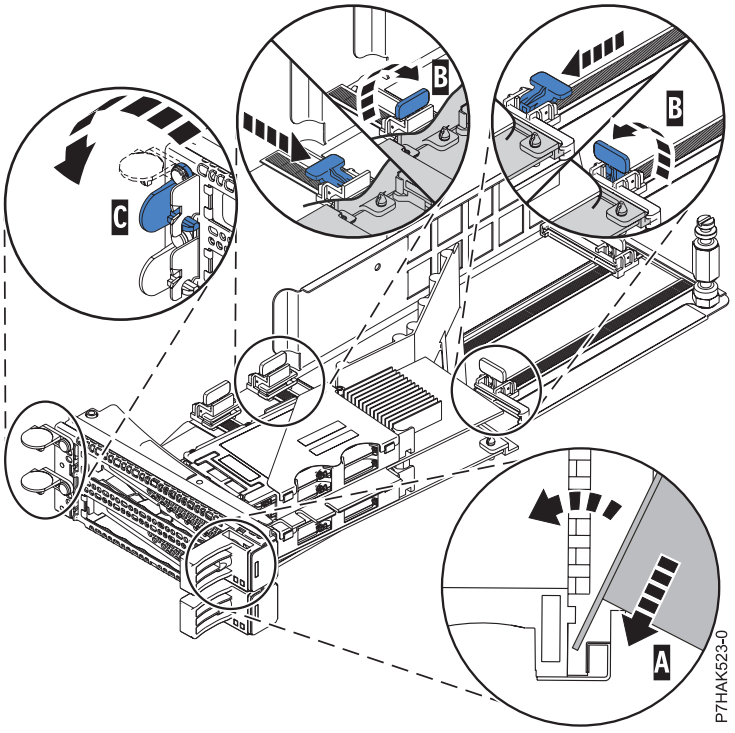


Figure 147. Replacing a PCIe RAID and SSD SAS adapter into the PCI adapter cassette

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 148.

   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.

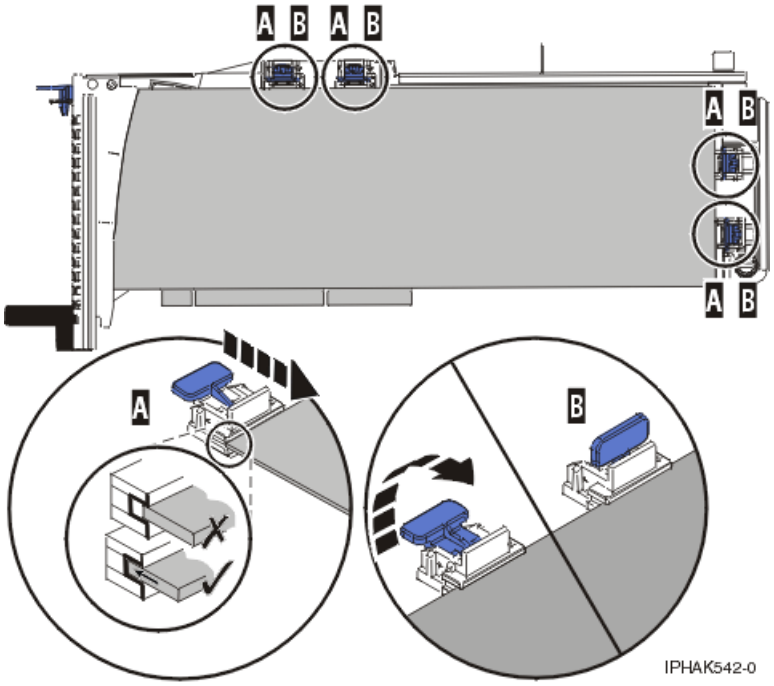


Figure 148. Long adapter in the PCI adapter cassette with the supports and stabilizer in place

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.

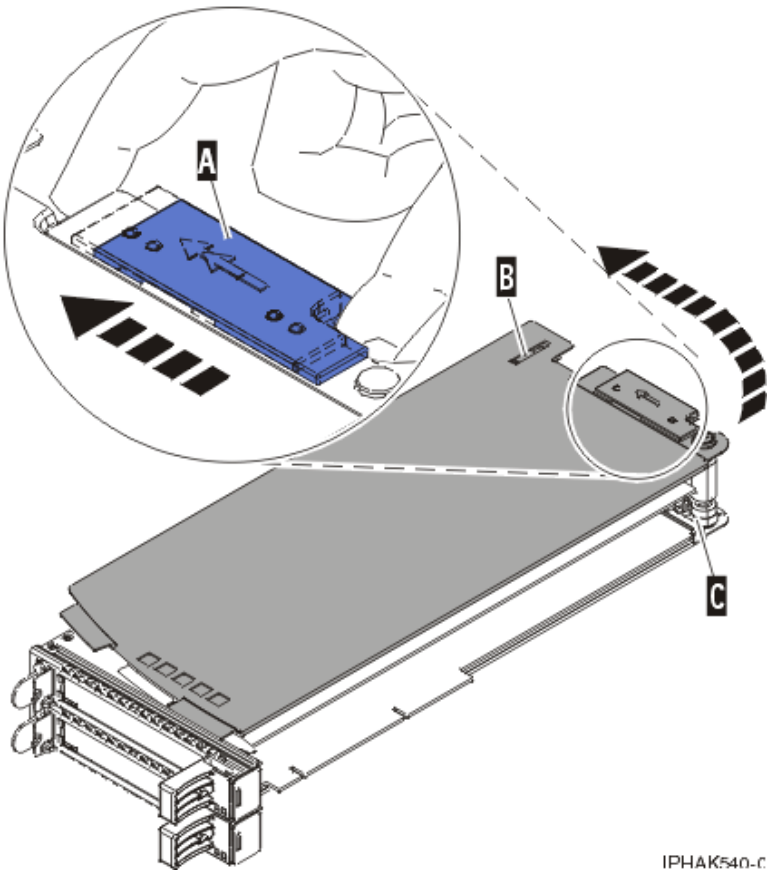


Figure 149. PCI adapter cassette cover replaced

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

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.

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:

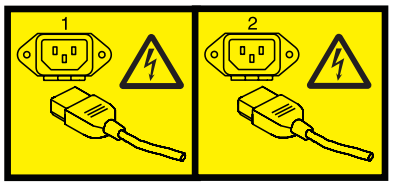
- **Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:**
  - **Remove 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.

Handling static-sensitive devices

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

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

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

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

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

Before you begin

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

Getting started

Before you begin

Prerequisites:

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

About this task

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

Procedure

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

Installing a PCI adapter

About this task

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

Procedure

1. From the PCI Hot Plug Manager, select **Add a PCI Hot Plug Adapter**, then press Enter. The Add a Hot-Plug Adapter window is displayed.
2. Select the appropriate empty PCI slot from those listed, and press Enter. A fast-blinking amber LED located at the back of the server near the adapter indicates that the slot has been identified.
3. Follow the instructions on the screen to install the adapter until the LED for the specified PCI slot is set to the Action state.
   a. Set the adapter LED to the action state so that the indicator light for the adapter slot flashes
   b. Physically install the adapter
   c. Finish the adapter installation task in **diagmenu**.
4. Run the **cfgdev** command to configure the device for the Virtual I/O Server.

Results

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

Replacing a PCI adapter

Before you begin

Prerequisite: Before you can remove or replace a storage adapter, you must unconfigure that adapter. See "Unconfiguring storage adapters" on page 173 for instructions.

About this task

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

Procedure

1. From the PCI Hot Plug Manager, select **Unconfigure a Device**, then press Enter.
2. Press F4 (or Esc +4) to display the **Device Names** menu.
3. Select the adapter you are removing in the **Device Names** menu.
4. In the **Keep Definition** field, use the Tab key to answer `Yes`. In the **Unconfigure Child Devices** field, use the Tab key again to answer `YES`, then press Enter.
5. Press Enter to verify the information on the **ARE YOU SURE** screen. Successful unconfiguration is indicated by the `OK` message displayed next to the Command field at the top of the screen.
6. Press F4 (or Esc +4) twice to return to the Hot Plug Manager.
7. Select **replace/remove PCI Hot Plug adapter**.
8. Select the slot that has the device to be removed from the system.

9. Select **replace**. A fast-blinking amber LED located at the back of the machine near the adapter indicates that the slot has been identified.
10. Press Enter which places the adapter in the action state, meaning it is ready to be removed from the system.

Unconfiguring storage adapters
About this task

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

Unconfiguring a storage adapter involves the following tasks:

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

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

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

Procedure

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

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

Preparing the client logical partitions
About this task

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

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

Procedure

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

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

Situation	Steps
You have redundant hardware on the Virtual I/O Server for the adapter.	No action is required on the client logical partition.
HMC-managed systems only: You have redundant Virtual I/O Server logical partitions that, in conjunction with virtual client adapters, provide multiple paths to the physical volume on the client logical partition.	No action is required on the client logical partition. However, path errors might be logged on the client logical partition.
HMC-managed systems only: You have redundant Virtual I/O Server logical partitions that, in conjunction with virtual client adapters, provide multiple physical volumes that are used to mirror a volume group.	See the procedures for your client operating system.
You do not have redundant Virtual I/O Server logical partitions.	Shut down the client logical partition. For instructions, see the following topics about shutting down logical partitions: • For systems that are managed by the HMC, see "Shutting down AIX logical partitions using the HMC", and "Shutting down Linux logical partitions using the HMC" in the Logical partitioning.[1] • For systems that are managed by the Integrated Virtualization Manager, see "Shutting down logical partitions."
[1]The Logical partitioning can be found on the Hardware Information website at add URL here.	

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.

PCI hot-plug manager access for AIX

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

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

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

Accessing hot-plug management functions

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

About this task

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

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

1. Log in as root user.
2. At the command line, type `smitty`.
3. Select **Devices**.
4. Select **PCI Hot Plug Manager** and press Enter.

5. The PCI Hot-Plug Manager menu displays. Return to the procedure that directed you here. The following section describes the menu options.

PCI hot-plug manager menu

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

Note: For information about the PCI slot LED states, see "Component LEDs" on page 177.

List PCI hot-plug slots

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

Add a PCI hot-plug adapter

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

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

Replace/remove a PCI hot-plug adapter

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

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

Identify a PCI hot-plug slot

Allows the user to identify a PCI slot. The selected PCI slot will go into the Identify state. See "Component LEDs" on page 177.

Unconfigure a device

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

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

Configure a defined device

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

Install/configure devices added after IPL

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

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

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

Component LEDs

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

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

Green LEDs indicate either of the following:

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

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

Resetting the LEDs in AIX:

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

About this task

After the repair action is completed, do the following:

Procedure

1. Log in as root user.
2. At the command line, type `diag`.
3. Select **Task Selection**.
4. Select **Log Repair Action**.
5. Select the device that was repaired.
6. Press F10 to exit diagnostics.

Results

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

Prerequisites for hot-plugging PCI adapters in Linux

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

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

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

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

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

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

This software is available at the Service and productivity tools for Linux on POWER Web site.

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

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

Procedure

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

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

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

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

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

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

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

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

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

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.

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.

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.

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.

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.

Notices

This information was developed for products and services offered in the U.S.A.

The manufacturer may not offer the products, services, or features discussed in this document in other countries. Consult the manufacturer's representative for information on the products and services currently available in your area. Any reference to the manufacturer's product, program, or service is not intended to state or imply that only that product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any intellectual property right of the manufacturer may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any product, program, or service.

The manufacturer may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to the manufacturer.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. The manufacturer may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to websites not owned by the manufacturer are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this product and use of those websites is at your own risk.

The manufacturer may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning products not produced by this manufacturer was obtained from the suppliers of those products, their published announcements or other publicly available sources. This manufacturer has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to products not produced by this manufacturer. Questions on the capabilities of products not produced by this manufacturer should be addressed to the suppliers of those products.

All statements regarding the manufacturer's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

The manufacturer's prices shown are the manufacturer's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information in softcopy, the photographs and color illustrations may not appear.

The drawings and specifications contained herein shall not be reproduced in whole or in part without the written permission of the manufacturer.

The manufacturer has prepared this information for use with the specific machines indicated. The manufacturer makes no representations that it is suitable for any other purpose.

The manufacturer's computer systems contain mechanisms designed to reduce the possibility of undetected data corruption or loss. This risk, however, cannot be eliminated. Users who experience unplanned outages, system failures, power fluctuations or outages, or component failures must verify the accuracy of operations performed and data saved or transmitted by the system at or near the time of the outage or failure. In addition, users must establish procedures to ensure that there is independent data verification before relying on such data in sensitive or critical operations. Users should periodically check the manufacturer's support websites for updated information and fixes applicable to the system and related software.

Homologation statement

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Red Hat, the Red Hat "Shadow Man" logo, and all Red Hat-based trademarks and logos are trademarks or registered trademarks of Red Hat, Inc., in the United States and other countries.

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.

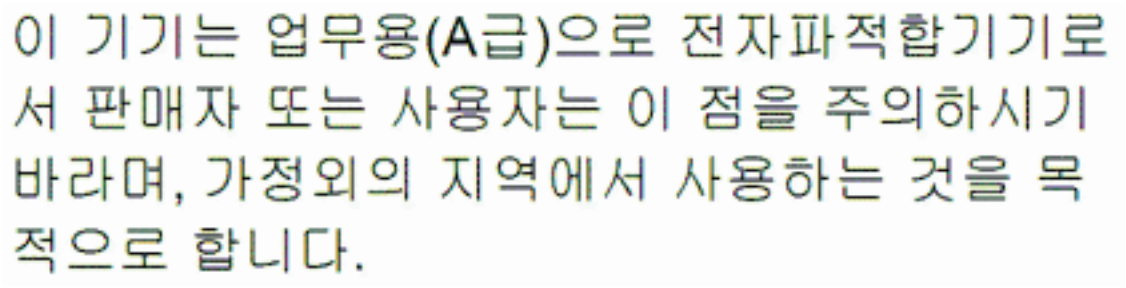
Electromagnetic Interference (EMI) Statement - Taiwan

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



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 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 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.

Terms and conditions

Permissions for the use of these publications are granted subject to the following terms and conditions.

Applicability: These terms and conditions are in addition to any terms of use for the the manufacturer website.

Personal Use: You may reproduce these publications for your personal, noncommercial use provided that all proprietary notices are preserved. You may not distribute, display or make derivative works of these publications, or any portion thereof, without the express consent of the manufacturer.

Commercial Use: You may reproduce, distribute and display these publications solely within your enterprise provided that all proprietary notices are preserved. You may not make derivative works of

these publications, or reproduce, distribute or display these publications or any portion thereof outside your enterprise, without the express consent of the manufacturer.

Rights: Except as expressly granted in this permission, no other permissions, licenses or rights are granted, either express or implied, to the Publications or any information, data, software or other intellectual property contained therein.

The manufacturer reserves the right to withdraw the permissions granted herein whenever, in its discretion, the use of the publications is detrimental to its interest or, as determined by the manufacturer, the above instructions are not being properly followed.

You may not download, export or re-export this information except in full compliance with all applicable laws and regulations, including all United States export laws and regulations.

THE MANUFACTURER MAKES NO GUARANTEE ABOUT THE CONTENT OF THESE PUBLICATIONS. THE PUBLICATIONS ARE PROVIDED "AS-IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE.

Printed in USA